

Medals and Ribbons

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A SALUTE TO OUR VALIANT WARRIORS

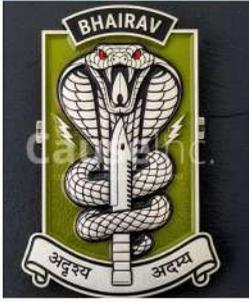
WHO SHAPES IRAN'S FUTURE?

Its People, The Regime or Foreign Powers

The Death of Diplomacy
The New World Disorder

Transformation, Integration and Future War Readiness
An Incisive Chat with the CDS

India's Sea Based Nuclear Deterrence
INS Arihant, Arighat and Aridhman



BHAIKAV

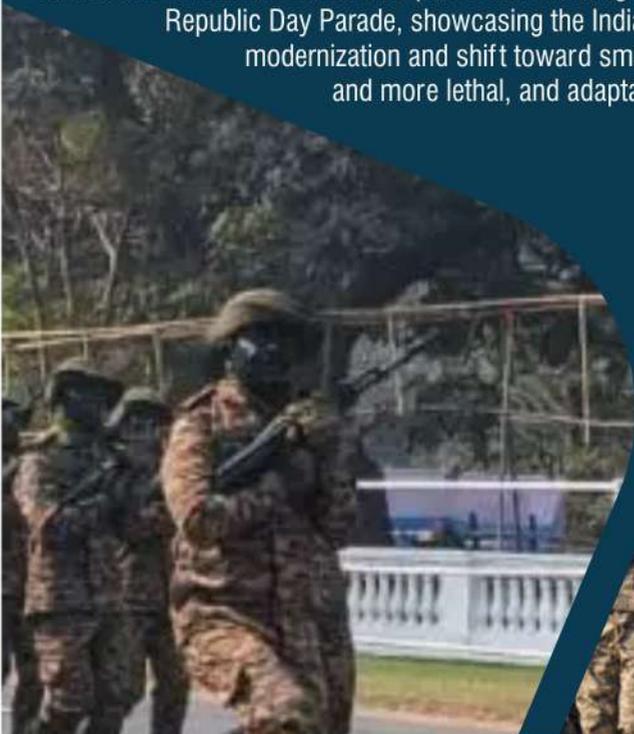
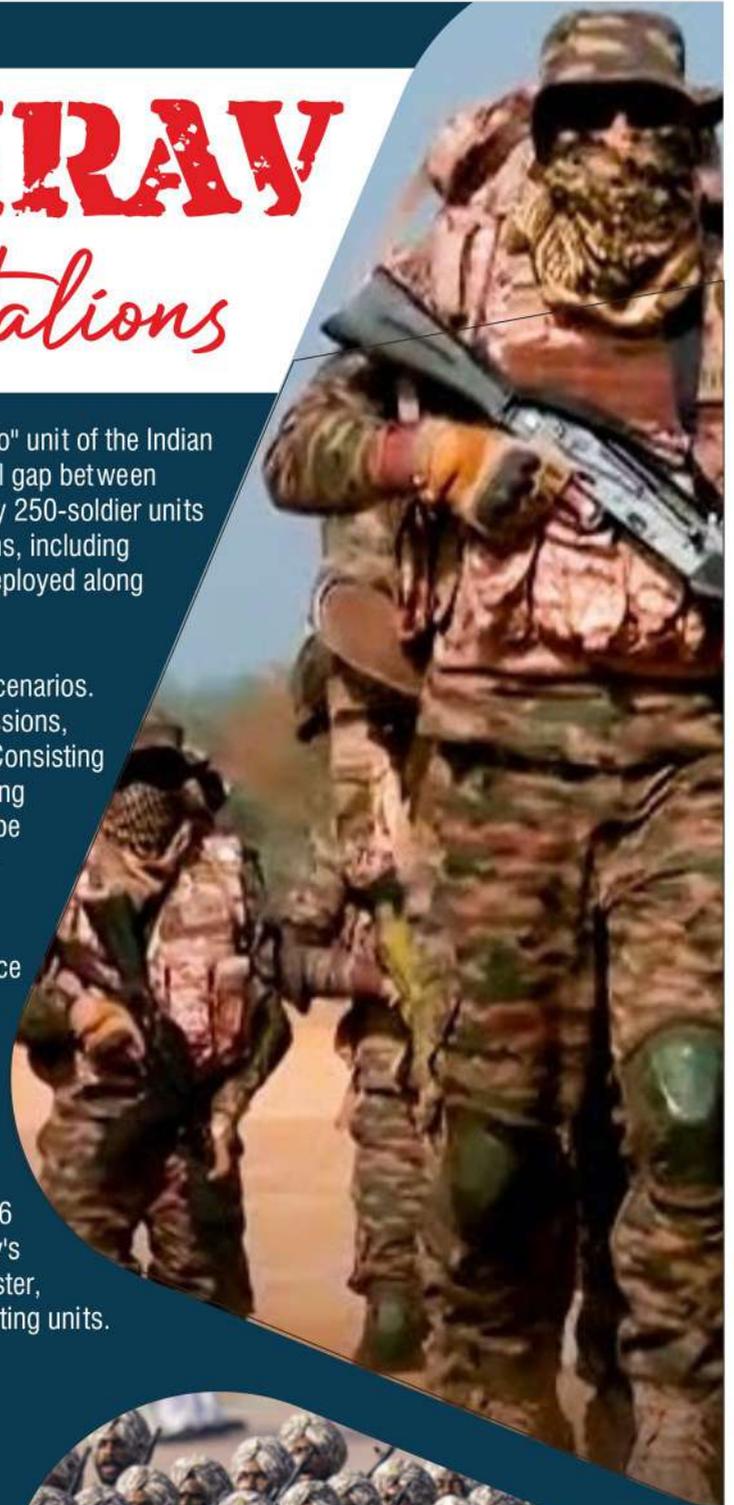
Battalions

The Bhairav Battalion is a newly formed, elite "light commando" unit of the Indian Army designed as a rapid-response force to fill the operational gap between regular infantry and Para Special Forces. These approximately 250-soldier units focus on high-speed, stealth, and technology-driven operations, including drone warfare and electronic support, and will primarily be deployed along sensitive borders.

The Bhairav Battalions have been created for "fight tonight" scenarios. These battalions handle quick, tactical, and high-intensity missions, such as destroying terrorist launch pads and forward posts. Consisting of approximately 250 highly skilled soldiers drawn from existing infantry, artillery, and specialized units, they are designed to be "lean and mean," focusing on mobility, endurance, and close-quarter battle (CQB) in varied terrains.

Equipped with advanced assault rifles, drones, and surveillance systems for real-time intelligence, they will be positioned in sensitive sectors like Jammu, Kashmir, Ladakh, and the Northeast. The Bhairav concept emerged following the need for faster, more agile units to operate in hybrid, modern warfare scenarios.

The Bhairav Battalions made their public debut during the 2026 Republic Day Parade, showcasing the Indian Army's modernization and shift toward smaller, faster, and more lethal, and adaptable fighting units.



Col David Devasahayam



It is all about OIL! This was the normative opinion of people at large when US Forces picked up President Nicolas Maduro and his wife from Caracas in Venezuela. All that Donald Trump did was to replace Maduro with his Vice President - no regime change, just a leadership change. The American leadership wasn't looking at democracy or people's choice in Venezuela, they were merely wanting US oil companies to take charge of Venezuelan oil wells. Any leader who obeyed the US diktat would suffice. In **Dr. Shashi Tharoor's** words in the Reflections column of this issue, the world is turning into a "jungle" where the strongest predator defines the law. The Rules based Liberal International Order is being sidelined, and the **Might is Right** principle is being followed by the reigning superpower. Dr. Tharoor has highlighted these developments and flagged the imperatives of economic and military power to protect national wellbeing.

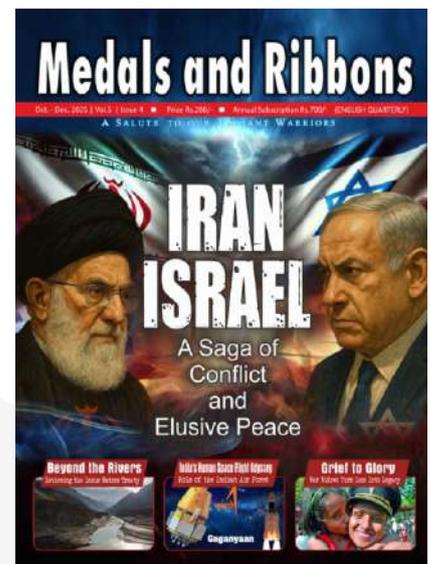
Donald Trump realises the need to leverage oil trade to sustain the US petrodollar economy. The follow-up joint US- Israeli attack on Iran starting 28 February 2026 is also aimed at enhancing US control over the oil rich Gulf region. It is evident that the US President wants to enhance US power

and control in critical resource rich regions; and weaken China's control over these resources. However, having discovered the cost of tariffs he is now discovering the cost of war. We saw oil prices surging to \$120 a barrel and Iran's de facto closure of the Strait of Hormuz has blocked roughly 15% of the global oil supply.

Winning wars is not a cakewalk, and Iran would be a tough nut for the US - Israeli Forces to crack. Iran is an ancient civilisation, with national pride and resilience. The Iranian people have faced economic sanctions for decades; diplomatic isolation has not weakened the nation's political structure. Though internal protests have convulsed Iran, the Iranians will not take kindly to external forces directing their destiny. The Iran protests and the conflict with USA and Israel have been discussed as our lead story in this issue.

Global institutions and international issues have also been relegated to the backseat by the **America First** administration. Climate change protocols have been cast away, and environmental goals discarded. Water scarcity is affecting many regions, and water wars are very likely in future. Our Armed Forces fraternity need to understand the water shortage challenges. I hence requested **Dr. Anbumani Ramadoss**, who is passionate about water conservation to write about and highlight the water management problem afflicting Tamil Nadu as a case study with similar application elsewhere in the country.

This issue has a healthy mix of insights into contemporary events, regional and national developments, as also human interest narratives and anecdotes from the Armed Forces. Medals and Ribbons has gained greater readership in the last two issues, with increased reach on social media too. On behalf of the Editorial Team I will like to say that we are grateful for your enhanced support and look forward to greater interest in the future as well.



(Our October-2025 Cover)

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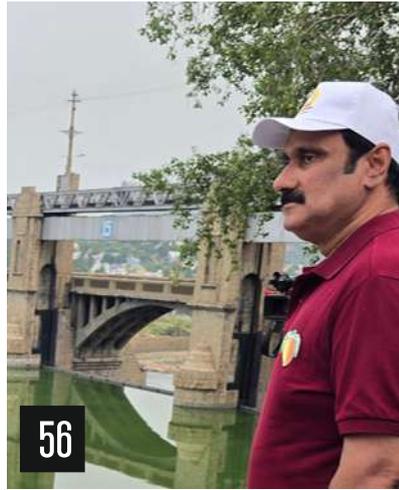
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A SALUTE TO OUR VALIANT WARRIORS (ENGLISH QUARTERLY)

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Lt Gen J S Sandhu, (Retd).

2026 began on a violent note. Iran was wracked by countrywide protests, which were brutally suppressed by the formidable State apparatus. But peace in Iran was short lived, and the US - Israel combine launched a decapitation strike on Iranian leadership on 28 February 2026. The war escalated, expanding to many countries in the Persian Gulf and in West Asia, as Iran retaliated with drone, missile and rocket attacks on American support and allies in the region. The conflict has had global effects, with oil and gas supply disrupted. What will Iran's future be like, what are the US and Israeli objectives, how will the conflict be halted? These and several such questions have been discussed in our lead story on the Iran situation by Lt Gen R S Salaria (retd).

The US Forces **Operation Absolute Resolve** against Nicolas Maduro in Venezuela and **Operation Epic Fury** against Iran may sound very righteous, but are not so. Far from being altruistic, the American actions reflect might, power and greed for resources,

control and wealth. Most analysts also feel that President Trump is working to a plan. He is using the American might and clout to expand US control and weaken access to China, the primary adversary to US power. While pressurising allies and foes alike, he is disrupting and breaking convention, working in a transactional manner - such behaviour is antagonistic and may adversely affect long term strategic relationships.

We often felt that war must have a **'Just Cause'**, *Jus ad bellum* (Latin for "right to war," it sets the legal and moral thresholds for initiating armed conflict). However, as seen in Iraq in 2003 and in many other countries, the **Just Cause** can be engineered by false narratives, misinformation campaigns and through media control. We Indian Armed Forces personnel have to be aware of the geopolitics, the narratives, the respective national interests, and **The New World Disorder** as Dr. Tharoor has opined. And we have to strive towards *Atmanirbhar* and *Sashakt* Bharat, to safeguard our autonomy and protect our interests.

Closer home, clashes have erupted between Pakistani and Afghan Forces, with air strikes being launched by the Pakistan Air Force on Kabul, Kandahar, Nangarhar and other Afghan positions. The Afghans too attacked Pakistani posts and bases. The Durand Line has heated up. The Pakistani anger stems from supposed shelter and support to the Tehrik-e-Taliban Pakistan by the Afghan Taliban Government. Lt Gen D P Pandey (retd) has analysed the internal violence in Pakistan, the diverse terror groups and the terror infrastructure therein.

General Anil Chauhan has been the Chief of Defence Staff for over three years, and some substantive structural reforms in the higher defence organisation are in the offing. We have covered an incisive chat with him on the transformation, integration and future war readiness of our Armed Forces. It gives a macro view of the pace of change.

While we keep track of the external horizon, we also need to assess our internal fissures. Islamic fundamentalism in Bangladesh has an impact on West Bengal, so Lt Gen Abhay Krishna (ret'd) gives us an overview of the faultlines and fissures in Bengal. Consequent to the involvement of Doctors in the Red Fort blast in November 2025, we have highlighted the rise of educated extremists: a new radicalisation paradigm in our country.

Non-Contact Kinetic Weapons like rockets and missiles are increasingly becoming the weapon of choice in conflict, with nations preferring to avoid physical '*boots on ground*' clashes along borders. Attempts to subjugate the enemy only by long range vectors may work in case of smaller and weaker nations, and may not succeed fully against stronger countries or against non-state proxies. Nevertheless, it is evident that future warfighting will be markedly different. We have hence examined aspects like survivable networks in the War on Nerves article, silicon sovereignty and sea-based nuclear deterrence. As amplified by Colonel David Devasahayam in the Founder's Note too, we have delved into environment issues too while looking at water scarcity in Tamil Nadu.

To maintain a balance between the volatile, uncertain, complex and ambiguous future and our glorious past, we have included some interesting stories from earlier days. The Battle of Colachel was a crucial victory wherein an Indian King defeated a European power (namely the Dutch) in 1741 CE. In tune with the growing importance of Air Defence in modern war, we have also highlighted the exceptional role played by 230 Signal Unit in Amritsar in the 1965 Indo-Pak War. Air Marshal R Nambiar (ret'd) describes the first flight of our Light Combat Aircraft on 04 January 2001. The remarkable reconstruction of an ancient stitched ship and its voyage to Muscat and back has been elaborated - the vessel was named INSV Kaundinya, recapturing our maritime legacy.

Amongst other articles, we have included a fascinating journey over the Himalayas to Kailash Mansarovar. I am sure this would interest many of our readers. We also pay tribute to Lieutenant Navdeep Singh, AC (Posthumous) and salute the perseverance of Murlikant Petkar (our first Paralympic champion). A write-up on the International Fleet Review and MILAN 2026 Exercise held off Visakhapatnam in February 2026 gives us an idea of the scale of the event and the large number of participating countries. In our regular Wellness column, Dr. Renuka David talks about the advantages of wearable devices for monitoring health and body routines. Our Money Matters Column elaborates on the advantages of investing in gold and silver Equity Traded Funds (ETFs).

We will continue to focus on contemporary issues and current events in our issues, while also including articles on adventure activities, valiant heroes, sports personalities, anecdotes and operational activities of the Armed Forces.

Desirous authors may please send the articles to chiefeditor@medalsandribbons.com by 10 May 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.



WHO SHAPES IRAN'S FUTURE :

ITS PEOPLE, THE REGIME OR FOREIGN POWERS?

On the 22nd of Bahmani (Iranian Calendar) corresponding to 11 February 2026, Iran celebrated its 47th anniversary of the 1979 Revolution with high fervour and the nation's top leadership emphasized upon national solidarity and praised the citizens for their unity, resilience, and steadfastness against adversity. However, rewinding 45 days back to 28 December 2025, and looking forward just 17 days ahead to 28 February 2026, reveal two starkly different scenarios in Iran.

"The Iranian nation is not one to surrender... Wise individuals who know Iran, its people, and its history never speak to this nation in the language of threats" – Ayatollah Khamenei

From 28 December 2025 till mid-January 2026, Iran experienced one of its most violent and unsettling protests in recent years. The public expressed anger, frustration and loss of faith in the Islamic Regime after decades of political repression and restrictions on personal freedom, citing corruption, economic failure and mismanagement or lack of governance. They sought a political order that would respect human rights and restore dignity to the Iranian people. The unrest went beyond Iran's borders with Israel and the US openly encouraging Iranians to overthrow the regime and threatening to intervene if the authorities resorted to lethal force. Meanwhile, the Iranian diaspora around the world, facing no direct threat, took a free run against the regime. In response, Iranian authorities relied on familiar tactics to suppress dissent, cutting off internet and utilising the state's security apparatus based upon the Islamic Revolutionary Guard Corps (IRGC) and Basij battalions. Estimates suggest mass casualties, with figures ranging from 3000 to 30000 killed, and around 12000 detained for further action.

And then moving forward to 28 February 2026, amid ongoing nuclear rollback talks in Geneva, which were showing some signs of progress, the US and Israel launched a deadly and accurate intelligence-based joint pre-emptive strike at the heart of Iran, decapitating in one go, almost the entire



Birds fly as smoke rises following an explosion, after Israel and the U.S. launched strikes in Tebran, Iran, March 2, 2026
(Photo Majid Asgaripour, West Asia News Agency, Reuters)



Ayatollah Khamenei pictured against a graphic depicting the Gulf region and rocket attacks

leadership and top military hierarchy of Iran, including the Supreme Leader Ayatollah Khamenei. Naturally Iran retaliated and declared war, with violent drone, rocket and missile attacks shattering the fragile peace in the Gulf Region. The death toll has already crossed the 1000 mark.

The consequent disruption in oil trade plunged global security and the economy into a state of uncertainty. *These fast-paced geo-political developments have thrown up many key questions: Were the December 25 and January 26 protests instigated by foreign powers aiming for regime change? Did they arise solely from internal dissent? Or were they the result of a combination of both factors? And having failed to topple the regime, did the US-Israel coalition adopt the hard power military option to bring about an endgame? Finally, will the Post-Khamenei Iran remain the same?*

Protests have been a regular feature in contemporary Iran in the last few decades; what distinguished the recent wave was **firstly** the declared and explicit support by Israel and US; and **secondly**, the level of violence. Externally, Iran struggles to maintain its geopolitical position as the country faces a major diplomatic deadlock over its nuclear programme, amid rigorous sanctions imposed, mainly by the United Nations, US and European Union. Iran is also grappling with a marked weakening of its regional influence and erosion of its key proxies, Hezbollah-Hamas and the collapse of Assad’s regime in Syria. Also, while the China-Russia-Iran Axis may be real, it is

country’s political climate.

The **second** major worry is the increasing intensity, frequency, nature, and geographical reach of the protests in the past 15 years or so. What were once sporadic and largely reform-oriented movements have evolved into ongoing cycles of protest that are frequently violent and systemic. It started with the Green Movement in 2009, which challenged the re-election of a conservative President, followed by 2017, when Iran entered a “recurring loop” of yearly protests demanding political reform and expanded civil rights. Notable examples include the “**Bloody November**” protests of 2019 and the “**Women, Life, Freedom**” protests of 2022-23. Protesters have embraced more confrontational tactics, including direct attacks on security forces and government institutions. In response, the State has escalated its suppression tactics, moving from selective arrests to the use of indiscriminate live fire and widespread telecommunications blackouts. Another notable feature of the recent protests was the expanded geographical scope from Tehran to across the country, reaching even peripheral regions and ethnic minority areas. This expansion indicates a growing sense of collective grievance that transcends regional and ethnic divides, including a coalition of diverse social groups uniting behind a common cause.

The **third** critical concern arises from the emergence of a new generation of Iranians, shaped by social media and global interconnectedness. This generation, born between 1997 and 2012 and commonly referred to as “**Dahe Hashtadi**” (those from the Eighties), lacks direct memory of the Pahlavi Monarchy. Nevertheless, they perceive that period as a “golden era” characterized by modernization, economic and social progress, when Iran was more open to the outside world. As a result, contemporary protests have used slogans such as “**Javid Shah**” (Long Live the Shah).

not a deep military alliance. It is more of an interest-based partnership that may have yielded economic and diplomatic benefits to Iran, apart from military weapons and equipment, but faces limits and divergent priorities. The external pressures on Iran have been amplified by the ongoing devastation of war.

Internally, the **first** source of anxiety for the Iranian regime was that the protests began in the Grand Bazaar, the principal economic institution, which always stood as a bulwark in absorbing economic shocks and developing survival mechanisms for the regime’s stability since 1979. However, this time, the story was different, signalling a profound shift in the

In analysing these protests, a basic question that arises is whether the current unrest in Iran mirrors the 1979 Revolution. The answer is **“No-not as yet.”** While both periods involved nationwide protests motivated by economic and political grievances with anti-regime sentiment, crucial differences remain. Today's protests lack unified leadership, unlike the 1979 movement led by prominent figures like Ayatollah Khomeini. State repression is now much stronger, with the IRGC being far more powerful than the Shah's security forces were. There is also less division within today's ruling apparatus, which remains largely loyal and capable of sustained suppression. Moreover, the 1979 Revolution germinated in the 1950s-60s and progressed incrementally over decades with the final spurt occurring from 1977 to 1979, whereas recent protests have struggled for hardly a month and withered under state pressure. In summary, the current unrest is a serious crisis but not yet a revolutionary upheaval.

Another aspect relates to the political structure of the Islamic Republic of Iran - *whether it is truly pragmatic to expect that the entrenched theological order since 1979 could be dramatically transformed into a secular, democratic republic.* Post the 1979 Revolution, Ayatollah Khomeini's vision of *Velayat-e Faqih (Guardianship of the Jurist)* established that in the absence of the Twelfth Imam, a leading Islamic Jurist (Faqih) must govern to implement divine law. This doctrine posited that Islamic Government was a necessity, with the jurist holding supreme authority over all state matters. The people of Iran, at that time, smarting from the wounds of the Shah's repressive and corrupt regime, wholly supported this doctrine. Through overwhelming referendums, they took conscious decisions to change over to the Islamic

system and adopted a constitution described as a hybrid of theocracy and democracy.

However, genuine democratic processes are significantly restricted. While elections are held for positions like the President and Parliament, all candidates and legislation must be approved by the Guardian Council-a 12-member body dominated by clerics and jurists aligned with the Supreme Leader, who holds ultimate authority. This Council filters candidates and controls legislative outcomes, maintaining the rigid ideological nature of the regime. Key unelected institutions, including the Judiciary, Armed Forces and Expediency Council, are also led by individuals appointed through this centralized hierarchy, thus ensuring a sound institutional entrenchment. Power thus radiates not only from the Supreme Leader, but through a dense network of security bodies and patronage structures, the most potent being the IRGC, whose Quds Force operates beyond Iranian borders through allied militias and proxies (though considerably weakened

now). The IRGC is a hybrid force that is at once a military, economic conglomerate and the guardian of revolutionary orthodoxy.

Another critical dynamic is that Iran's political system is marked by competition between Conservatives (Principlists) and Reformists, rather than traditional party politics. After the 2024 parliamentary elections, Conservatives now hold a 70–75% majority, raising concerns about balance in governance. Reformists like President Pezeshkian face significant obstacles in pushing their agenda within a conservative-dominated structure. Public calls for a total systemic change have grown, with some viewing even reformists as tools to show a semblance of balance within the regime. However, the fact is that despite protests and symbolic anti-regime slogans like **“Javid Shah,”** the entrenched theological regime remains resistant to change, and figures such as Reza Pahlavi lack direct connect, influence or movements within Iran.

Finally, can the United States,



Rallies for the Islamic Revolution on 22 Bahmani (11 February) in 2026 (Photo ISNA).



Graphic showing US Forces and the Iranian Flag featured in the upper left background

Israel and Allied powers possess the capability to bring about a regime change in Iran through their current strategy of imposing hard power?

Before we consider this aspect, it is pertinent to figure out the core objectives of USA in this region and what led to the latest round of hot conflict. It is neither **“Freedom for Iranian People”** or **“Regime Change for their Welfare”**. The objectives instead range around pulling Iran and its energy resources into the West’s orbit and limiting China’s and Russia’s influence. To achieve this unipolar situation, installation of a friendly or compliant regime in Iran is essential, which would resolve the nuclear issue too. The US National Security Strategy 2025 also hints at this intent - it labels Iran as the chief destabilising force in the region - to be tackled ideologically and militarily. The Strategy underscores that America’s enduring interest remains in ensuring that Gulf energy does not come under control of an adversarial power, and that the US must address the Iranian threat both ideologically and militarily, *without becoming entangled in prolonged “nation-building” wars*. As regards Israel, their objective of complete degradation of Iran is very clear - so that it never rears its head to attack and destroy Israel.

President Trump used the *“nuclear issue”* to rein in Iran, both through diplomatic means and then

through the 12 day *Iran-Israel War in June 2025*. The June action failed to achieve this objective because Iran’s nuclear programme has *survivability and cannot be eliminated by a few strikes*. Washington realises that Iran is different from Iraq, Afghanistan and Libya.

Iran was difficult to rein in for various reasons - *in Iran, there is no viable opposition political party or a credible opposition figure to whom external support could be given, or armed internal opposition groups backed by external powers, neither is there any armed intervention of foreign powers (with boots on ground)*. This assessment could have prompted US and Israel to first support the internal voices of dissent, particularly at a time when Iran’s proxies were significantly degraded and the prolonged sanctions had taken a serious toll on Iran’s economy. The protests were,

however, suppressed by the Iranian Regime.

Hence the decision to launch an intense military campaign was firmed up. It is now evident that the indirect talks in Oman and Geneva were more of a sham, considering that Iran had reportedly agreed to tone down their nuclear ambitions in line with international demands. Despite this Iranian climbdown, the strikes were launched on 28 February 2026 because the nuclear issue was not the core issue. The objective of the US - Israel leadership is to **“Bring about a Regime Change to Serve the Interests of the US-Israel Combine”**. Other stated objectives of the war like *“self-defence”* and so on are nothing but false narratives. President Trump has also started signalling his intentions to support an internal rebellion through the Kurds, knowing fully well that an external invasion with boots on ground is a *“no-go”* option. In any case, the National Security document also highlights that the US does not intend to get embroiled in prolonged *“nation-building”* wars - implying boots on ground is not an option for Trump despite his veiled threats.

The game-plan is starkly clear now - Pulverise Iran starting from decapitation of the regime, imposing maximum damage on the nuclear sites and missiles, and bring about such an economic and military devastation in Iran, that the public who are already frustrated with curbs on their freedom, severe repression and economic hardships, will rise up to revolt, causing a systemic and national implosion with armed internal opposition groups of the ethnic minorities adding fuel to the fire. It is a strategy to shape Iran’s behaviour and regional posture, through a mix of kinetic operations, promoting internal dissent and catalysing a political evolution, hoping for the emergence of a more compliant regime-one

that is moderate and accommodating to American interests.

As of early March, very significant deductions are already crystallising on the horizon:

- **First** - despite the decapitation of a significant portion of the top hierarchy, Iran's political establishment remains deeply entrenched and demonstrates considerable resilience against external pressures. The surviving leaders have been quick to assemble alternative arrangements and Ayatollah Mojtaba Khamenei has been anointed as the new Supreme Leader.. The clerical control remains strong and there are no indicators of fissures erupting in their political and security apparatus.
- **Second** - there are no signs as yet of any public uprising or a dramatic outpouring of people into the streets seeking a regime change.
- **Third** - contrary to expectations of the US-Israel coalition, Iran's rapid and wide-spread military response and their strategy of "*asymmetric endurance by way of expanding the war, increasing cost and outlasting Trump*" appears to be running in their favour. Faced with an existential threat, Iran, in survival mode and regime preservation, is willing to raise the costs. It has craftily enlarged the battlefield to the entire Gulf Region apart from Israel, Cyprus, Jordan and Azerbaijan, targeting US military bases, US embassies, civilian and energy targets. They intend to spread the pain, regardless of the cost to themselves and scarred relations with their neighbourhood, hoping to create enough opposition to the war and sharpen domestic questions in US about the wisdom of Trump's war, thus forcing him to back off.
- **Fourth** – Iran's low-cost war strategy too has upset the American calculations. The cost dynamics of neutralising

Iranian low-cost drones and ballistic missiles with high tech costly systems, as also the practical limitations in ensuring a fool-proof air defence shield across the entire Middle East, may prompt the US planners to give a serious re-look at their future ventures. Also, despite its naval losses and imposing presence of US Carrier Groups lurking nearby, Iran's "*modest navy*" has been successful till now in sealing off the Strait of Hormuz, putting strain on the energy situation world-wide.

- **Fifth** - President Trump and his advisors are giving conflicting narratives to justify the war and have been unable to articulate a clear strategy for victory. This erodes the faith of the American public in their President, which is already down with just about 25% in favour of this war. The American casualties too will rise with each passing day. To that extent, the US President will look at ways and means for an honourable exit by defining *regime decapitation*" (but not change) as a symbolic victory and step back.
- **Sixth** - the Israeli Prime Minister is keen to prolong this war and ensure complete destruction of the Axis of Resistance, thus projecting himself as a historic, indispensable leader and the "**protector of Israel**".
- **Seventh** – Iran's strategic military assets have again proved survivable and a regime change cannot be brought about solely by aerial strikes. The US President may pose indirect threats of "*putting boots on ground*", but he is conscious that any full-fledged conventional offensive with boots on ground will cost America dearly and even if executed, will surely precipitate a broader global war.

- **Eighth** - While empowering internal divisions through the minorities, particularly Kurds, will be far less costly than invasion or occupation, these communities lack a shared political vision. Kurdish aspirations differ sharply from those of the Baloch or Arabs, and the Azeris are strongly invested in the Iranian State. The late Ayatollah Khamenei, incidentally, was an Azeri.

Consequently, the current reality is that the US and its allies may not achieve the conducive environment, politically, diplomatically, economically and militarily through sheer hard military power.

What then are the forks on the road that could shape Iran's future?

Iran's biggest strength is its resilience as an ancient civilization, enriched by a deep cultural heritage and a proud legacy. The Iranian people, known for their fortitude and bravery, hold a strong sense of national identity and are resistant to external pressures. This sense of nationalism, unity and defiance gets particularly pronounced when faced with existential threats. **However, the same people can redirect this energy against the regime too.** With decapitation of the top echelons, the chances of an open internal political conflict and emergence of warring factions cannot be ruled out. Disagreements on whether the Islamic Republic must adapt and recalibrate to survive or whether defiance remains its only viable doctrine could lead to a civil war too. It will, therefore, be wise for the regime to review its human rights record and moderate its religious



*Iranian authorities intensify crackdown against protesters January 2026
(photo Center for Human Rights in Iran)*

rigidity and implement meaningful reforms that prioritize the needs and freedom of its citizens and rebuild trust. This includes granting more space to reformist elements. While the current reformist President has introduced certain reliefs, these are inadequate and fail to address the broader grievances of the population. Without substantial and genuine change, the regime’s institutional viability of **Velayat-e-Faqih** will remain uncertain and could lead to a systemic collapse.

Externally, Iran is unlikely to yield under pressure and may turn even more hostile and revengeful. But it would benefit from reassessing its foreign policy. Continued efforts to export its revolutionary model have strained regional relationships, especially amid the ongoing conflict. The reprisal attacks on Arab countries have reignited and widened Arab-Persian divisions, which will require some time and effort to mend. Simply blaming Israel for all the region’s problems will not be enough. Iran’s deterrent web of its proxies has also been significantly degraded. Iran, therefore, must shift toward fostering amicable ties within the Middle East.

The US and Israel on the other hand should adopt realistic goals in their approach to Iran, as past interventions have shown that regime change often leads to instability, unintended consequences and terrorism. The IRGC too will strongly resist any external threats. A pragmatic, flexible strategy focused on diplomacy and negotiation rather than force is

recommended for all parties involved.

“To sum up – If a positive shaping of Iran’s future is to take place, imposition of external hard power with an aim to reverse the political system is not a wise option. Iran is not Iraq or Venezuela. Instead a subtle convergence of several key conditions is essential - namely, a domestically inspired political reset aimed at establishing a moderate Islamic System that tempers state repression and regains trust of the public, along with a paradigm shift in the psyche of the external stakeholders who should seek to reintegrate Iran into the global

eco-system paying due respect to their sensitivities and allowing them to grow economically. And for this to happen, the world hopes for the emergence of such leaders who respect sovereignty and international law, and have pragmatic long-term visions for mutual respect and benefit. Till then, we can expect to get dissolved into another chapter of unresolved confrontation and senseless destruction in a region already weary of endless wars.”



Lieutenant General RS Salaria, PVSM, VSM (Retd) was commissioned into 7 Field Regiment (GAZALA) in June 1980, the regiment which he later commanded. A graduate of Long Gunnery Staff Course and the Defence Services Staff College, Wellington, the General Officer has also attended Higher Command Course at Army War College, Mhow and National Defence College at Delhi. His staff appointments include exposures to operational & logistical management at various Headquarters. The General Officer, apart from an instructional tenure in School of Artillery, was also a UN Observer in Angola and the Defence Attaché in Tajikistan. The General Officer commanded an Artillery Brigade and Artillery Division. The General served as Commandant School of Artillery till his retirement in March 2020.



**Lieutenant General
RS Salaria**



Representative image. Encounter in J&K in 2008
(Photo Getty Images/AFP)

RADICALISATION PARADIGMS

THE RISE OF EDUCATED EXTREMISTS

Radicalisation has traditionally been viewed as a peripheral phenomenon, confined to remote training camps, clandestine safe houses or the shadows of open conflict. India's recent experience however reveals a more pervasive challenge. Post the investigation of the November 2025 Red Fort car bombing at Delhi, multiple doctors from Kashmir and other regions were arrested and medical institutions across the country questioned. This pointed towards an evolving **'white collar'** terror ecosystem anchored in professional networks and university campuses. This form of radicalisation differs in that it is intellectually driven and socially camouflaged, but not unprecedented. Internationally, groups like the Islamic State have targeted professionals for their skills, mobility and credibility. This article focuses on this evolving phenomenon in radicalisation, its drivers and processes, while highlighting challenges in carrying out a holistic threat assessment.

Deciphering the 'White Collar' Phenomenon

The expression **'White Collar Crime'** was introduced by an American sociologist and criminologist Edwin H. Sutherland in 1939. He used it to challenge the then dominant view that crime was mainly a lower class phenomenon. He defined it as an act committed by a person of respectability and high social status in the course of his occupation. It highlighted shifting of emphasis from violent acts to abuse of trust, power and organisational position.

The term got associated with terrorism, when highly educated professionals used their skills and intelligence for terror orchestration, thus blending Sutherland's respectable offender model with a radical ideology. In recent times, notable examples include Osama Bin Laden, a Saudi civil engineer; Ayman al Zawahiri, Al Qaeda Chief strategist, an Egyptian surgeon and ISIS leader Abu Bakr al-Baghdadi, who had a



Al-Falah Medical College, Faridabad (Photo from College website gallery alfalahmedical.org)

PhD degree¹. Historically terrorist organisations have widely exploited Information Technology (IT), technical and logistic expertise, medical skills, financial acumen and associated knowledge of these professionals, transforming them into enablers of sophisticated operations. Khalid Sheikh Mohammed, the principal architect of the 9/11 US World Trade Centre attack, earned a degree in mechanical engineering from North Carolina State University in 1986². These examples reveal a shift in the radicalisation phenomenon and the emergence of a new challenge.

The Indian Context

In the Indian context, religious radicalisation is often linked to the J&K issue, Pakistan's intrinsic involvement and a digital environment that enables scaled outreach to professionals. But, the manifestation and evolution of radicalisation in India must be viewed through the lens of a wider ideological conflict, transitioning away from its traditional epicentres like the proxy war in Jammu & Kashmir (J&K).

According to a recent Ministry of Home Affairs report³, the security situation in J&K has seen a paradigm shift. In the recent past, kinetic incidents, including stone pelting and terrorist initiated actions, have dropped precipitously, often reporting zero for

extended periods. This stabilisation is also mirrored in the theatre of Left Wing Extremism, where the 'Red Corridor' has been systematically dismantled from 126 districts in 2014 to a mere 11 in 2025, with the objective of a 'Naxal Free India' by 31 March 2026⁴. This success is largely the result of a coordinated strategy involving stringent border vigilance, sustained kinetic operations and effective implementation of developmental policies.

India is currently navigating a 'Success Paradox'. As the state achieves near total control over physical territory and traditional insurgencies, the threat has mutated into a decentralised and cognitive form. The decisive gains by the State have

forced a metamorphosis in the adversary's strategy. As traditional operational spaces have been constrained and low skill cadres neutralised, radicalisation trajectories have pivoted toward hybrid modules that aim to leverage educated urbanites, tapping into strong sympathetic beliefs. This shift is characterised by a transition from localised grievances to broader, evolved *jihadist* narratives such as the *Ghazwa-e-Hind*⁵ and Global Caliphate ideologies, which are disseminated through sophisticated digital channels. On ground, these have translated into a change in recruit profiles, migration of sleeper cells into urban centres and the adoption of high tech methods of indoctrination and execution skills.

Delhi Red Fort Blast and its Aftermath

The Red Fort car bombing in Delhi on 10 November 2025, was perpetrated by a suicide bomber Dr Umar un Nabi, a trained doctor from Pulwama working in Al-Falah University, Faridabad. Subsequent investigations revealed a well-coordinated 22-member module comprising mainly of doctors, mostly from Al-Falah University, that included Dr Muzammil Ahmad Ganai (explosives handler), Dr Adil Ahmed Rather (planner) and also a lady Dr Shaheen Shahid (aid for transportation)⁶. The terror act was being planned since 2023 and was directed by a Pakistan based Jaish-e-Mohammed handler Umar bin Khattab and Maulvi Irfan Ahmed Wagay, a Kashmiri radical preacher, who made extensive use of encrypted message apps.

The network had stockpiled approximately 2900 kgs explosives for use in 32 vehicle borne Improvised Explosive Devices (IEDs) for targeting major cities and had received funds of over Rs 20 lakh via *hawala*/charity channels. The attack exemplifies how counter terrorism

dominance in the field has catalysed a tactical evolution from visible kinetic actors to white collar modules, where educated professionals leverage hybrid actions to orchestrate a terrorist attack. India's security apparatus needs to deliberately dissect this radicalisation continuum, to pre-empt similar elite driven threats and recalibrate prevention strategies.

The Professional Veil

A professional's reputation, specialised knowledge and access to high technology infrastructure create a perfect cover, allowing them to manage complex, illegal tasks while raising no suspicion and appearing completely normal on the outside.

Technical Proficiency. Beyond mere ideology, a professional's involvement and expertise brings logistic acumen and technical skills. A familiarity with high grade chemicals, laboratory protocols and specialised equipment allows for the sophisticated fabrication of IEDs and other high lethality products. This expertise transforms standard medical or industrial supply chains into potential pipelines for explosives and weaponry.

The Credibility Factor. Professionals occupy positions of high social capital, and as respected community figures, they act as ideological multipliers. In universities, a professional's endorsement of a narrative carries weight that can with time and the right environment introduce radical thoughts to students under a veneer of intellectual authority. This makes a terrorist cause appear like a reasoned pursuit of justice.

Financial Sophistication. White collar ecosystems provide access to complex financial architectures. Through professional associations and international employment networks, these actors can

leverage sophisticated funding channels. Their ability to move capital across borders, often blending it with legitimate earnings or philanthropic donations, makes the financial footprint very difficult to trace. Any recruitment from the field of accounts / banking, translates into significant advantage.

Operational Security. A professional's status functions as effective camouflage. Professional requirements such as attending international conferences or receiving bulk medical or chemical supplies provide plausible covers that evade traditional red flags. Law enforcement profiling often overlooks these activities, which are then carried out with relative anonymity.

Intellectual Respectability. Perhaps most damaging is the shaping of overall narrative and recruitment that participation of these individuals aids. Terrorist propaganda leverages the participation of intellectuals and professionals to claim moral and rational legitimacy for its actions. By highlighting its support amongst intellectuals, extremist groups can project their cause as a calculated choice, thereby making this acceptable and further encouraging recruitment among the educated class.

First Step of Radicalisation

As per sociological models, the primary step in radicalisation is often identified as **Cognitive Opening**⁷. This is a micro level psychological moment where an individual's existing worldviews are shaken, making them receptive to new and often extreme ideas. For professionals, apart from apocalyptic radicalisation narratives, these micro level drivers are often linked

with the individual's identity, long term grievances and career frustrations. Investigations by the National Investigation Agency (NIA) suggest that Dr. Umar un Nabi despite his professional status, felt a deep moral dislocation between his secular medical duties and his religious identity. On similar lines, relevant micro drivers for professionals include:-

- Perceived discrimination and profiling in admissions / employment that reinforce narratives of systemic injustice.
- Exposure to conflict trauma and witnessing civilian suffering, mostly in disturbed areas, that deepen resentment and moral injury, leaving a lingering and persistent sense of grievance and discrimination.
- Certain psychological vulnerabilities like depression, identity confusion and unresolved trauma can interact with ideological grooming to create susceptibilities.

Radicalisation of Educated Extremists – Staged Pathway

The university environment can inadvertently provide an ideal climate for a staged radicalisation pathway, where academic rigour is replaced by ideological rigidity. In this context, the transition from professional to operative is when a progressive **Cognitive Opening** acts as catalyst, transforming the campus site into a sanctuary for echo chambering and the eventual legitimisation of violence. Six distinct steps identified (may not be linear) in this staged pathway are exposure, resonance, social bonding, isolation / echo chambering, legitimisation of violence and operationalization.



From left to right Dr. Shabeen Shabid, Dr Umar un Nabi and Maulvi Irfan Wagay
(Left and Right Images from Facebook, Centre Image from video released by the suicide bomber)

- **Exposure.** This process of professional ideological contact occurs when a person is introduced to a radical ideology through a campus club / peer or a local religious figure. Maulvi Irfan Ahmad Wagay, who worked as a healthcare professional in Government Medical College, Srinagar and was involved in the Delhi blast case played a similar role⁸.
- **Resonance.** The radical narrative to which professionals are exposed starts to make sense to them because it matches personal micro drivers. This is the ‘Cognitive Opening’ discussed earlier in the article. For doctors involved in the Delhi blast case, linking personal stress to a wider grievance resonated because the doctors witnessed civilian suffering and could associate this with the militarised spaces in J&K.
- **Social Bonding.** Following resonance, the vulnerable professional now seeks validation through social bonding, which then transforms into networks. In this context, it occurs within the dense trust networks of colleges, university campuses and professional associations. These environments allow radical thoughts to be shared, with like-minded people of similar background, under the guise of intellectual authority and freedom of expression. Social bonding in Al-Falah University was not just physical but digital as well, which reflected the critical role of technology in the process.

- **Isolation/ Echo Chambering.** The next stage involves cognitive isolation, where the professional’s social circle in the campus or workplace is transformed into a sanctuary for echo chambering. In these closed circles, dissenting moderate views are replaced by ideological rigidity. For educated recruits, their social position often shields them from outside scrutiny, while reinforcing radical narratives. This process gets accelerated by sophisticated digital channels that disseminate evolved narratives.
- **Legitimisation of Violence.** This stage resolves the moral dislocation felt by professionals, who now subordinate their professional ethics to their radicalised religious identity. They then make calculated choices and violence is framed as a moral and rational necessity. Terrorist propaganda later specifically leverages the participation of intellectual elites to claim moral and rational legitimacy for its actions.
- **Operationalization.** The final stage is the transition from an ideological sympathiser to a hybrid operative. Here, professional skills are directly applied to terror planning, logistics facilitation and execution. Involvement of a professional may also be purely limited to acting as a facilitator or for execution, based on his or her capabilities. The Delhi blast module exemplified this stage, moving from online radicalisation to stockpiling of explosives, managing complex *hawala* funding channels and executing the blast.

Change is a Challenge

White-collar terrorism marks a paradigm shift from the still largely true stereotype crude, poorly educated, camp-trained militancy of the past. However, its defining edge lies not in ideological novelty but in the seamless fusion of professional sophistication, digital infrastructure and institutional embedding that renders it stealthier, more effective and resilient.

Digital Radicalisation. Digital ecosystems have complemented and in many cases, replaced physical terrorist training camps, weaponising professional expertise through encrypted and scalable virtual networks. Recent patterns suggest, these modules are built on encrypted apps, Virtual Private Networks (VPNs), dark web forums and Artificial Intelligence (AI) generated indoctrination videos⁹. Suicide bombing glorification, deep fakes and emotionally charged atrocity contents are created for radicalisation. YouTube tutorials, online

manuals and open source engineering resources provide step by step guidance for explosives handling and IED construction. Addressing this spread of content on social media is getting ever difficult to near impossible in today's information age.

Virtual Metastasis. These networks have now begun to transcend localised conflict zones and are spreading nationwide. High speed internet and natural mobility of the professional workforce facilitates this spread. Unlike past movements tied to specific terrain, modern modules thrive in the anonymity of urban centres in small cells, using encrypted tools to operate anywhere. As the individuals are not on any security watch list, their movement is virtually undetected providing them speed and ease of travel to operate anywhere they deem fit. By shifting their operational footprint from the battlefield to the cloud, the threat has become geographically invisible and much harder to contain.

Institutional Governance. The infiltration into educational and professional institutions poses a critical challenge to national security and campus integrity. Universities, designed as bastions of free thought, are being increasingly exploited as low visibility recruitment hubs. Weak institutional oversight and lack of robust background vetting allow radical modules to often co-opt student unions and faculty networks. This governance deficit enables the transformation of universities into fertile grounds for radicalisation.

Professional Stigma. The involvement of a particular class of professionals creates a profound trust deficit that stigmatises an entire category. When doctors, engineers or PhD scholars are implicated in terror orchestration, it invariably casts a shadow of suspicion over their peers. This complicates their very

roles in serving society. This stigma also creates a risk of alienating the innocent majority within these fields. Consequently, the actions of a few can and does tarnish the reputation of affected institutions and places professional domains under increasing security scrutiny.

Conclusion

Investigations following the Delhi Red Fort module reveal a profound strategic inflection point for India's national security apparatus. The most critical emerging challenge is **Cognitive Radicalisation**, a process that targets the state's intellectual core by weaponising vulnerable members from a professional domain.

The integration of high end encryption and AI driven indoctrination further complicates the landscape, allowing extremist modules to operate with unprecedented stealth. This evolution necessitates a fundamental recalibration of counter terrorism doctrine, prioritising cognitive prevention over traditional kinetic reaction. White collar extremism is no longer a tactical anomaly, but is becoming a rapidly increasing new normal. To safeguard the nation from these emerging internal threats, the security paradigm must shift toward intelligence innovation and in the cultivation of long term societal resilience.

¹ *Intelligence and Terrorism Information Center, "The Financing of Terrorism."*
² *Ibid.*
³ *Annual Reports, Ministry of Home Affairs, Government of India, accessed February 2, 2026.*
⁴ *Press Information Bureau, Government of India, October 25, 2025.*
⁵ *"Ghazwa-e-Hind: Deconstructing a Misinterpreted Doctrine and Its Political Appropriation in India," NATSTRAT, accessed January 28, 2026.*
⁶ *"NLA-Related Incidents 2025," South Asia Terrorism Portal (SATP), accessed January 26, 2026.*
⁷ *"What Does Radicalisation Look Like? Four Visualisations of Socialisation into Violent Extremism," CIDOB, accessed February 4, 2026.*
⁸ *"Inside Faridabad Terror Module: How a Kashmiri Cleric Turned Paramedic Radicalised Medical Students for Terror Network," Times of India, last modified October 2025.*
⁹ *"Delhi Red Fort Blast Suspects Used Encrypted Swiss App Threema to Share Maps, Plans," NDTV, accessed February 8, 2026.*



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Col Akash R Naik

PAKISTAN'S TERROR FACTORIES AND INFRASTRUCTURE MAYHEM AT HOME AND BEYOND BORDERS

The strategic community that emerged in Pakistan following Partition viewed itself as a materially weaker state facing an existential adversary in India.

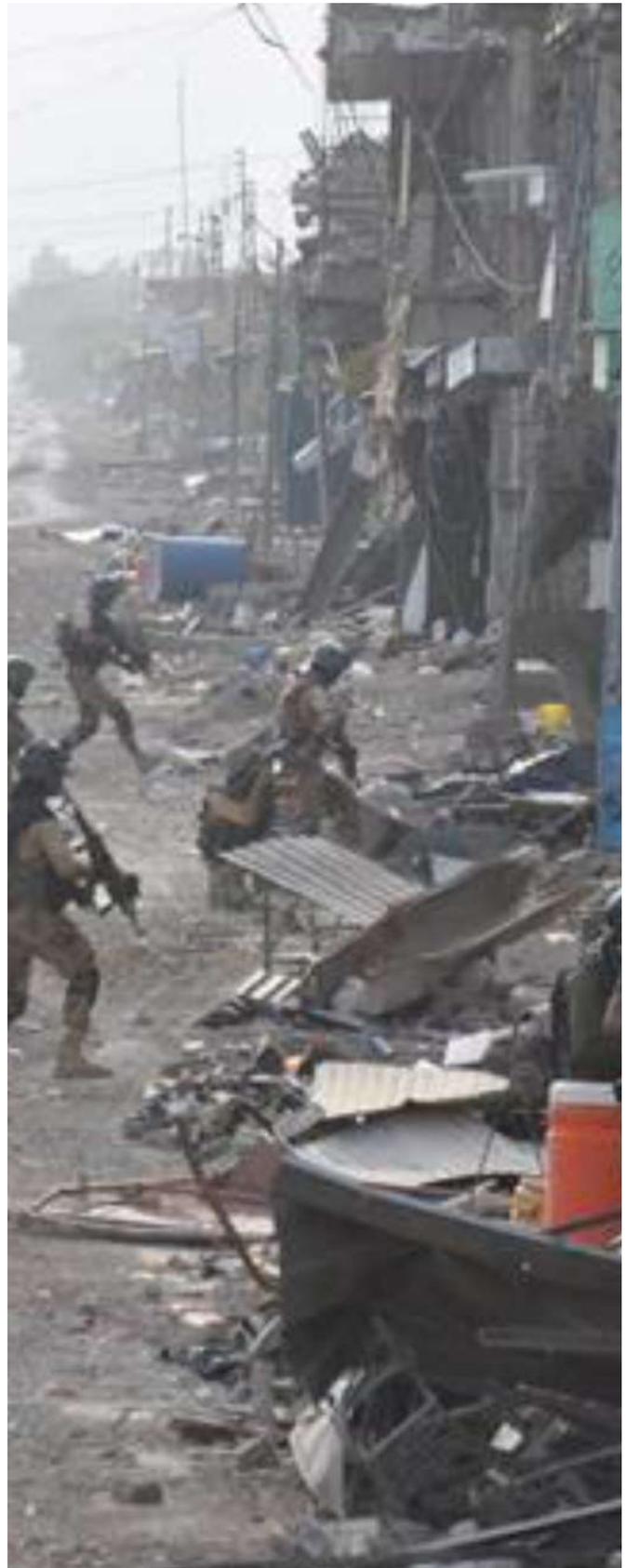
Conventional military asymmetry encouraged the exploration of sub-conventional and irregular warfare as cost-effective alternatives¹. Over the years, militant groups came to be seen not merely as tactical assets but as instruments of statecraft-capable of exerting pressure externally while shaping internal political dynamics. Soon they were embedded in Pakistan's regional strategy, particularly in Kashmir and Afghanistan² and became influential players in the domestic arena.

The logic was straightforward: irregular forces required comparatively minimal financial investment relative to conventional military modernization while offering strategic leverage. They provided plausible deniability in international forums, complicating attribution and shielding the state from direct accountability. Domestically, such networks could also serve to manage dissent, influence political actors, and enforce ideological conformity.

Religion became the unifying framework. Surrounded by Muslim-majority states and seeking ideological consolidation, the Pakistani establishment drew upon Islam as the legitimizing force behind mobilization. Militant networks were framed not as irregular combatants but as defenders of faith, transforming geopolitics into religious obligation. Over decades, this architecture expanded beyond external projection to encompass internal security dynamics.

¹ C. Christine Fair, *Fighting to the End: The Pakistan Army's Way of War* (Oxford University Press, 2014)

² Stephen P. Cohen, *The Idea of Pakistan* (Brookings Institution Press, 2004)



Clearance of Mirali in North Waziristan Agency during Operation Zarb e Azh, 06 October 2015 (Photo credit ISPR Pakistan)

The logic of proxy warfare under nuclear deterrence has also been explored through the **stability–instability paradox**, wherein nuclear weapons reduce the likelihood of full-scale war but create space for sub-conventional conflict³. Pakistan’s support for militant actors has frequently been justified within this framework.

In its 78-year history, Pakistan’s economic and institutional fragility has contrasted sharply with the growth of extremist networks. According to the South Asia Terrorism Portal (SATP), dozens of active and inactive militant organizations operate or have operated within Pakistan’s territory. As per South Asian Terrorism Portal (SATP) there are 80 proscribed or extremist groups, 45 terrorist and insurgent groups and 26 inactive terrorist / insurgent groups in Pakistan. The list of morphed and fringe extremist and insurgent groups and radical religious organisations that rule the streets are not included⁴.

As a consequence in Pakistan alone, last year in 2025, over 4000 fatalities were reportedly linked to terror-related incidents, including security personnel, civilians, and insurgents. Across the first quarter of the twenty-first century, cumulative deaths in Pakistan exceed 74000⁵. The infrastructure once intended to

destabilize adversaries now generates sustained domestic violence.

Harbouring Al Qaeda, the exchange programme of terror groups in Pakistan with Hamas, and the international influence of Lashkar-e-Taiba (LeT) and Islamic State of Iraq and Syria (ISIS) have serious implications. Many major terrorist strikes in the world have roots in Pakistan. The world must recognize the enduring threat Pakistan’s creation and sustenance of terror infrastructure poses and must endeavour to dismantle the same for larger global peace.

The Soviet–Afghan War and the Institutionalization of Jihad

The transformation of Pakistan into a frontline state during the Soviet–Afghan War was a decisive turning point. With the support of the Central Intelligence Agency and Saudi funding, billions of dollars flowed into Pakistan to arm, train, and mobilize Afghan resistance fighters. The Inter-Services Intelligence (ISI) became the primary conduit for resources and operational coordination⁶.

A vast network of *madrasas* emerged along the Afghan border and within Pakistan’s tribal areas. Recruitment was facilitated through ethnic affinity—particularly among Pashtun populations straddling the Durand Line—and through ideological indoctrination. Fighters were valorised as *mujabideen*, defenders of faith against atheist communism. The conflict was reframed not as geopolitics but as a civilizational struggle between belief and disbelief⁷.

These institutions offered food, shelter, education, and identity to impoverished youth from Pakistan and Afghanistan. For many families,

enrolment in religious seminaries alleviated economic burdens. The promise of martyrdom conferred spiritual prestige and social meaning. Radicalisation was not merely ideological; it was socio-economic and institutional.

Under General Muhammad Zia-ul-Haq, Islamisation policies penetrated the military establishment itself. Religious symbolism and doctrinal reinterpretations were integrated into training and institutional culture. This era cemented the fusion between security policy and ideological mobilization. The militant ecosystem was thus formalized—no longer an ad-hoc wartime necessity but a structural component of strategic planning.

The Tehreek-e-Taliban Pakistan (TTP): Blowback and Internalization of Jihad

The post-9/11 environment marked a strategic inflection point. Pakistan’s alignment with the United States in the Global War on Terror produced internal fragmentation among *jihadist* networks. In 2007, various militant factions operating in the Federally Administered Tribal Areas (FATA) coalesced to form Tehreek-e-Taliban Pakistan (TTP) under Baitullah Mehsud.

Unlike the Afghan Taliban, whose primary objective was control of Afghanistan, the TTP directly targeted the Pakistani state. Its goals included enforcing a hard line interpretation of Islamic law, supporting *jihad* in Afghanistan, and confronting Islamabad’s authority⁸.

The distinction proved consequential. The TTP conducted mass casualty attacks against civilians, mosques, schools and security forces.

³ Glenn H. Snyder, “The Balance of Power and the Balance of Terror,” in Paul Seabury (Ed.) (Scranton: Chandler, 1965).

⁴ <https://satp.org/terrorist-groups/pakistan>; Pakistan-Terrorist, insurgent and extremist groups.

⁵ <https://www.satp.org/datasheet-terrorist-attack/fatalities/pakistan>; Annual Fatalities Database.

⁶ <https://www.irreview.org/articles/pakistan-judas-of-the-american-alliance>; “Pakistan: Judas of the American Alliance”; Joe Clark; May 25, 2023

⁷ Thomas Hegghammer, *Jihad in Saudi Arabia* (Cambridge University Press, 2010).

⁸ <https://www.dni.gov/nctc/groups/ttp.html>



Image released by Baloch Liberation Army after Operation Herof 2.0 (Photo credit Resonant News)

One of the deadliest incidents was the Army Public School, Peshawar massacre, where 150 individuals—mostly children—were killed.⁹ The attack galvanized public outrage and led to intensified counterterrorism operations.

Pakistan launched military campaigns such as **Operation Zarb-e-Azb**, pushing TTP fighters across the border into Afghanistan. However, sanctuary dynamics persisted. Following the 2021 Taliban takeover in Kabul, the TTP regained momentum. The ideological victory of the Afghan Taliban reinforced the narrative that sustained insurgency could defeat a modern state.

Cross-border accusations intensified. Islamabad alleges that the Afghan Taliban tolerates TTP sanctuaries; Kabul denies these claims. Escalatory episodes—including cross-border strikes and retaliatory fire—have heightened tensions and led to conflict between the two governments. The Durand Line remains a volatile fault line. The TTP case illustrates a core paradox: **proxies cultivated for strategic leverage may reorient against their patron when political alignments shift.**

The Baloch Insurgency: Ethno-Nationalist Resistance

In South-western Pakistan, Balochistan has witnessed recurring insurgency since 1948. Local narratives argue that accession to Pakistan was

contested and imposed. The economic marginalization, political exclusion, and resource extraction grievances fuel periodic uprisings. Groups such as the Baloch Liberation Army (BLA) conduct guerrilla operations targeting state infrastructure and security forces. The development of the China–Pakistan Economic Corridor (CPEC) intensified tensions, as many Baloch groups perceive projects as extractive rather than developmental and no benefits have accrued to the local communities.

Attacks have included assaults on trains and rail infrastructure such as the Jaffer Express and coordinated offensives like “**Herof 1.0**”¹⁰ and “**Herof 2.0**.”¹¹ Foreign

nationalists and Chinese-linked installations have also been targeted. Unlike *jihadist* networks, Baloch insurgents frame their struggle in ethno-nationalist rather than religious terms, though fragmentation persists. The persistence of this insurgency underscores that Pakistan’s internal instability is multidimensional—religious militancy coexists with secular separatism.

Transnational Jihadist Actors

Pakistan has willingly proffered its territory to global *jihadist* networks and has tried to hedge them as security leverage.

Islamic State – Khorasan Province (ISKP). Islamic State – Khorasan Province emerged around 2015 as a regional affiliate of ISIS. Drawing defectors from TTP and other militant groups, ISKP promotes a transnational and sectarian vision. While primarily active in Afghanistan, it has expanded influence in Pakistani border areas, exploiting governance vacuums.

Al Qaeda. The presence of Al-Qaeda in Pakistan gained international attention when Osama bin Laden was killed in Abbottabad during **Operation Neptune Spear**.¹² Historically, Al-Qaeda operatives

⁹ International Crisis Group, “Revisiting Counter-Terrorism Strategies in Pakistan,” 2015.

¹⁰ <https://sundayguardianlive.com/editors-choice/balochistan-on-the-boil-as-bla-carries-out-operation-herof-20-169054/>

¹¹ <https://timesofindia.indiatimes.com/world/pakistan/herof-2-0-explained-balochistan-is-exploding-again-and-why-it-matters-for-pakistan-and-world/articleshow/127860325.cms>; “Baluchistan is exploding again”; Feb 02, 2026.

¹² <https://www.war.gov/News/News-Stories/Article/Article/2234142/ai-gleaned-information-about-emerging-threats-future-plots-from-bin-laden-raid/>; “AI Gleaned Information About Emerging Threats, Future Plots From bin Laden Raid”; June 26, 2020; By David Vergun

utilized tribal regions and urban centres such as Karachi and Quetta for logistical coordination. Collaborative linkages with Deobandi militant outfits have been documented.

The continued intersection between local and global jihadist actors has complicated counterterrorism efforts and reinforces perceptions of selective enforcement. Engagement and sharing of knowledge has enhanced the capacities of the other groups operating against the State and outside as well. This has resulted in the world looking at the Pakistan establishment negatively.

Kashmir-Focused Militant Organizations

Since the late 1980s insurgency in Jammu & Kashmir, Pakistan-based groups have operated with varying degrees of overt and covert support. The **Muttahida Jihad Council** (also known as **United Jihad Council**) was formed in 1994 to coordinate *jihadist* outfits under centralized direction.¹³ Among the most prominent

organizations are Hizbul Mujahideen, Lashkar-e-Taiba and Jaish-e-Mohammed. These groups have faced international designation yet continue to morph organizationally to evade sanctions. Rebranding through front entities and shifting nomenclature reflects adaptive survival strategies to avoid global scrutiny.

While primarily Kashmir-focused, their operational footprints have extended beyond the region. Their persistence illustrates the enduring utility of proxy warfare in Pakistan's India policy.

Sectarian and Peripheral Militancy

Sectarian militancy further fragments Pakistan's security environment. Sunni extremist groups such as Sipah-e-Sahaba Pakistan and its offshoot Lashkar-e-Jhangvi have targeted Shia communities.¹⁴ Responding to the violence perpetrated by State supported Sunni extremist groups, a few Shia militant groups have grown in Pakistan. These are Sipah-e-

Muhammad Pakistan, Tehreek-e-Jafaria, Ansar-ul-Hussain, and Khatam-ul-Anbia. They operate against the extremist Sunni organisations but have not been effective.¹⁵

In Sindh, separatist rhetoric under banners such as the Sindhudesh Liberation Army reflects localized grievances, though insurgent capability remains modest. Gilgit-Baltistan also experiences sectarian undercurrents, often linked to broader Sunni-Shia tensions.

Pakistan's militant infrastructure today is not monolithic but layered comprising *jihadist* proxies, sectarian militia, ethno-nationalist insurgents, and transnational terrorist networks. What began as a strategic instrument to offset conventional inferiority evolved into a complex terror ecosystem with an autonomous momentum.

Implications for India: Persistent Proxy Conflict

Pakistan's reliance on militant proxies has had its most sustained

¹³ [https://www.efsas.org/publications/study-papers/pakistan-army-and-terrorism%3B-an-unholy-alliance/#:~:text=The%20jihad%20outfits%20which%20are,Harkat%20Dul%20Ansar%2C%20Tebrik%2D%2Djihad%2C%20Tebrik%2Dul%2DMujabideen%2C%20Jamaat%2Dul%2DMujabideen%2C%20Al; Pakistan Army and Terrorism; an unholy alliance"; European Foundation for South Asian Studies \(EFSAS\), Amsterdam; August 2017](https://www.efsas.org/publications/study-papers/pakistan-army-and-terrorism%3B-an-unholy-alliance/#:~:text=The%20jihad%20outfits%20which%20are,Harkat%20Dul%20Ansar%2C%20Tebrik%2D%2Djihad%2C%20Tebrik%2Dul%2DMujabideen%2C%20Jamaat%2Dul%2DMujabideen%2C%20Al; Pakistan Army and Terrorism; an unholy alliance)

¹⁴ [https://www.efsas.org/publications/study-papers/pakistan-army-and-terrorism%3B-an-unholy-alliance/#:~:text=The%20jihad%20outfits%20which%20are,Harkat%20Dul%20Ansar%2C%20Tebrik%2D%2Djihad%2C%20Tebrik%2Dul%2DMujabideen%2C%20Jamaat%2Dul%2DMujabideen%2C%20A; Pakistan Army and Terrorism; an unholy alliance"; European Foundation for South Asian Studies \(EFSAS\), Amsterdam; August 2017](https://www.efsas.org/publications/study-papers/pakistan-army-and-terrorism%3B-an-unholy-alliance/#:~:text=The%20jihad%20outfits%20which%20are,Harkat%20Dul%20Ansar%2C%20Tebrik%2D%2Djihad%2C%20Tebrik%2Dul%2DMujabideen%2C%20Jamaat%2Dul%2DMujabideen%2C%20A; Pakistan Army and Terrorism; an unholy alliance)

¹⁵ <https://satp.org/Terrorism%20in%20Pakistan; Terrorist Groups in Pakistan; accessed on Feb 19, 2026>



Pakistani security forces rushed to the scene of an explosion at a Shiite place of worship on the outskirts of Islamabad, 06 February 2026 (Image Hussain Ali / ZUMA/ picture alliance)



The Taliban has set up a parallel state calling it the Islamic Emirate of Afghanistan with their own white flag, July 2021 [File: Parviz/Reuters]

propaganda-has complicated attribution. Hybrid warfare tactics, including misinformation and radicalisation via online platforms, have supplemented kinetic operations. The cumulative effect has been the normalization of a protracted shadow conflict between two nuclear-armed neighbours.

Internal Implications for Pakistan: Strategic Blowback and State Fragmentation

While militant proxies were initially cultivated for external leverage, their internal consequences have proven profound. The emergence of TTP symbolized the internalization of *jihad*.

external impact on India. Since the late 1980s insurgency in Jammu and Kashmir, irregular warfare has functioned as a calibrated instrument of strategic pressure. By maintaining groups such as Lashkar-e-Taiba, Jaish-e-Mohammed, and Hizbul Mujahideen within an ecosystem of selective tolerance, Pakistan has sustained a low-intensity conflict designed to internationalize the Kashmir issue and stretch Indian security resources.

The operational logic rests on what analysts describe as the “**stability–instability paradox.**” Following reciprocal nuclearization in 1998, overt conventional war became increasingly costly. Under the nuclear umbrella, however, sub-conventional operations appeared to carry manageable escalation risks. Militant attacks could inflict political, psychological and economic costs while remaining below the perceived threshold of full-scale war.

For India, this has necessitated a transformation in counter-insurgency doctrine, intelligence coordination, border management and internal security architecture. Major attacks attributed to Pakistan-based groups have repeatedly generated crises that risk horizontal and vertical escalation. Even when India has exercised restraint, the cycle of provocation and retaliation has hardened bilateral hostility and constrained diplomatic engagement.

Moreover, the adaptive rebranding of militant outfits-through front organizations and diffuse digital

Groups once aligned against external adversaries redirected violence toward the Pakistani state itself. The scale of violence over the past two decades underscores the magnitude of blowback. Tens of thousands of civilians, security personnel and militants have been killed in terrorist incidents. Recurrent military operations in tribal areas-often involving displacement of civilian populations-have deepened grievances and fostered cycles of radicalisation.

The persistence of militancy has also distorted civil–military relations. Counter Terrorism imperatives have strengthened the political centrality of Pakistan’s Armed Forces, reinforcing a security-dominant state structure. Democratic institutions, already fragile, operate within a constrained environment shaped by internal security narratives.

Economically, chronic instability deters foreign investment, elevates defence expenditures, and diverts resources from social development. International financial scrutiny, including monitoring by the Financial Action Task Force (FATF), has periodically placed Pakistan under pressure to curb terror financing networks. Although compliance measures have been undertaken, structural ambiguities persist.

Societally, decades of ideological mobilization have embedded sectarian and extremist narratives into segments of the population. *Madrasa* networks, radical preachers, and militant propaganda have influenced social discourse in ways that complicate de-radicalisation. The result is a fragmented internal security environment in which *jihadist*, sectarian and ethno-nationalist violence coexist.

Afghanistan–Pakistan Dynamics: Sanctuary, Sovereignty and Escalation Risks

The Taliban’s return to power in Kabul in 2021 fundamentally altered regional security calculations. The ideological affinity between

the Afghan Taliban and the TTP has created persistent friction between Islamabad and Kabul. Pakistan accuses the Afghan authorities of tolerating TTP sanctuaries; the Afghan side rejects these allegations and frames violence as Pakistan's internal problem.

Border skirmishes, artillery exchanges and drone strikes illustrate the volatility of this relationship. The Durand Line remains contested not only geographically but politically. For Afghanistan's Taliban leadership, suppressing the TTP risks alienating ideological allies; tolerating it risks diplomatic isolation and retaliatory action from Pakistan. The triangular relationship between Pakistan, the Afghan Taliban, and the TTP thus generates structural instability. It demonstrates how proxy networks, once empowered, develop autonomous agency that complicates interstate diplomacy.

China, Iran and Regional Security Spillovers

Pakistan's militant landscape also intersects with broader regional actors. For China, stability in Pakistan is critical to the success of the CPEC. Attacks by Baloch insurgents on Chinese nationals and infrastructure have heightened Beijing's security concerns. While China has deepened security cooperation with Pakistan, persistent violence raises questions about long-term project viability.

Iran, sharing a border with Balochistan, has also experienced cross-border militancy involving Sunni extremist factions. Periodic tensions between Tehran and Islamabad underscore the

transnational dimensions of insurgent networks operating in border regions. Collectively, these dynamics illustrate that Pakistan's internal militancy is not geographically contained; it radiates outward, shaping the security perceptions of neighbouring states.

Global Counterterrorism and Transnational Jihad

Pakistan's territory has intersected historically with transnational *jihadist* actors such as Al-Qaeda and Islamic State – Khorasan Province. The killing of Osama bin Laden in Abbottabad during **Operation Neptune Spear** intensified global scrutiny of Pakistan's counterterrorism commitments. Although Pakistan has conducted significant operations against certain militant factions, international scepticism persists regarding selective targeting—distinguishing between “good” and “bad” militants based on strategic utility. This perception complicates intelligence-sharing partnerships and affects Pakistan's global diplomatic standing. Furthermore, the diffusion of *jihadist*

ideology through digital platforms means that militant narratives developed within the Afghanistan–Pakistan theatre can inspire actors far beyond South Asia. The region has historically functioned as an incubator of transnational *jihadist* thought, with reverberations visible in the Middle East, Central Asia and Western countries.

The Nuclear Shield and the Proxy Warfare Paradox

The central strategic paradox underlying Pakistan's terrorist policy is the assumption that nuclear deterrence provides space for sub-conventional aggression. While nuclear capability may deter large-scale conventional war, it does not eliminate escalation risks arising from high-casualty terrorist attacks. The 88-hour intense military “**Operation Sindoor**” after the dastardly terror attack in Pahalgam in India by Pakistani proxies called out the nuclear bluff and exposed the very concept of nuclear shield¹⁶.



Tehrik e Taliban Pakistan cadres near the Af Pak border (photo Centre for Strategic and Policy Research, Islamabad)

¹⁶ <https://www.wionews.com/india-news/-india-exposed-pak-s-nuclear-bluff-bit-deep-and-hard-some-airbases-still-in-icu-pm-modi-1753796549254>; 'India exposed Pak's nuclear bluff, bit deep and hard; some airbases still in ICU': PM Modi; Anuj Shrivastava; Jul 29, 2025.

Each major crisis between India and Pakistan has demonstrated the fragility of escalation control. The interplay between non-state actors and nuclear-armed states introduces unpredictability. A mass-casualty attack attributed to Pakistan-based militants could compel conventional retaliation, triggering rapid escalation before diplomatic channels intervene. Thus, the very shield intended to provide strategic insulation may amplify instability when combined with proxy warfare.

Strategic and Policy Implications

Several policy implications emerge for Pakistan from this analysis.

- **Dismantling Militant Ecosystems.** Selective counter terrorism is unsustainable. Distinctions between strategically useful and hostile militants erode over time as networks fragment and reconfigure. Pakistan is unlikely to dismantle the infrastructure invested over eight decades. It has to be encouraged and assisted.
- **Civil–Military Rebalancing.** Durable counter-extremism requires strengthening civilian governance, rule of law and political inclusion rather than relying exclusively on kinetic operations.
- **Regional Confidence-Building.** India–Pakistan crisis management mechanisms must adapt to hybrid threats and rapid escalation cycles to avoid conventional wars or nuclear sabre-rattling. The region afflicted by the Pakistani terror infrastructure will have to push for the dismantling of the same.
- **Border Governance.** The much hyped and sought after strategic depth myth of Pakistan has been busted. To avoid war with Afghanistan some coordination on border management is essential.
- **Socio-Economic Integration.** Addressing grievances in Balochistan, former FATA regions, and marginalized provinces is critical to undermining recruitment pipelines. However, the entire process if military led is unlikely to yield any results.

To Sum Up

Over nearly eight decades, Pakistan’s terrorist

infrastructure evolved from an asymmetric instrument against India into a multi-dimensional ecosystem encompassing *jihadist* proxies, sectarian militias, ethno-nationalist insurgents, and transnational terrorist actors. What began as a low-cost strategic equalizer matured into complex security architecture with deep domestic and regional consequences.

Externally, it has entrenched hostility with India, destabilized Afghanistan, and generated friction with neighbouring states. Internally, it has inflicted heavy human and economic costs, strengthened the military’s dominance over civilian institutions, and embedded extremist narratives within segments of society.

The strategic logic of proxy warfare under nuclear deterrence has produced diminishing returns. Terror networks, once cultivated, acquire autonomy and adaptability that defy centralized control. The long-term implications extend beyond South Asia, affecting global counterterrorism efforts and international security norms. Without structural reforms, Pakistan risks perpetuating a cycle in which tactical gains yield strategic losses.

Pakistan is now at a critical inflection point. Whether it transitions from selective management of militancy to comprehensive dismantlement will determine not only its internal cohesion but also the trajectory of stability in South Asia and the broader international system.



Lieutenant General Devendra Pratap Pandey, PVSM, UYSM, AVSM, VSM (Retd), an alumnus of National Defence Academy, Pune, was commissioned into 9th Battalion The Sikh Light Infantry in December 1985. He went on to command his unit on the Northern Glacier. With extensive operational experience in varied terrain, especially in Kashmir, Lieutenant General Pandey commanded a Rashtriya Rifles Sector, the Counter Insurgency Force Kilo and went on to command the challenging 15 Corps in Srinagar. Qualified in mountain warfare courses from the famous High Altitude Warfare School, Gulmarg, he specialised in mountains, jungles and glaciers. With a double Master’s Degree, including from National War College, Washington DC, he is an M Phil in Defence and Strategic Strategy and has authored several articles on matters military. Prior to superannuation in June 2024, he was the Commandant of Army War College, Mhow.



**Lt Gen
Devendra Pratap Pandey**



A security personnel stands guard near India-Bangladesh border in Malda district, West Bengal (Photo Credit PTI)

FISSURES AND FAULTLINES IN WEST BENGAL

West Bengal occupies a strategic location - it is India's Eastern gateway, a cultural bridge between the mainland, the Northeast and South Asia. Yet today, this pivotal space faces a complex web of security challenges that extend far beyond conventional law and order concerns. These challenges are neither episodic nor isolated. They are structural, layered and deeply interconnected with developments along the Bangladesh border and in the wider regional churn. What confronts Bengal today is not one single threat but a convergence of multiple pressures that test social cohesion, internal security and long term economic confidence.

Unfolding Silent Transformation of West Bengal

The story of West Bengal is usually told through its politics, cultural legacy and ideological traditions. Yet beneath these visible layers lies a quieter but far more consequential transformation. Over the past five decades, the state has undergone a steady demographic and social shift that has subtly reshaped local balances, administrative challenges and governance priorities. This change has not been abrupt but rather gradual and cumulative with a profound long-term impact.

West Bengal's demographic journey, however, cannot be well understood without going deeper into history. The seeds of communal distrust were sown in August 1946, that is, a year before India's independence. The Muslim League, led by Muhammad Ali Jinnah, had decided to take **'Direct Action'**. Hooligans brandishing Muslim League flags, guns, long daggers, swords, *lathis* and clubs etc., went around Kolkata executing their nefarious plans. The violence, tacitly supported by the then Bengal Government, led by Suhrawardy of the Muslim League, lasted for almost a week and was known as the **'Great Calcutta Killings.'** It was estimated that around ten thousand people were killed and an equal number suffered injuries in the communal carnage.

The Western part of Bengal that was named as West Bengal and the Eastern part that became East Pakistan, were partitioned by the hastily drawn border by British Barrister Sir Cyril Radcliffe. This Partition led to one of the biggest mass migrations in human history impacting the lives of about ten million people in just Bengal. Later, a second partition in the year 1971 culminated in the liberation of Bangladesh. A new

nation was born ushering in hopes of a lasting peace on our Eastern front. But tragically, the divide didn't end there.

As we look back in time, one recalls the chivalry and sacrifices of our Armed Forces as they marched into East Pakistan to liberate the Bengali speaking people suffering from the marauding Pakistan Army which had killed an estimated three million people. The dignity of lakhs of women was violated and houses were set on fire causing enormous destruction under **'Operation Searchlight'** launched by the Pakistan Army on 25 March 1971. The prevailing situation then led to the exodus of about 10 million to India, mix of Hindus and Muslims, in order to escape the military atrocities. This is considered as one of the largest refugee crises of the 20th century.

West Bengal's Demographic Journey

From the early 1970s, West Bengal began witnessing differential population growth trends. The growth rate of the Muslim population outpaced that of the Hindu population after 1970-71, influenced significantly by growing turmoil in East Pakistan then. This flow of migration, unfortunately, continued even after creation of Bangladesh.

So, when seen over a longer horizon, West Bengal's demographic journey tells us a story of steady transformation. By 1971, Hindus constituted roughly 79 per cent of West Bengal's population, while Muslims accounted for about 20 per cent. By 2011, the Hindu share had declined to around 70 per cent and the Muslim population had risen to approximately 27 per cent. This shift was shaped not only by fertility differentials but also, and perhaps more importantly, by patterns of migration and settlement over successive decades. Crucially, these changes



Communal Clashes in North 24 Parganas, 04 July 2017 (photo LANS)

were not uniform across the state. Districts such as Murshidabad and Malda gradually became Muslim majority over successive decades, while parts of North 24 Parganas, Nadia and pockets of Southern Bengal experienced rapid compositional change. Statewide averages often masked these intense local transformations.

Turbulence in Bangladesh

Similarly, when we look at Bangladesh over the past five decades, the numbers of Hindus in Bangladesh have reportedly dropped by around 7.5 million or may be more. The first population census in independent Bangladesh was done in 1974 when Hindus made up about 13.5 % of the population. The last census of 2022 revealed that Hindus were down to 7.95 %. It is speculated to have significantly dipped after the August 2024 overthrow of the Sheikh Hasina Government. Dispossession of properties, intimidation, abductions, crimes against women and forced marriages of Hindu girls as well as conversions have continued intermittently.

Under the leadership of Sheikh Hasina, there was a degree of some stability in relations and border management, even when internally some trouble kept brewing. But, following her ouster on 5 August 2024, power was captured by extremist elements backed by Pakistan's Inter-Services Intelligence (ISI). Blatant attacks on Hindus started to take place once again. The Hindu homes, their businesses and places of

worship were targeted. Here the insidious role of **Jamaat-e-Islami** and its students wing, **Islami Chhatra Shibir** has been observed. Such developments inevitably create spillover pressures along West Bengal's long and porous border.

The Security Matrix and Challenges

Migration management, thus, remains central to Bengal's security challenges. The India- Bangladesh border has evolved into a complex security frontier shaped by illegal migration, human trafficking, smuggling and organised crime. Riverine terrain, dense habitation and shifting channels make

surveillance difficult, especially in areas like the Sundarbans. Criminal syndicates exploit humanitarian desperation, embedding themselves into local economies and creating logistics chains that move people, contraband, explosives and occasionally extremist operatives.

The India-Bangladesh border has, thus, evolved into a multidimensional security frontier. Illegal migration, transnational crime, smuggling, climate induced displacement and emerging resource stress together created a volatile ecosystem. Nowhere is this more evident than in the ecologically fragile and difficult to police regions like the Sundarbans.

Porous riverine terrain, shifting channels and densely populated border villages make surveillance and interdiction inherently difficult. Under these conditions, migration routes and smuggling corridors can be easily weaponised. Population movement, low intensity cross border provocations and criminal logistics can be deliberately exploited to inflame local tensions, deepen mistrust and create space for clandestine extremist activity. Organised crime syndicates thrive in this grey zone, monetising humanitarian vulnerability while embedding themselves into local economies.

Assessment Post Bangladesh Election February 2026

The Bangladesh election results signal a clear consolidation of Islamist influence, particularly by **Jamaat-e-Islami**, across Western and Northern districts adjoining the India (West Bengal) border. The issue for India is not electoral change but the ideological drift in sensitive frontier regions.

Jamaat-e-Islami has historically opposed the 1971 Liberation and was openly aligned with the Pakistan Army during that period. Its ideological orientation has never been ambiguous. What was once a marginal electoral presence has now acquired significant political weight.

From holding just two seats in 2008, Jamaat has surged to 68 seats in the 2026 elections. The scale of this rise is not a routine political fluctuation but it reflects a visible consolidation of Islamist influence. Equally concerning is the reported linkage of Jamaat with a network of 18 to 23 radical Islamist organizations. Even if indirect, such ecosystems create ideological depth and operational reach beyond formal politics.

If Jamaat now exercises influence over the Western and Northern Bangladeshi constituencies abutting India, particularly opposite West Bengal, the border environment could gradually become more volatile. Administrative discretion at the local level, even subtle relaxation in vigilance, social oversight or informal networks can transform vulnerable stretches of the frontier into conduits for radical messaging, recruitment and facilitation. An ideological shift in Dhaka also creates openings for external strategic penetration into the Bay of Bengal theatre impacting India's Eastern seaboard security matrix.

West Bengal's border districts have already experienced demographic shifts over decades. The risk is not dramatic confrontation but the slow conversion of the border into a corridor of radicalisation. India, therefore, needs to respond with firmness, tighten border management, intensify financial and intelligence tracking, sustain quiet diplomatic engagement and prevent internal political polarization. The danger is gradual structural erosion and not sudden crisis. Thus, vigilance and decisive containment are imperative.

Human Trafficking and Illegal Migration - The Criminal Economy of Desperation

The border belt has been a major corridor for human trafficking. Deep socio-economic disparities, political instability in

the neighbourhood and gaps in enforcement have sustained these flows for years. Besides illegal Bangladeshi migrants, a particularly vulnerable group includes Rohingya refugees fleeing persecution in Myanmar, many of whom transit through Bangladesh before attempting to enter India.

The illegal migrants' journeys through forests, river islands and remote settlements make them easy prey for traffickers. Forced labour, sexual exploitation and coercion are common which further entrenches criminal economies along the border. Over time, these networks do not merely traffic people but they also create logistics chains that can equally move contraband, weapons and extremist operatives.

Illegal migration of Rohingyas, estimated at around 30 million, continues to be surreptitiously facilitated by an unscrupulous cabal of politicians and human smugglers in West Bengal. While the situation remains highly explosive in Bangladesh, the Special Intensive Revision (SIR) of voters in West Bengal has created a tinder box situation with thousands of Bangladeshi illegal intruders reportedly lined up at a few border posts to return. The intellectual cabal, meanwhile, continues to raise the hoax of a communal divide.

Geography, Capacity and Coordination Gaps

The efforts to counter these threats face formidable constraints. The border's length, riverine nature and dense habitation restrict physical fencing and rapid response. Remote areas suffer from limited infrastructure and connectivity. These challenges are compounded by weak inter agency coordination and sporadic enforcement

deficits which dilute deterrence and embolden organised networks.

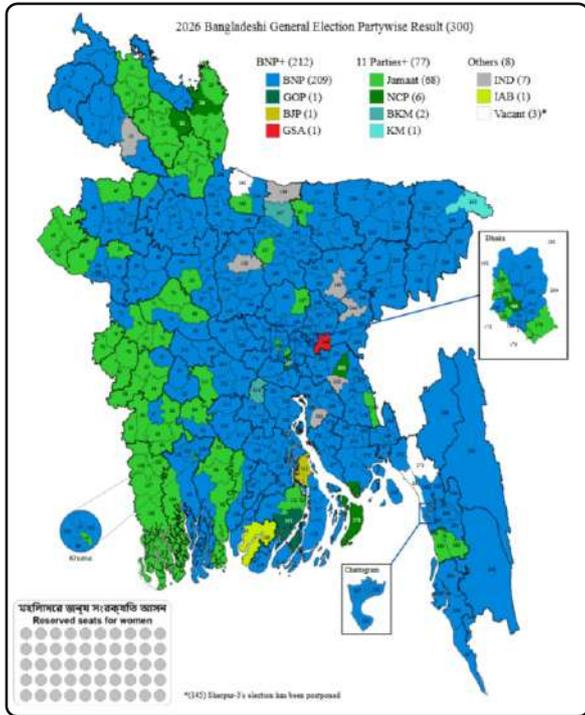
Meanwhile, humanitarian and political instability in neighbouring regions continues to generate push factors. The result is a persistent pressure cooker environment where security forces are forced into a reactive mode instead of sustained dominance through a proactive posture.

Local Sparks Escalate to Statewide Riots

Against this backdrop, Bengal's internal security environment is increasingly growing very sensitive. Local incidents now have the potential to cascade rapidly into wider unrest. Episodes of mob violence during police operations, communal clashes in districts such as Murshidabad and tensions linked to administrative exercises demonstrate how fragile the equilibrium can be. Disinformation and polarising narratives circulating through social media amplify these events far beyond their immediate geography. What begins as a local grievance is quickly reframed into a statewide or even national flashpoint, thereby, eroding trust and normalcy.

Communal disturbances linked to protests, religious processions or local disputes have recurred in recent years. These have at times escalated into stone pelting, arson, attacks on police and displacement of large number of families. Border districts face additional stress from demographic pressure, economic competition and ideological influence which filters across the frontier.

Large scale Left Wing Extremism has definitely declined but residual Maoist presence in pockets of the Western districts still remains a part of



Bangladesh General Elections Result February 2026

Socio Economic Roots of Insecurity

At the base of many security challenges lie deep-seated socio-economic disparities. Gaps in education, employment and access to services generate frustration, especially among today's youth. Such conditions are fertile ground for criminal recruiters, extremist ideologues and agitators who promise identity, purpose or income. Unchecked illegal immigration and entrenched syndicates controlling sectors like land, mining, transport and informal finance further distort opportunity structures. The result is, therefore, loss of faith in institutions and gradual erosion of Bengal's once vibrant civic culture.

Preserving Bengal's Composite Ethos

A less acknowledged but critical dimension, which we must not ignore, is the growing unease among the native Bengali Muslim communities. They have historically and traditionally always valued the cultural syncretism and peaceful coexistence. Today many of them feel marginalised by externally injected radical ideologies which are suppressing the local valued traditions, culture and ethos - restricting women's freedom and diluting Bengal's composite Ganga Jamuni ethos.

Empowering these indigenous voices is an inescapable cultural and security necessity. Reaffirming cultural confidence acts as a firewall against radicalisation, especially among the next generation. We need to seriously focus on this and make the native Bengali Muslim community feel connected, culturally confident and safe from prevailing radicalisation.

Reimagining Bengal as a National Asset

Security cannot be sustained in isolation from growth and dignity. Bengal's revival must be framed as a renaissance and not a reaction. The state that very proudly once led India's freedom struggle can again lead its Eastern resurgence.

Bengal's geography offers unmatched advantages. Sea access, land corridors and air connectivity position it as a natural gateway to the Northeast and South Asia. A dedicated Bengal Export Corridor with modern logistics, ports and industrial clusters can unlock this potential. Tourism integration from the Sundarbans to the hills, with focused religious and cultural circuits, can create livelihoods while projecting soft power as well.

Creative industries offer another lever. Reviving Tollywood through studio infrastructure, regional collaboration and global OTT platforms can showcase Bengal's storytelling tradition. Sports, particularly football, can be harnessed through academies, grassroots leagues and Northeast scouting networks, transforming Bengal into India's eastern sporting capital.

Healthcare, education and research must form the backbone of inclusive growth. World class medical institutions, specialised

the security landscape. Past attacks on security forces serve as reminders that dormant networks can always revive if governance vacuums re-emerge.

Explosives, Arms and Organised Crime

One of the most alarming fault lines is the widespread illegal manufacture and storage of explosives. Massive seizures of banned firecrackers, explosive materials and improvised devices over recent years point to existing active supply chains operating in semi-urban and rural areas. Tragic explosions at illegal units have exposed weak regulatory oversight and the dangers posed to civilian populations.

Riverine districts repeatedly emerge as locations where device components and caches are discovered. This points to a dangerous overlap between local criminal entrepreneurship and cross border trafficking. A growing perception of Bengal as a hub for interstate organised crime and illegal arms movement further compounds the threat environment.

universities focused on border studies, climate adaptation and counter narcotics can turn Bengal into a knowledge hub. Defence manufacturing and industrial training, leveraging availability of land, labour, power and port access, can anchor high value employment.

An Integrated Way Forward

The current security environment in Bengal is shaped by communal stress, cross border pressures, residual insurgency, organised crime, cyber vulnerabilities and socio economic fault lines. Managing this complexity demands an integrated strategy. Robust border management must merge with intelligence driven policing, inter agency coordination, community engagement and rapid counter disinformation mechanisms.

Equally important is sustained diplomatic and security coordination with Bangladesh essentially to curb organised infiltration, trafficking networks and document fraud. Transparent, humane mechanisms to distinguish illegal infiltrators from long settled law abiding communities are essential to preserve the trust and stability.

The fencing along the entire 4096 km Indo-Bangladesh border has been successfully completed, covering approximately 80% of the total border length. This initiative is aimed at enhancing control over illegal immigration, smuggling and infiltration of miscreants and insurgents in the border areas. It definitely reflects the Government's commitment to bolstering security and maintaining order along this vital boundary. However, 20% of the border still remains unfenced primarily due to challenging terrain, densely populated areas, riverine pockets and unresolved border disputes. Climate change and resource conflicts, driven by flooding and rising sea levels also pose

significant challenges to regional stability. Modern security challenges are no longer purely physical. Law enforcement technology systems face cyber vulnerabilities, data breaches and suspected sabotage. These compromise investigations and erode public trust in digital policing. Simultaneously, misinformation ecosystems enable rapid mobilisation, panic and communal signalling, turning rumours into triggers for violence. The Government, therefore, must urgently ensure resilient and secure digital policing architecture with strong cyber protection, data integrity safeguards and accountability mechanisms. Equally critical is a proactive national strategy to counter misinformation through real time monitoring, credible public communication and swift legal action to prevent rumours from metastasising into violence.

Towards a Golden Bengal

The prevailing trajectory is not irreversible. West Bengal's history shows that communal harmony was strongest when governance was firm, neutral and development focused. Rebuilding trust will require restoring administrative credibility, depoliticising law and order, managing migration transparently and countering

misinformation decisively. Robust border management must integrate intelligence driven policing, inter agency coordination and sustained diplomatic engagement with Bangladesh.

Beyond security, Bengal's revival must be framed as renaissance rather than reaction. Its geography offers unmatched advantages as India's Eastern gateway. Investment in logistics, ports, tourism, creative industries, healthcare, education and defence manufacturing can transform the state into a major growth engine. A confident, prosperous Bengal anchored in livelihoods and opportunity is the strongest antidote to communal fracture.

Finally, West Bengal is not merely a state but is a national frontier of culture, commerce and civilizational confidence. If its security challenges are addressed with clarity, inclusion, foresight and a strong hand then undoubtedly West Bengal can once again emerge as **Sonar Bangla**. A secure, confident and prosperous Bengal would not only stabilise India's East but also become one of India's greatest strategic assets in the decades ahead.



Lieutenant General Abhay Krishna, PVSM, UYSM, AVSM, SM, VSM (retd), an alumnus of National Defence Academy, Pune was commissioned into the Rajputana Rifles in June 1980. He has extensive experience along the Line of Actual Control, and CT/CI ops with four tenures in Kashmir -Ladakh region and eight tenures in East. He has also served as a UN observer in Mozambique & Rwanda and as Chief of Staff (UN forces) in Burundi. He has commanded a Rashtriya Rifles Battalion in the Kashmir valley, and an infantry battalion in Sikkim. Besides command of 3 Corps in Dimapur, he has the unique distinction of being an Army Commander of three Regional Commands - the South Western, Eastern and Central Army Commands. Post retirement he also functioned as the Chief Commissioner West Bengal Right to Public Service Commission.



Lt Gen Abhay Krishna

TRANSFORMATION, INTEGRATION AND FUTURE WAR READINESS

An Incisive Chat with the Chief of Defence Staff

General Anil Chauhan, PVSM, UYSM, AVSM, SM, VSM is the current and 2nd Chief of Defence Staff (CDS) of the Indian Armed Forces tenating the appointment since 30 September 2022. Chauhan, commissioned into the 11th Gorkha Rifles on 13 June 1981 has had an illustrious career spanning nearly 45 years. General Anil Chauhan commanded the Baramulla-based 19th Infantry Division and in 2017, on promotion to the rank of Lieutenant General, he took charge of the Dimapur-based III Corps. In January 2018, he was appointed Director General Military Operations, during the course of which he oversaw the execution of two key military operations: the 2019 Balakot airstrike against Pakistan and Operation Sunrise (2019) - a joint India-Myanmar counter-insurgency operation. On 1 September 2019, he took over as the General Officer Commanding-in-Chief Eastern Command. He has also served as a military advisor to the National Security Council Secretariat (NSCS), prior to taking over as the CDS. **The Editor interacted with him in February 2026, the extracts hereafter.**

*The appointment of CDS has been in place for over six years. As the CDS is the Permanent Chairman Chiefs of Staff Committee (CoSC), decision making has improved with regard to tri – services issues. The integration of HQ Integrated Defence Staff (IDS) with the Department of Military Affairs (DMA), Ministry of Defence has also enhanced bureaucratic efficiency. Undoubtedly, these structural reforms were long overdue. **What, in your view, are the most consequential institutional changes brought about by the CDS system that may not be visible to the public? How do you assess the evolution of the CDS role thus far?***

The most consequential impact of the CDS system has been institutional and cultural rather than purely structural, which is why much of it is not immediately visible to the public



eye. One of the first clarifications that must be made is the distinction between the IDS and the DMA. These two are often perceived as similar entities, but they are fundamentally different in character and role. DMA is part of the Ministry of Defence, whereas IDS functions in a manner similar to a Service Headquarters.

IDS has two principal responsibilities. The first is capability development in new and emerging domains such as cyber, space, information warfare and cognitive warfare. The second is promoting jointness and integration across the Services. To that end, a large number of sub-committees of the CoSC are headed by officers from IDS, ensuring continuity, institutional memory and joint perspective.

The creation of DMA has led to perhaps the most important invisible reform i.e. the integration of the Services with the Ministry of Defence itself. Earlier, there existed a perceptible disconnect between the military and the civilian bureaucracy. That disconnect has now been effectively bridged. The Services feel that their professional views are heard, articulated and taken forward within the Ministry through DMA, which is predominantly manned by serving officers. This has resulted in greater reliance, speed of decision-making and mutual understanding.

Another major reform is in the role and responsibility of the CDS, an appointment that has institutional access to people dealing with national security affairs and strategic policy making. This distinguishes the CDS from any conventional Secretary to the Government of India and significantly strengthens civil–military integration at the apex level.

Finally, the creation of Permanent Chairman CoSC has corrected a fundamental flaw of the earlier rotational system. Earlier, the Chairman was also a

Service Chief responsible for a particular operational domain, which could have been perceived or even tend towards a biased decision making. The CDS, not being responsible for fighting in any single domain, is now able to provide a balanced, unbiased and cogent military advice to the political leadership.

It has been opined that the three Services Chiefs should report to the CDS, and he should have a higher Warrant of Precedence, possibly at Table Serial Number 11, equivalent to the Cabinet Secretary. Presently, the four Chiefs have been placed at par at Serial 12. Do you feel that this structural change in channel of command will further enhance synergy and rightfully give greater value to national security related appointments? Should the CDS formally function as CDF?

It is important to revisit the original rationale and framework under which the CDS appointment was created. The Government decision approving the CDS clearly states that the CDS will not exercise direct military command over

the Services or the Service Chiefs. This was a conscious design choice, meant to ensure that the CDS functions as an integrator, facilitator and principal military advisor to the Government.

The CDS does not interfere in service-specific operations. However, he does exercise an operational role through the CoSC, of which he is the permanent Chairman and also through IDS, particularly in new and emerging domains of warfare that are inherently joint and cannot be owned by any single Service. These domains include space, cyber, cognitive and electromagnetic. This balance preserves Service autonomy while enabling joint operational coherence.

Issues of warrant of precedence are, in my view, largely ceremonial. It determines ceremonial hierarchy. What truly matters is clarity of role, institutional access and the ability to shape outcomes. The Cabinet Secretary has a clearly defined administrative role, just as the CDS has a clearly defined military advisory, operational and integrative role. The three Service Chiefs and the CDS function within a



Chief of Defence Staff General Anil Chauhan, on January 22, 2026, released the Military Quantum Mission Policy Framework (Photo PIB, India)



The Chief of Defence Staff and Secretary, Department of Military Affairs, General Anil Chauhan along with his wife Smt. Anupama Chauhan calling on the President of India, Smt. Droupadi Murmu, at Rashtrapati Bhavan on December 20, 2022. (Photo Rashtrapati Bhavan Digital Photo Library)

collaborative framework and effectiveness flows from mutual respect, clarity of responsibility and shared national purpose.

*In the next rung of structural reforms, it is assessed that the Services Chiefs should handle the Raise, Train and Sustain roles, while operational aspects are transferred to the CDS and Theatre Commanders. The Military Operations, Naval Operations, Air Operations and related Intelligence and such Directorates should then function under the CDS. **Notwithstanding the resistance and expected turf protection, do you feel that we should proceed towards such a structural revamp?***

The separation of force generation from force application is a well-established framework in modern warfare and we are also steadily moving towards the same framework. The CDS is not envisaged as a traditional force commander as I have just told you, and that is by deliberate design. What we are evolving towards is a system where the Services concentrate on raising, training and sustaining of forces, while operational employment is handled through joint structures.

Recent operations have demonstrated that collaborative decision-making produces far superior outcomes. When intelligence, operations, logistics and planning are integrated, the decisions reached are more

balanced, timely and effective. As we move forward, joint operational structures that subsume these functions will become essential and there will be a requirement for someone to head that particular organization. The Command and Control structure of that organisation and its relation with the CoSC and Service Chiefs is being carefully defined.

It is important to emphasise that this process which we are currently progressing is not driven by turf protection by any particular Service. Differences of opinion may exist, but they stem from professional perspectives and belief of every Service to be the best in its particular domain rather than institutional insecurity.

Discussions being undertaken are robust, doctrinal and are anchored in national interest. My role as Chairman, CoSC is to integrate all of them together and mitigate all concerns.

*Most defence analysts have strongly advocated the urgency to set up the integrated theatre commands. Apparently, the hurdles have been largely resolved, and the theatre commands are soon going to be a reality. **Where do you believe the greatest cultural resistance lies in forming integrated commands - in structures, processes, or mindsets? What guiding principles are shaping India's approach to theatre commands, given our unique geography and threat spectrum?***

Most structural and procedural hurdles to theatre commands have now been addressed. The principal challenge I felt was in the mindset. Every Service naturally believes that it is best equipped to deal with threats-not only within its own domain but across the entire spectrum. This belief flows from professional pride, operational experience and institutional history and it permeates at all levels. What has changed is the recognition that these strengths must now be applied in a complementary manner. Warfare today is no longer service-specific. It is multi-domain, technology-driven and highly integrated. Once this reality is internalised, the silos begin to dissolve on their own. Structural and procedural changes then become manageable issues of detail. Not surprisingly, the focus has now decisively shifted from service-centric optimisation to mission-centric and result oriented outcomes.

Hurdles, you were mentioning, in fact, the issue is all four of us (CDS and three Service Chiefs) being in Delhi together because of our commitments. However, whenever we are in station, there is always a sense of urgency to meet and decide. It is taking time because we want to provide a comprehensive solution which looks at all angles and not just

Theatre Commands. Angles like recent changes undertaken by our Western neighbour in their higher defence organisation and restructuring in terms of creation of Army Rocket Force Command, the kind of strategic capability building in the subcontinent, etc. The underlining aim is that whatever we create should be able to endure the disruptions of not just today but of foreseeable future. We want to find an optimum solution encompassing all possible eventualities and that is why the perceived delay.

You have also queried about the guiding principles, in fact, in my first CoSC meeting itself these were clearly articulated. They emphasised that national interests must unequivocally take precedence over Service specific considerations. Theaterisation, to the greatest extent possible, must be achieved through consensus amongst all three Services and joint structures shall be established solely on the basis of operational imperatives, not to address human resource or administrative consideration. Further, integration shall deliver enhanced operational effectiveness as the primary outcome followed by administrative efficiency and so on.

Also, India's approach to theatre commands is shaped by its unique geography, threat spectrum and resource realities. We are not replicating any foreign model. Our guiding principles remain national interest, operational effectiveness, administrative efficiency, sustainability and flexibility to adapt to future disruptions.

Jointness and Integration within the three Services is a work in progress. You have rationally pointed out that one cannot jump into integrated structures without resolving processes and many related administrative functions. Can you enlighten us on some of the jointness and integration steps taken

in fields like training, logistics, human resources, communications and such other aspects?

The central purpose of jointness and integration is effective prosecution of operations. Everything else—training, logistics, human resources and communications exists to support this core aim. We are therefore developing common operating procedures, which in turn require common communication architecture.

Certain operational areas lend themselves naturally to integration because the threat environment is common across Services. These include Air Defence, drone and counter-UAS systems, electronic warfare and Chemical Biological Radiological Nuclear (CBRN) defence. Joint doctrines are being evolved for airborne, heli-borne and amphibious operations, all of which are inherently joint.

Logistics is a critical enabler. Several joint logistics nodes have already been established, with more planned. A major initiative is achieving visibility of inventory across Services. The inventories of Services are huge. In fact,

the smallest service, Navy, has the largest inventory because of diverse platforms which they are operating. Army may be the largest, but its inventory is the smallest. Notwithstanding, the numbers in each are humongous. But today, each Service operates a number of platforms, which are common to them. Accordingly, if this inventory is visible, then we will be able to demand and procure things together. By next year, we aim to have comprehensive visibility of stocks, buffer reserves and demand projections, which will result in substantial efficiency gains and cost savings. Wherever common equipment exists, a lead Service for maintenance has also been designated.

The only micro area requiring careful management is human resource and cadre structures. Promotion pathways, command opportunities, and career progression are closely linked to morale and service ethos. These concerns are being addressed in a calibrated and transparent manner. They are manageable challenges, and are being addressed mutually. Progress



General Anil Chauhan laying wreath at the National War Memorial before taking over as 2nd Chief of Defence Staff, in New Delhi on September 30, 2022.



Chief of Defence Staff General Anil Chauhan speaking at the Chanakya Defence Dialogue, 27 November 2025. (Photo ANI file)

has been made through common appraisal formats, recommendations for tri service appointments, numerical grading of three star officers by Army in consonance with the other two Services, inclusion of tri-Service commanders in promotion boards of three star officers etc.

These are incremental steps, but they are laying the foundation for deeper integration in the future especially in niche fields where the integration exists from the beginning by virtue of them being under HQ IDS.

*For several years the senior leadership in the Air Force has expressed reservations over setting up integrated theatre commands. They opine that air assets should be controlled centrally, as it frequently involves inter-theatre movement and dynamic employment of the combat aircraft. Even individual missions would require movement of aircraft from different theatres. **How have we addressed these reservations, and resolved the differences?***

Concerns regarding asset mobility are not unique to the Air Force. Army formations and naval assets are also required to move dynamically across theatres. Early models of theatre commands raised valid concerns, particularly regarding a separate Air Defence command. This issue has since been resolved by recognising that Air Defence and the air battle are inseparable.

The number of Theatre Commands is another important consideration. Excessive fragmentation places strain on limited high-value assets such as fighters, AWACS and air to air Refuellers. A more optimised command structure mitigates these challenges.

You would appreciate that certain issues are legacy challenges arising from our unique geography and infrastructure. For example, India's airfields, given the narrowing geography in the north, are configured to operate against both our Northern and Western adversaries. So you truly cannot distinguish as to how they will operate and their employment will be contingent on evolving exigencies.

Complexities such as these defy quick fixes and require more phased, deliberate and pragmatic solutions.

*The importance of Information Warfare has been highlighted during **Operation Sindoor**. Many nations bought the Pakistani story, and our successful destruction of major Pakistani assets did not garner much footage or attention. Our media campaign possibly needed to run formally and informally on several platforms. **What should our approach be in future in cognitive warfare, for narrative building and countering misinformation and fake news?***

Narratives must be anchored in evidence. The impact of fake news is inherently short-lived. While sensational claims may capture attention briefly, they do not endure. What endures are verifiable outcomes. Victory is not declared by mere rhetoric but demonstrated through evidence. A sense of victory obviously cannot be built on demolished infrastructure, damaged runways, crippled airfields and dysfunctional Air Defence infrastructure.

Independent assessments by international think tanks have since corroborated India's operational effectiveness. Evidence must shape a narrative, we produced hard hitting evidence and we are now strengthening institutional mechanisms to counter misinformation in near real time by integrating information and cognitive warfare more closely with kinetic operations. The objective remains credibility, not noise and rhetoric.

Recently you pointed out that global geopolitics is passing through a disruptive phase, and that our military needs to have high tech military adaptability. Grey zone warfare, coercive diplomacy, financial and trade



CDS Gen Anil Chauhan calls on Defence Minister Rajnath Singh soon after assuming charge on 30 September 2022 (Photo ANI)

tariff pressures are now persistent features that India has to counter to defend its national interests. What role do the Armed Forces play in this and how prepared are India's Armed Forces to counter them?

We are today witnessing geopolitical, geo-economic and technological disruptions simultaneously. The central lesson from this environment is clear - there is no substitute for self-reliance and *Atmanirbharta*. Strategic alignments also have become fluid and transactional. Assumptions about permanent friends or adversaries are increasingly unreliable. In such an environment, strategic autonomy is not a preference but a necessity and only a self-reliant nation retains strategic autonomy and freedom of choice.

Our doctrines, concepts and strategic vocabulary must reflect Indian realities. Borrowed ideas and imported philosophies create dependency and predictability-both are undesirable in warfare. The Armed Forces are adapting across domains to meet these challenges holistically.

In the Republic Day Parade this year, several drones were seen on different platforms. Undoubtedly, as seen in the Russia – Ukraine war too, drones have impacted military operations extensively. Large scale movement of armoured and other vehicles can be easily destroyed by drones and loiter munitions. The Army will need to fight dispersed, with smaller, leaner

organisations. What lessons have recent global conflicts reinforced for India's force structuring?

Recent conflicts, including the Russia–Ukraine war, have clearly demonstrated the growing impact of drones and loitering munitions on the modern battlefield. Their visibility during this year's Republic Day Parade reflects the importance we attach to these capabilities. At the same time, it is important to recognise that drones are not a panacea; they are vulnerable systems and will continue to face countermeasures. Therefore, technology by itself cannot be the sole driver of force restructuring.

The correct starting point for force structuring is an understanding of how tactics are changing. Technology first alters tactics, these tactical shifts then influence operational concepts, and only thereafter should they inform strategy and force design. If this sequence is reversed, we risk restructuring forces around equipment rather than around how wars will actually be fought.

What drones and associated technologies have fundamentally done is expand the engagement envelope and situational awareness of existing platforms. Earlier, a tank's effectiveness was largely defined by the range of its main gun or an attached missile, typically a few kms. Today, with

persistent surveillance, loiter munitions and networked targeting, the same platform can influence and engage targets at ranges of 25–30 kms. The platform has not changed, but its ability to see, decide and act has increased dramatically.

This expansion of the tactical envelope will inevitably lead to changes in how formations are employed, greater dispersion, increased emphasis on survivability and taut integration across arms and domains. However, this does not automatically translate into blanket changes in force structures. The emphasis is on optimising existing structures through better integration of technology, not replacing them.

The lesson for India's force structuring is therefore one of measured evolution, not disruptive reorganisation. We must leverage new technologies to enhance warfighting efficiency, precision and operational tempo, while retaining proven organisational frameworks. Incremental adaptations, informed by doctrinal and tactical clarity, will deliver far greater operational dividends than premature structural overhauls. If we get the tactical and operational concepts right, the force structure will naturally and correctly evolve to meet the demands of future warfare.

*Artificial Intelligence (AI) is assessed to be the next major technology disruptor in Warfare. To have effective AI support for analysis and decision support in operations, our 'machines' have to learn (Machine Learning), with large amount of data inputs. **Are we moving decisively enough towards network centric and data driven warfare capabilities? Will we achieve the AI edge over our future adversaries?***

AI is indeed emerging as one of the most consequential technology disruptors in warfare, but it is important to first clarify how we conceptualise this transition. Net-centric warfare and data-centric or intelligent warfare are related, but they are not the same. Net-centric warfare connected platforms and sensors, intelligent warfare connects data, algorithms, and decision making.

Our focus today is moving decisively beyond connectivity alone towards data-driven, intelligent operations. This shift is already reflected in our doctrinal thinking. We have articulated the framework for multi-domain operations in a networked environment and the classified version takes this further by laying down how emerging technologies-including AI-will be employed to enable faster analysis, improved situational awareness, and superior decision support in future conflicts. The unclassified version of this is available in open domain.

AI effectiveness ultimately depends on the quality, scale, and integration of data. Accordingly, our emphasis is on building robust data architectures across Services, ensuring interoperability and enabling secure sensor-to-shooter linkages. AI is not being viewed as a replacement for human judgement, but as an enabler that compresses decision cycles and enhances the commander's ability to operate in complex, contested environments.

So, yes, we are moving in the right direction-conceptually, doctrinally and structurally towards an intelligent and data-driven warfare. The trajectory is clear and deliberate.

India's Defence Industrial Base has seen remarkable improvement in the last decade, and the private sector has entered the field in a big way. But our procurement processes are still tardy and slow. Quality checks of

*newly inducted equipment are also suspect, and many drones inducted are not hardened for electronic and other disruption. **How do you assess the progress of Atmanirbhar Bharat in defence - what has worked, and where do structural bottlenecks remain?***

Atmanirbhar Bharat in defence is a relatively young initiative-barely five to six years old-and when viewed in that context, the progress achieved so far has been significant. Much of this success has been driven by the Services, because they are the end users. Their direct involvement has ensured that indigenous development is guided by operational realities and not abstract requirements, while also injecting much-needed speed into the system.

Three key drivers are shaping this transformation. The **first** is mindset. There has been a fundamental shift in how the Services, industry and the broader ecosystem view indigenous capability development. The **second** is the process. Procurement procedures are being progressively adapted to enable faster decision-making, greater industry participation and more iterative capability development. The **third** is financial commitment. Clear policy directions have been provided, including incremental increase in procurement from domestic sources, with a larger per cent share of budget reserved for the private sector. This gives predictability and confidence to industry. In parallel, specific initiatives now allow the Services to allocate a portion of their modernisation budgets towards innovation and start-ups.

That said, challenges remain. Procurement timelines must continue to compress, quality assurance mechanisms need to evolve to keep pace with rapidly changing technologies, and systems such as drones must be hardened against electronic and cyber disruptions. These are recognised issues and are being addressed incrementally. Taken together, changes in mindset, procedures and financial structures are beginning to align. While the ecosystem is still maturing, the direction is correct. *Atmanirbhar Bharat* in defence is no longer aspirational, it is becoming operational, scalable and increasingly credible.

*In December 2025, while speaking to officers in MILIT, Pune, you emphasized the need to set up a defence technology management framework. Start-Ups and innovations have to be supported and encouraged. The Navy's Innovation and Indigenisation Organisation (NIO) and the Army Design Bureau are providing direction and resources support too. But possibly DRDO and DPSUs are not complimenting the effort synergistically. **How do we network all these initiatives and achieve faster and efficient new technology induction and absorption?***

Let me first clarify that innovation in defence is not being viewed as a single-organisation or single-domain activity. What we are consciously building is an all-encompassing ecosystem, where multiple institutions like Services, DRDO, DPSUs, private industry, start-ups and academia

operate as complementary contributors rather than parallel silos.

At the **first** level, each Service has put in place structured innovation mechanisms. The Navy, through its NIO, the Army Design Bureau and the Air Force's DAD are all actively engaging with start-ups, MSMEs and academia. These organisations are not only identifying future capability requirements but are also acting as facilitators providing direction, access to users and operational context.

The **second** layer of the framework focuses on innovation within existing inventories and sustainment ecosystems. The Services have established indigenisation cells that look at in-service equipment, spares, inventory management, life-cycle support and upgrades. Base workshops, dockyards, and Air Force maintenance units are fully integrated into this effort. Incremental improvements, indigenisation of spares and performance enhancement of legacy platforms deliver immediate operational dividends and resilience.

The **third** dimension is inter-Service and institutional coordination. We are making a conscious effort to ensure visibility of what each Service is doing, whether it is WESEE (Weapons and Electronics Systems Engineering Establishment) and Navy-led initiatives or Air Force or Army innovation projects, to ensure that the best practices are shared and duplication is avoided. This coordination is extending to our engagement with academia as well. We are de-conflicting outreach so that the same institutions, such as IITs and research universities, are not approached independently for identical problems by multiple agencies without awareness of each other's efforts.

DRDO continues to remain a central pillar of this ecosystem, particularly in deep technology and long-gestation research initiatives. Parallely, the role of DPSUs and private industry is evolving. What we are attempting is to align roles better so that effort, funding and talent are optimally utilised. Admittedly, from the outside, this may appear disaggregated. However, there is now far greater situational awareness across the system than that existed five or



General Anil Chauhan and Mrs Anupama Chauhan at Fort William, Kolkata, May 2021 (Photo credit The Telegraph)

six years ago. Earlier, multiple initiatives were running independently with limited visibility, leading to overlap and inefficiencies. Today, duplication is reducing, coordination is improving and outcomes are becoming more discernible. The direction is clear, to move faster, integrate better and ensure that innovation translates into credible operational capability.

The defence forces realized the importance of Space and Cyber in warfare over a decade ago, and some organisations were established for handling space and cyber operations. The threat from space and cyber has expanded rapidly, and possibly we need to develop more extensive linkages with ISRO and other organisations in the cyber arena. More satellites need to be deployed at a faster rate in Low Earth Orbits, and in the Stratosphere. How ready are we to face threats in these fields and also to use these domains for offensive strikes?

Indian Defence Forces recognised the strategic significance of space and cyber as warfighting domains well before their centrality became evident in recent conflicts. Accordingly, we have put in place dedicated organisational structures to address both defensive and operational requirements in these domains. At the institutional level, we established the Defence Space Agency and Defence Cyber Agency, complemented by service-specific cyber organisations. Since then, the character,

scale and velocity of threats in space and cyber have expanded exponentially and we are consciously evolving these organisations in size, capability and mandate.

Equally important is integration beyond the military domain. Space and cyber are inherently national domains, not purely military ones. Therefore, the defence forces are working in close coordination with organisations across Government. In the space domain, the Defence Space Agency engages closely with ISRO and DRDO to ensure alignment in satellite resilience, launch responsiveness, space situational awareness and future architectures.

Similarly, in the cyber domain, the Defence Cyber Agency operates in coordination with the National Cyber Security Coordinator under NSCS, MeitY and organisations such as NTRO. This whole-of-government approach ensures coherence between military cyber operations, national cyber defence, intelligence and policy frameworks.

As far as readiness is concerned, we maintain constant situational awareness of developments in these domains. Capabilities are being developed in line with the evolving threat landscape and India's national security objectives. I can assure you that we are fully cognisant of the actions and capabilities being developed by other nations and we are taking appropriate and measured steps to safeguard our interests.

The Editor thanked the CDS for his incisive assessments and frank responses, while concluding the chat.

■ Lt Gen JS Sandhu (Retd) Editor

WAR OF NERVES

The wars of the future will be wars for digital dominance, where the side that controls the flow of information, will control the skies. The challenge for air power will be to protect the networks and also develop the ability to be effective even when networks are degraded or denied. Therefore, to ensure national security in the decades ahead, it has become imperative for India to develop secure, resilient and intelligent networks and platforms capable of distributed processing, autonomy and human-machine teaming to operate in the network degraded environment.

In the 21st century, the omnipotence of air power can be attributed to its net-centricity. The networks connect the sensors, decision makers and shooters in real time, thereby, shortening OODA (Observe, Orient, Decide, Act) loop and dominating the outcome of battles.

The Indian Air Force (IAF) has also evolved into a network centric force with the help of Integrated Air Command and Control System (IACCS), secure data links, Software-Defined Radios (SDRs), military satellites and indigenous surveillance systems. However, this dependence on networks has created a new vulnerability. Future wars will start with the attacks on networks through cyber operations, jamming, spoofing or kinetic attack. China's A2AD (Anti-Access Area Denial) doctrine is focused on denial of network connectivity to the opponent by Electronic Warfare (EW), Anti-Satellite Weapons (ASAT) and quantum-enabled communication disruption etc.

Communication is Key

'Communication is the key' is an old adage, as much applicable in war as in peace. Timely and accurate information is required for victory and its denial may lead to disaster. The Chinese used kites and sky lanterns for signalling during battles in the 5th century BC. During the Second World War, in the Battle of Midway (1942), the US Navy broke Japanese naval communication code, revealing the location and composition



Launch of DRDO's Ballistic Missile Defence interceptor missile for an ASAT test 'Mission Shakti' engaging an Indian orbiting target satellite in Low Earth Orbit (LEO) in a 'Hit to Kill' mode from the Dr. A.P.J. Abdul Kalam Island, in Odisha on 27 March 2019 (Photo PIB India)

of the Japanese fleet. It enabled US forces in setting up the decisive ambush, a pivotal event in the naval war in the Pacific. During the Normandy landings, effective communication through secure radio networks and coded signals amongst the Army, Navy and Air Force, ensured synchronised assault despite the large scale of the operation. By the end of the 20th century, effect-based air operations and multi domain warfare accelerated the pace of conflict. In such an environment, the availability of a resilient and functioning communication network became a prerequisite for success.

OODA Loop and Evolution of Network-Centric Warfare

Colonel John Boyd of US Air Force (USAF) postulated that the side which can go through the four stages of the OODA loop faster, will win the war. Till late in the 20th century, most efforts were focused on accelerating the ‘Act’ phase by inducting faster jets, long range missiles and precision weapons. By 1990s, the acceleration in Act phase plateaued out with F-16s and MiG-29s having similar capability and weapons. This led to the US revolutionising warfare by shortening the Observe, Orient and Decide phases through Network Centric Operations. It linked satellites, radars, AWACS, drones and strike aircraft through secure data-links to compress the ‘Sensor to Shooter’ timeline.

The first Gulf War demonstrated the efficacy of the system. A reconnaissance satellite could detect a Scud launcher (**Observe**), convey it digitally through secure channels to E-8C JSTARS (Joint Surveillance Target Attack Radar System) (**Orient**), which transferred the data to F-15 (**Decide**) which destroyed the target immediately (**Act**). In both the Gulf wars (1991 and 2003), and in Kosovo (1999), US and NATO could maintain seamless

connectivity across cyber, space and traditional domains to win wars. This established the criticality of having a functioning network to win a war and by corollary, networks have become prime targets for the adversary. *The wars of the future will start with the wars for network and will be won by the side which can retain its own network while crippling the adversary’s.*

Evolution of Networked Air Power in IAF

The Kargil Review Committee (1999) highlighted the lack of real time surveillance and intelligence data flow in India’s security set up. The IAF identified the need and made a transformational shift to indigenously developed infrastructure and platforms for network centric operations, with major components as under:-

- **IACCS.** The Command & Control Centre, decision on real time air situation obtained by high speed, encrypted data from radars, AWACS, satellites, drones etc.
- **SDR.** For secure, encrypted,

frequency-agile, jam resistant high-speed data transfer.

- **Navigation with Indian Constellation (NavIC).** Indigenous, satellite-based, encrypted, jam resistant, navigation system for military use, reducing dependence on GPS/Glonass.
- **Drones.** Heron, Searcher and Rustom for persistent surveillance with encrypted real time feed to IACCS.
- **Munitions.** Use of network for mid-course correction and terminal guidance of precision munitions.

The dependence of airpower on networks can be explained by a simple example. A drone detects enemy armour movement, supported by close air support aircraft (**Observe**). It passes the information to IACCS through SDR which forwards it to AWACS for identification (**Orient**). On getting confirmation from AWACS, IACCS assigns the airborne target to a Rafale and ground target to a Su-30 through



Information courtesy Bharat Electronics Ltd, Info Graphic by IndraStra Global



China's A2/AD power projection in the South & East China Sea (Source CSBA)

In the recent conflicts with Hamas and Hezbollah, Israel lost a few of its drones to signal interference and GPS jamming by the adversaries. The ongoing Ukraine-Russia war has seen both sides resorting to large scale GPS jamming, spoofing drones and targeting communication nodes. And in a display of exceptional networks paralysis on 03 January 2026, US Forces captured Nicolas Maduro, the Venezuelan President from Caracas, the Venezuelan capital. There was practically no resistance.

Chinese Threat to OODA Loop

Naturally, China too realises that USAF and IAF will be less effective if their networks are degraded or destroyed. In future conflicts, at the outset, the People's

SDR (**Decide**). Rafale launches Meteor missile and provides mid-course update by network to destroy the airborne target and Su-30 launches network supported sensor fused weapon for ground target (**Act**). This real time collaboration and precision can only be possible in a secure and persistent network environment.

Networks, as the Centre of Gravity

This reliance of modern air power on networks creates a new centre of gravity. Inflicting decision paralysis on the adversary by crippling his network is far easier than striking the air assets directly. Networks can be interfered by kinetic attack over nodes or by cyber and EW like jamming and spoofing as seen in some of the recent wars.

Examples. Serbia (1999) survived in the Kosovo war for 78 days by jamming GPS signals which degraded the effectiveness of NATO strikes. In 2003, Saddam Hussain's mighty army collapsed without fighting when coalition strikes neutralised its command and control networks. Prior to attacking Georgia in 2008, Russia carried out jamming and 'distributed denial of services' attacks not only against military networks of Georgia but also against Government, media and commercial websites, leading to collapse of the Georgian defence. In 2011, Iran spoofed GPS signals to capture a US RQ-170 drone.

Liberation Army (PLA) will aim to detect, deny, deceive, degrade, disrupt or destroy the enemy's military networks by kinetic attacks or electronic/cyber-attacks. This is consistent with its doctrine of "Informationised and Intelligentised Warfare", and would include measures as under:-

- **Anti-Access/Area Denial (A2/AD).** China will deny or degrade enemy's use of his networks.
- **Ground/Air/Space Based Jammers.** PLA will use ground, air and space based jammers to jam degrade or spoof satellite signals which will affect navigation, targeting, communication and ISR capabilities.
- **Communication Jamming.** China also plans to jam military or commercial satellite communication. It will disrupt data transfer to and from aircraft and isolate them.
- **Electronic Intelligence Satellites.** China has established Yaogan constellation of 30 satellites for reconnaissance in low earth orbit. These satellites collect optical images, SAR and SIGINT for real time tracking and attacking enemy's communication and radar systems.
- **Cyber Attacks.** China plans to hack into enemy's satellite control systems to intercept and alter data transmissions and insert malware to disable or hijack space-based assets. Such cyber attacks can disrupt the enemy's operation without fear of kinetic retaliation.
- **Anti-Satellite Weapons (ASAT).** China has also developed ASAT to disrupt communication or data links. It has SC-19, a derivative of the DF-21 ballistic missile, capable of striking satellites in low earth orbit. China also has co-orbital satellites which on command can either collide with a 'target' satellite or grab it by a robotic arm. China is also testing hypersonic weapons in ASAT roles. Apart from these China is also developing Directed Energy Weapons to dazzle or blind satellites.

Meeting the Chinese Threat

The Chinese will try to target the IACCS network prior to start of an actual offensive. The IAF fighters require network inputs for situational awareness, targeting updates and precision strikes. The network denial and jamming of Active Electronically Scanned Array (AESA) radars will force these aircraft to operate blind, deaf and in isolation, making them vulnerable even before the kinetic action starts. Moreover, these attacks will also slow down the OODA loop, thereby impacting decision making and allowing the enemy to seize the initiative and dictate the pace of the conflict.

India is aware of the threats posed by a technologically capable adversary and has implemented a multi-pronged strategy to safeguard its military networks and data-links. The Indian strategy is based on developing indigenous technical capabilities, dedicated and secure infrastructure and enhancing cyber warfare capabilities, as outlined hereafter.

- The Indian tri-service cyber and space agencies work in close coordination with the civil Government counter parts to ensure a whole of nation approach to counter threats in these domains and work towards developing offensive cyber capabilities to disrupt hostile command and control networks.
- An exclusive, tri-service, fully indigenous, ultra-modern, secure, **'Defence Communication Network'** has been created. The network uses optical fibre cables, satellite links and microwave radio for connectivity and redundancy. Moreover, the IACCS itself is being expanded with redundant communication paths, hardened data centres and indigenous encryption algorithms.
- India is integrating the Air Defence

network of the Army, Navy and Air Force (Akashteer, Trigun and IACCS) respectively, to create a unified, effective Air Defence grid. The grid will use Artificial Intelligence (AI) to autonomously track and prioritise threats in real time.

- India is also developing its own SDR with indigenous cryptographic modules, reducing dependence on foreign hardware and software.
- ISRO launched GSAT series satellites have dedicated encrypted military channels. India is also planning to launch low earth orbit micro satellites for communication and data to ensure redundancy in case of ASAT attacks.

The Next Step

The Indian Armed Forces aim to change from the service and platform centric approach to a cohesive, network-centric force, capable of multi-domain dominance. India is developing cognitive EW capabilities. Bharat Electronics Ltd, DRDO and other Indian defence companies are integrating AI and Machine Learning in next generation EW modules. The goal is to create systems that can autonomously detect, identify and adapt to neutralise threats in the contested electromagnetic environment. The development work on **'Himshakti'** project for the Army, **'Shakti'** project for the Navy and **'Swayam Raksha Kavach'** for Tejas Mk-1 of IAF are in an advanced stage.

DRDO has established a Quantum Technology Research Centre (QTRC). QTRC along with Raman Research Institute and the Indian Institutes of Technology (IITs) has been working on developing a radar which can counter

quantum jamming and stealth. These radars use entangled photon to distinguish between original signal and jamming. The radar generates pairs of entangled photons, sending one towards the target and keeping the other locally. By comparing the returning photon with its entangled twin, the system can detect weak signals even in a jamming environment. Moreover, any interference with the signal photon breaks its entanglement with its reference twin, thereby, instantly warning operators about attempted interception or spoofing of signal. The radar is presently in the field trial stage.

DRDO is working towards securing networks with indigenous solutions. It is embedding advanced encryption, quantum key distribution (QKD) and modular cyber security protocols in missile guidance, drones, and communication equipment at the hardware level itself. The systems will have layered security and follow **"zero-trust"** principle. There will be network segmentation, role-based access control and end-to-end encryption to minimise lateral movement in case of a breach. It will create secure, future-proof communication systems, resistant to remote manipulation and quantum computing threats.

'Bharat 6G Vision' is aimed at design, development and deployment of 6G technology by 2030. The defence forces are actively collaborating with the Ministry of Electronics and Information Technology for developing military-grade 6G applications. 6G technology will provide seamless, jam resistant low latency connectivity with manned and unmanned systems. 6G with quantum technology will ensure resilience and

integrity of communication networks. It is also crucial for controlling hypersonic weapons.

DRDO is also developing an indigenous, unified defence cloud to ensure data sovereignty and enhance multi-domain operations. The cloud platform will also support AI applications for Command, Control, Communications, Computers, Intelligence, Surveillance and Reconnaissance (C4ISR) and predictive analytics. The DRDO is developing indigenous laser and optical technologies for defence applications, like Directed Energy Weapons, and high-speed secure communication with aerial and space platforms.

Leapfrog Over 5G

Considering dependence of 4-5th generation fighters on vulnerable networks, the major powers are developing 6th Gen fighter aircraft which will be able to operate in degraded environment with minimal external inputs. These aircraft will be capable of integrating loyal wingmen drones, distributed sensors and onboard AI to generate their own resilient 'combat cloud'. They will have AI co-pilot with embedded quantum sensors and neuro-morphic computing for on-board decision loops.

These 6th Gen fighters will be designed to use passive IR/EO sensors for detection, AI for target prioritisation and laser data links which will be immune to RF jamming for short-range data transfer. In effect, these aircraft themselves will be mobile, autonomous hub of information and connectivity allowing them to share data, coordinate missions, and maintain situational awareness despite hostile attempts to disrupt external networks. NGAD (USA), GCAP (UK-Japan-Italy) and FCAS (EU) are a few major 6th Generation Fighter programmes.

Presently, the IAF has 4-4.5 Generation fighter aircraft (Su-30, Rafale, LCA). AMCA (Advanced Medium Combat Aircraft), the under-development 5th Generation indigenous fighter aircraft, is likely to be inducted by 2035. All these fighters are dependent on networks for their efficiency. China has already developed 6G and quantum jamming techniques to disrupt networks which will make these fighters blind and deaf. Therefore, India should move beyond incremental upgrades of 4th and 5th generation

platforms, and leapfrog to design AMCA with 6th generation capabilities like autonomous operation (when cut off from networks), AI-enabled onboard processing, sensor fusion and preloaded mission intelligence.

To Conclude

Supremacy in air might have decided the outcome of wars in the 20th century, but supremacy in networks will define the winner of future wars. The victory in every domain, air, land, sea, space and cyber, will be of the side which can protect its networks while denying the adversary the use of his networks. The ability to connect sensor, decision maker and shooter securely and faster than the adversary will ensure a shorter OODA loop, thereby dominating the decision cycle and winning the battle.

A peculiar quality of this **War of Nerves** is its continuance in peacetime also. It is being fought in laboratories and cyberspace for creation of new technologies, in the field for creating upgraded infrastructure and in training for adoption of new tactics. India must strive to not only become 'Atmanirbhar' in manufacturing fighters and missiles but also in the nerves (networks) which will control them. Creation of AFNET, IACCS and SDR with indigenous encryption was remarkable, but now new threats are emerging with the Chinese using 6G and quantum technology in pursuit of A2AD. The IAF must upgrade its networks to ensure safe and uninterrupted data transfer or face the threat of delayed decisions, fighters flying blind and PGMs missing the targets. As far as the fighter platforms are concerned, the **war for networks** makes it imperative for IAF to leapfrog 5G technology and arm AMCA with 6G technology. Future war may not be decided by the bigger and better bombs but by faster and uninterrupted 'bits and bytes'.



Air Marshal Amit Tiwari, PVSM, AVSM, VM (Retd) was commissioned in the IAF as a fighter pilot in June 1982. A qualified flying instructor, he has over 3500 hours of experience on various fighter aircraft. An alumnus of National Defence Academy, Pune, he is also a graduate of Defence Services Staff College, Wellington, College of Defence Management, Secunderabad and National Defence College, New Delhi. Besides commanding a forward airbase, he has been the team leader of Surya Kiran Aerobatic Squadron. He has served as the Air Advisor at Indian Embassy in Afghanistan from 2007 to 2009. As an Air Marshal, he has had tenures as Commandant, Air Force Academy, Dandigal and Air Officer in charge of Personnel at Air Headquarters, New Delhi. His last appointment before retirement was Air Officer Commanding-in-Chief Central Air Command.



Air Marshal Amit Tiwari



India's first under-water- launched Missile K 15 (Sagarika) was successfully flight tested from Bay of Bengal off the coast of Visakhapatnam on 27 January 2013 (photo PIB India)

DEVELOPMENT OF INDIA'S SEA-BASED NUCLEAR DETERRENCE

As most readers would know, the world entered the oft-called nuclear age in August 1945, when the United States dropped two atomic bombs on the Japanese cities of Hiroshima and Nagasaki. Never before in human history had a single weapon dropped from one bomber caused so much death and destruction.

Bombing raids on European cities and fire-bombing strikes on cities in Japan had required hundreds of bombers and thousands of bombs. Right from these earliest of bombs, scientists and engineers and Armed

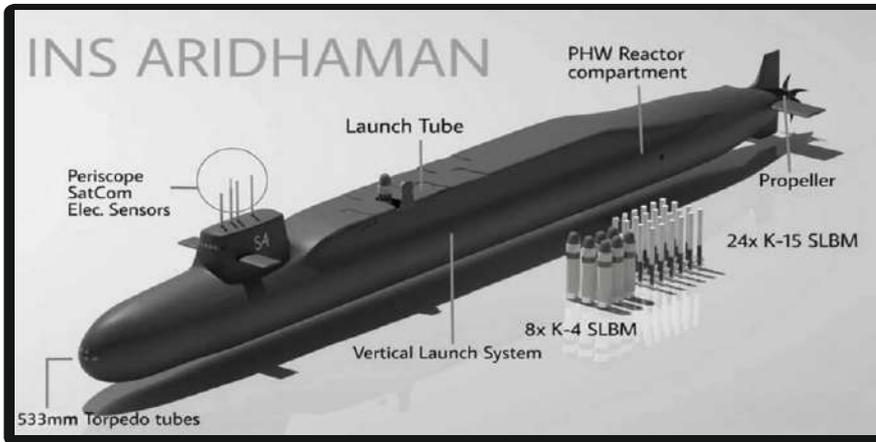
Forces personnel began using terms like **"TNT equivalent"**. For example, the two bombs used in August 1945 went by their innocuous code names, **Little Boy** and **Fat Man**, and were the equivalent of between 15 to 20 Kilo Tons (KT) of TNT equivalent.

This destructive capacity went up dramatically as technologies improved, and nuclear devices have become the ultimate weapons of deterrence.

From Kilotons to Mega Tons

We have seen how data devices have had their capacities multiplied many fold in just a few years. For example, 16 GB flash drives or 500 GB hard disks seemed unbelievable to my generation who were very impressed with the capacity of 54 MB floppy discs and 128 MB flash drives a couple of decades ago. Today we are no longer impressed by Terabyte home storage devices!

Similarly, the destructive potential of nuclear weapons multiplied exponentially from the fission types of early atomic weapons to the fusion types of thermo-nuclear bombs. In 1952, the Americans tested their first Hydrogen bomb in the South Pacific. This had a yield of 10 Mega Tons (MT)! Later versions of nuclear warheads were also of greater yields; *"atomic"* bombs were tested up to 200 KT (and likely one test for 500 KT) and thermonuclear devices grew to around 100 MT.



India is to commission the third Arihant class nuclear ballistic missile submarine INS Aridhaman (Image credit armyrecognition.com)

Proliferation of Nuclear Weapons

It is important to note a few salient points:

- **First**, there was very rapid realisation that atomic (the word nuclear came into use a few years later) weapons had ushered in a new age that would impact war and warfare in very significant ways.
- **Second**, from the very early days there was recognition that many nations would see merit in developing their own nuclear weapons and that proliferation would be very difficult to prevent. In fact, a *Declaration on Atomic Bombs* on 15 November 1945 by the US President and the Prime Ministers of Canada and Britain - just three months after the use of these bombs by the US - presciently said that, *"We recognize that the application of recent scientific discoveries to the methods and practice of war has placed at the disposal of mankind means of destruction hitherto unknown, against which there can be no adequate military defence, and in the employment of which no single nation can in fact have a monopoly."*
- **Third**, the USSR, China and even the UK, to name just three, realized early on that they too would need to develop their own nuclear weapons. A new form of deterrence - nuclear deterrence - was now very much a strategic consideration. In India as well, fine

minds like Dr Homi Bhabha were conscious of both the need for India to consider nuclear weapons for her own defence as well as the uses of atomic energy for peaceful purposes from the early 1950s.

- **Fourth**, from the early 1950s scientists, engineers and Armed Forces in a few countries, primarily in the US and USSR were working purposefully to expand the means of delivering constantly more powerful nuclear warheads through a variety of delivery systems.

The Relatively Fast Road to "Nuclear Triads"

Large bomber aircraft were the first and only means of nuclear attacks on an enemy's cities in the first few years into the 1950s. The research done by German scientists and engineers on Hitler's "V" series of rockets which bombed Southern parts of England from European launch points was now available to the Soviets as well as Americans, who began the development of missiles with ballistic trajectories. Early versions of these missiles were land-based and usually liquid fuelled. These took time to be readied and the fuels were not very easy to handle due to volatility. Soon, solid-fuel missiles began to be engineered which enabled them to be stored for longer and could be made ready for launch in a few minutes. So, with bombers and missiles, the major nuclear powers - now in a Cold War - had a nuclear diad of two delivery methods. The stage was set for a "triad".

Nuclear Deterrence from the Sea

The Americans and the Russians were close on each other's heels to experiment with ballistic missiles capable of carrying nuclear warheads first, on conventional submarines as a proof of concept and then on nuclear powered submarines. By the late 1950s, the Americans had put to sea the first of the Polaris type Inter Continental Ballistic Missile (ICBM) in the submarine launch version of the ballistic missile (SLBM) specially designed for underwater launch. Thus, the USS *George Washington* carried a big load of 16 Polaris (A-1) SLBMs and each of its warheads was a 600 KT equivalent, i.e. about 30 times as powerful as the bombs used against Japan. The US Navy was fielding a Ship Submersible Ballistic Nuclear (SSBN) force of about 41 submarines by the 1970s. The Soviets too designed and built many classes of submarines with ever longer inter-continental range SLBMs. The

British and French also developed their own sea-based nuclear deterrent (SBND) as did China (in the 1980s).

India Thinks of a Triad

Not only did the Indian political and scientific leaders start recognizing the need for India to have its own nuclear deterrent precisely to reduce the likelihood of nuclear attacks on us, they had early on envisaged having a framework with a triad. Developing on pioneering research and infrastructural work led by Dr Homi Bhabha, until his death in an Air India plane crash in Switzerland in 1966, early thinking for India to build its own SSBNs as part of a nuclear triad began in the late 1960s. Visionary naval leaders were quick to realise the need for it and that the programme would have to be indigenous. The Indian Navy was keen to become a builder's Navy, even before words like *atmanirbharta* became the buzzwords for defence indigenization. The problems were many. There were issues of lack of money, of technology, and trained manpower. Moreover, there were international pressures.

Nuclear Deterrence, But on the Quiet!

We need to understand the nuclear world in terms of the "haves and have-nots" in the 1960s to the 1990s. In nuclear weapons matters, the "haves" understandably never wanted the "have nots" to have nuclear weapons. The five haves were the US, USSR, UK, France and China listed here in the order that they first tested their own nuclear weapons. They were all also permanent members of the UN Security Council (known as the P-5). By the mid - 1960s they had tested nuclear weapons more than 2000 times, in every dimension - land, sea and air. The US topped the tally with 1030 tests; USSR with 715; France 210; UK and China 45 each. In 1968, with

some concerns of the dangers of proliferation as well as adverse impact of such nuclear testing, and undergirded by the "have / have not" drivers, the nuclear Non-Proliferation Treaty (NPT) came into force in 1970 and the Comprehensive Test Ban Treaty in 1996. For very valid reasons, India has not signed either Treaty but has always supported a complete ban of nuclear weapons and testing. Of course, India has not helped any other country by sharing nuclear weapons technology or fissile materials.

All this imposed constraints on India. While the world may have expected and often suspected India developing its own nuclear arsenal, our leaders had to ensure that all the work was done secretly. The entire nuclear weapons development programme was therefore carried out covertly with very few people in the know so that severe sanctions by other countries could be avoided. India tested a small nuclear device at Pokhran Testing Range in what was officially called a Peaceful Nuclear

Explosion (PNE) on 18 May 1974 (now sometimes referred to as Pokhran I). It is wrongly believed that this was a unique euphemism invented by India.

This was a recognized term for testing nuclear devices for peaceful purposes of mining or large scale excavations. USA and the Soviet Union had carried out several tests that claimed to be for such devices. The 1976 Treaty between the USA and USSR on Underground Nuclear Explosions for Peaceful Purposes (**PNE Treaty**) limited peaceful nuclear explosions to 150 kilotons, required on-site verification, and complemented the 1974 Threshold Test Ban Treaty.

The Advanced Technology Vessel (ATV) Programme

While the desire for India to have her own SSBNs was in the leaders' minds from the 1960s, it was around the mid-1980s that concrete steps on how to build them were taken. Literature for this period suggests that there were areas of nuclear propulsion technology



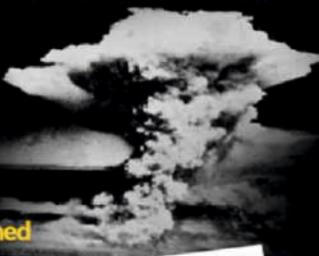
(Photo credit www.iadnews.in)

Pokhran-I was carried out on May 18, 1974

INDIA'S FIRST NUCLEAR WEAPON EXPLOSION

Was detonated on the army base **Rajasthan Pokhran Test Range** by the Indian Army

Was the **first confirmed** nuclear test by a nation outside the five permanent members of the UN Security Council





Dr PK Iyengar created & designed the bomb while **Dr Raja Ramanna** was the project head

The explosive yield was estimated to be around **8kt**. It weighed **1,400 kg**



This would increase the possibilities of increased pressure on India to stop such development. After all, China was a nuclear weapons state since 1964 and Pakistan was developing its own weapons with significant help from Beijing. (*Dr Bhabha had flagged the importance of nuclear deterrence at the Pugwash Conference in May 1964 and the threat that China could pose to India*). To learn more about nuclear submarine operations, India negotiated with the Soviet Union for lease of a nuclear attack submarine. The **INS Chakra** reached India in 1988 on a three - year lease. Such a lease was unprecedented since not even the US had done anything like this for its treaty allies.

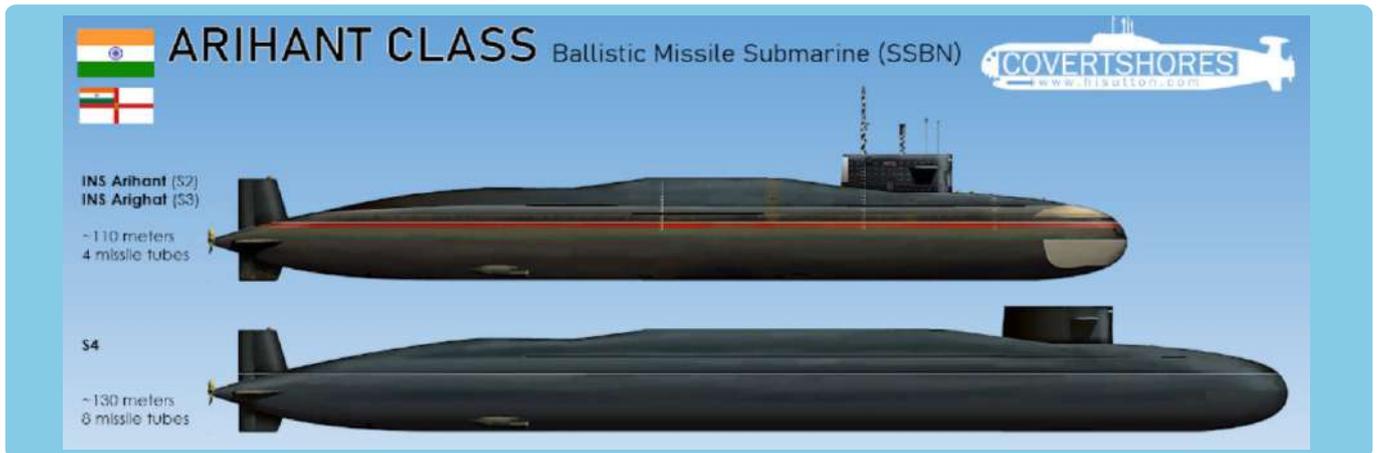
Pokhran II and the Lifting of the Lid

Ten years later India carried out three nuclear weapons tests in May 1998 at Pokhran. This was announced by Shri Atal Bihari Vajpayee, the then Prime Minister and as such, the years of quiet development were now over. This was followed by the release of the *Draft Report of the National Security Advisory Board on Indian Nuclear Doctrine* on August 17, 1999. This short and crisp report and the opening remarks of the then National Security Adviser, Shri Brajesh Mishra is worth reading for the clarity, brevity and in hindsight, the enduring utility of this doctrine over nearly three decades. This doctrine clearly flags that the forces required for credible minimum deterrence “*Will be based on a triad of aircraft, mobile land-based missiles and sea-based assets...*”

The SSBN programme perhaps was the biggest defence construction challenge that India took up and succeeded admirably. Decades back, all concerned showed resolve that we had to essentially go it alone. The programme was also a very early example of what was variously labelled “**Strategic Partnership**”; “**Indian Designed and Manufactured,**” etc., decades before new policies created these terms. This reiterates that it was less policy documents than resolve, grit and a “*fire in the belly*” approach, while taking a lot of trouble to maintain information security. The Indian Navy’s special agencies, trials teams, training initiatives, deep integration with DRDO and with private companies (some large partners like Larsen & Toubro and several smaller ones including start-ups and Micro Small and Medium Enterprises) were involved. It has been a classic coming together of “*people, ideas, things.*” This is not to say that everything might have been perfect or that timelines could have been shorter. Yet, we have much reason to be proud of what has been achieved.

for these “*boats*” that began from scratch. In this field, the Department of Atomic Energy (DAE) and the Bhabha Atomic Research Centre (BARC) worked on the engineering side of reactor development. Meanwhile, the Indian Navy, under visionary leaders like Vice Admiral M K Roy worked closely with DAE senior leadership to have a few officers undergo nuclear physics and engineering education at BARC to form the early nucleus of expertise in safe operation of nuclear propulsion plants. (*Readers may recall an article on Admiral Mibir Roy by Commodore Srikant Kesnur in the April 2023 issue of this magazine*).

A major step was to quietly set up the Advanced Technology Vessel Programme (ATVP) with its Headquarters in Delhi to start creating infrastructure at places like Visakhapatnam and elsewhere. Elaborate information security measures were put in place. It was expected that foreign countries who were “*interested*” in watching India for potential nuclear weapons development would guess that this was likely for building nuclear submarines. There may be an impression that this neutrally worded project (ATVP) might be for nuclear attack submarines namely Submersible Ship Nuclear (SSN). Even giving the impression that this could be an SSBN project would mean admission of a nuclear-weapons programme.



Arihant Class SSBN graphic from www.bisutton.com

SLBMs as Peacekeepers

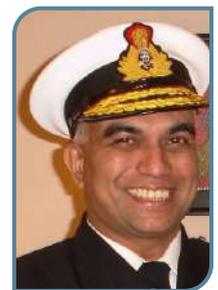
In parallel, the DRDO and industry in the public and private sectors were working discreetly in other places to design and manufacture the SLBMs that these ballistic missile submarines would carry to add to the effectiveness of nuclear deterrence for India. These programmes were led by eminent scientists like Dr Abdul Kalam, later the President of India and all those involved in designing warheads, propulsion, guidance, command and control systems that would go into the architecture of SBND. This too was a herculean task that India mastered successfully as well as silently.

Nuclear deterrence is certainly difficult and expensive, but as is said, *“If you think deterrence is expensive, try war!”*

In a subsequent article, we will examine how SSBNs have become the backbone of nuclear deterrence for countries like the US, Russia, France or Britain and will be for India. This is something that our forebears visualized from the early years after our independence, **and**, brought into reality in a few decades: at great expense, with great effort and towards enduring nuclear deterrence stability in a world where stability is under strain much of the time.



Rear Admiral Sudarshan Y Shrikhande, AVSM (Retd) graduated from the National Defence Academy, Pune in 1979. His qualifications include Masters in Weapon and Sonar Engineering from the Soviet Naval War College (1985-88); M.Sc Defence Services Staff College, Wellington (1995); M.Phil from the Indian Naval War College; highest distinction from the US Naval War College (2003) and a PhD from Mumbai University (June 2025) for his thesis on sea-based nuclear deterrence. He has commanded three ships after a long tenure as the anti-submarine warfare officer of a destroyer and has also been the Executive Officer of INS Delhi. He has served as the Defence Attaché in Australia and the South Pacific. In flag rank, he was Director of Naval Intelligence, Chief of Staff Southern Naval Command, and in the nuclear forces command, Flag Officer Doctrines and Concepts. After retirement in 2016, he is a visiting professor at several institutions specializing in strategy, operational art, Peloponnesian War, Indo-Pacific geopolitics, leadership and ethics and Atmanirbharta / Self-Reliance in defence production. He has participated in Track 2 discussions with some countries and in various national / international conferences and workshops and written for national and international journals. He is a visiting professor at the Naval War College, Goa; Honorary Senior Fellow with ANCORS, Wollongong and a Distinguished Fellow at the Australia-India Institute, University of Melbourne.



Rear Admiral Sudarshan Y Shrikhande

SILICON SOVEREIGNTY: THE NEW ARCHITECTURE OF NATIONAL POWER

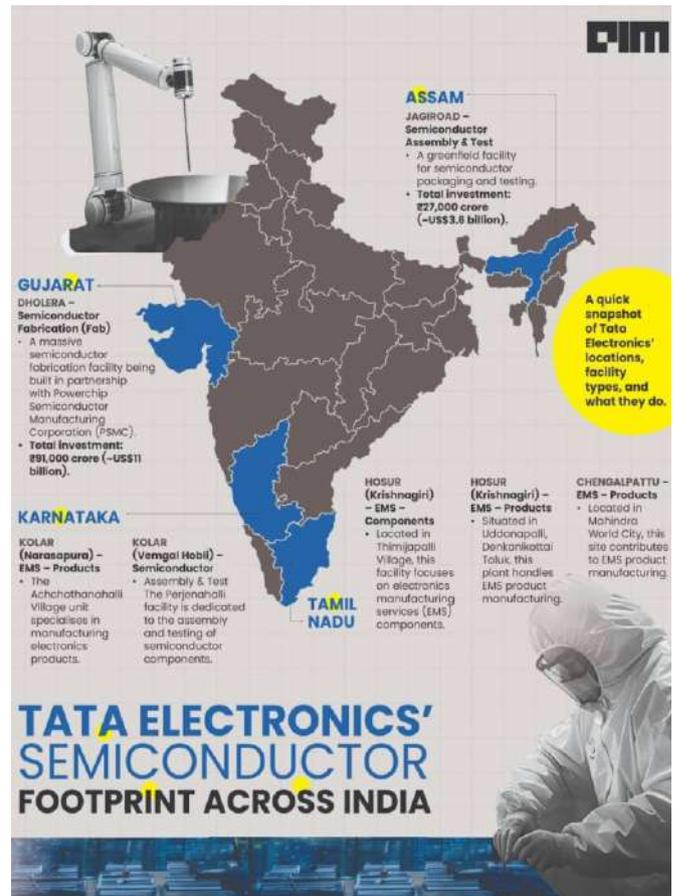
In the digital century, semiconductor capability has emerged as a decisive determinant of national power. Control over chip design, fabrication, packaging, and high-performance compute infrastructure now shapes economic resilience, Artificial Intelligence (AI) leadership, industrial competitiveness and strategic autonomy. Global supply chain disruptions during the COVID-19 pandemic, followed by export controls on advanced Graphics Processing Units (GPUs) and semiconductor manufacturing equipment, have revealed structural vulnerabilities in nations dependent on external technology ecosystems. This article highlights the concept of silicon sovereignty and evaluates India's strategic response and analyses geopolitical triggers, compute dominance, energy implications, stakeholder alignment, academic inclusivity and human capital transformation.

Power in the Age of Silicon

The foundations of national power have shifted profoundly in the twenty-first century. While oil, steel and industrial production defined strength in the twentieth century, semiconductor capability and computational infrastructure now determine technological momentum and economic resilience. Microchips power digital finance, telecommunications, electric mobility, space systems, healthcare diagnostics, and advanced defence platforms, embedding silicon into the structural core of modern states.

AI, semiconductors, GPUs, and global software platforms together form the strategic ecosystem of the digital age. AI development depends on advanced processors - particularly high-performance GPUs - while software frameworks and cloud systems operationalize this hardware at scale. Control over both chip production and AI infrastructure influences innovation speed, technological standards and economic leverage. Compute capacity has therefore evolved from a commercial asset into a strategic instrument of technological power.

As semiconductors become integral to national systems, disruptions in chip supply can stall industry, weaken communications, and constrain digital infrastructure. Silicon



From Hosur to Dholera, Tata Electronics is piecing India's chip puzzle (Image credit Analytics India magazine, 05 September 2025)

sovereignty - the ability to independently design, fabricate, secure, and scale semiconductor systems - has thus become a structural requirement for national continuity and growth.

Digital and Silicon Sovereignty

Digital sovereignty refers to a nation's authority over its data, digital infrastructure, access frameworks and regulatory safeguards. At its foundation lies silicon sovereignty - the capacity to design, fabricate, secure, and verify the semiconductor chips that power networks, data centres, AI systems, and critical platforms. Without trusted control over processors, GPUs and embedded architectures, digital sovereignty remains incomplete.

Silicon sovereignty covers the full semiconductor journey - from Electronic Design Automation (EDA) software and intellectual property development to wafer fabrication (fabs), Assembly, Testing, Marking, and Packaging (ATMP), advanced materials and critical mineral supply chains, manufacturing equipment, and high-performance compute infrastructure. Weakness in any one of these areas creates dependence and vulnerability. **To lead in AI and advanced technologies, a country must build strength across the entire chain,** supported by stable policy, strong infrastructure, and long-term

investment in capability. Silicon sovereignty is therefore not just an industrial goal; it is the foundation of real strategic autonomy.

Sovereignty over silicon extends beyond fabrication to include trusted design standards, secure microarchitecture, hardware root-of-trust frameworks, and independent verification mechanisms. Without the ability to audit, validate, and certify chip integrity, fabrication capability alone cannot guarantee strategic security.

The Silicon-AI Convergence: Strategic Sovereignty Framework

The convergence of software capability, AI, compute infrastructure, and semiconductor depth now defines the architecture of modern technological power. As illustrated in Figure 1 (Strategic Sovereignty Framework), strategic sovereignty emerges when software strength, AI capability, scalable compute infrastructure, and trusted semiconductor ecosystems are aligned within a unified national framework. Software platforms enable AI innovation; AI applications drive demand for high-performance compute; compute infrastructure depends on secure semiconductor supply chains; and silicon

capability forms the foundational layer that sustains the entire structure.

India is still emerging as a leading AI power, yet its globally recognised software talent base, combined with renewed momentum from the AI Impact Summit 2026, has strengthened efforts to integrate AI growth with domestic semiconductor development. Long-term strategic autonomy will depend on building this integrated ecosystem deliberately, ensuring that software excellence is supported by indigenous silicon capability and secure, scalable compute infrastructure.

GPU Warfare: The New Frontier of Strategic Denial and Digital Sovereignty

In the AI era, GPUs have become the core engines of advanced computing, enabling large-scale model training, real-time analytics, autonomous systems and high-performance simulations. Their significance lies not only in performance but in control over production, access and deployment. Nations dependent on external GPU supply chains or foreign cloud ecosystems operate within externally defined constraints, where export controls or supply disruptions can slow innovation and limit strategic capability. Control over chip architecture, firmware integrity and access governance directly shapes AI advancement, data security and operational autonomy.

In high-technology competition, decision advantage increasingly depends on the speed at which data can be processed and translated into action. GPU-driven competition reflects a structural shift where strategic advantage stems from large-scale analytics, sensor fusion and rapid adaptation rather than kinetic scale alone. Superior compute capacity compresses decision cycles and

accelerates technological progress, creating computational asymmetry that influences both economic and security outcomes.

Sovereignty Through Access Control and Trusted Infrastructure

True silicon sovereignty requires transition from technology consumption to lifecycle control encompassing design authority, fabrication access, firmware governance and secure deployment. In an era of weaponised interdependence, external actors may exercise technological leverage by restricting chip supply, firmware updates, or access to advanced AI hardware. Sovereign resilience therefore depends on trusted infrastructure, independent verification, and assured lifecycle control of critical compute assets.

To mitigate this risk, India's strategic roadmap must prioritise the establishment of sovereign GPU clouds and strategic compute reserves insulated from external sanctions. Control must extend to the micro-architecture level to ensure that defence and critical systems are built on a trusted silicon foundation, protected against hidden vulnerabilities or unauthorised access mechanisms. By securing the entire compute stack, from independent chip verification to localised high performance data infrastructure, India can enhance resilience against external technological pressure.

Strategic Triggers - Global Disruption and Geopolitical Leverage

The COVID-19 pandemic exposed the fragility of globally concentrated semiconductor manufacturing. Lockdowns in key fabrication hubs disrupted supply chains, leading to severe shortages that halted automotive



Figure 1. Strategic Sovereignty Framework- Author's conceptual framework

and electronics production worldwide. The crisis demonstrated how semiconductor concentration could paralyse economic systems.

Subsequently, export controls on advanced GPUs and lithography equipment revealed that chip access could be strategically restricted. Semiconductor capability became an instrument of geopolitical leverage. Nations dependent on external ecosystems faced potential technology throttling. This environment elevated silicon sovereignty from industrial and technology aspiration to a strategic imperative.

India's Strategic Response - India Semi-Conductor Mission (ISM 1.0 and ISM 2.0)

In response to growing technological vulnerabilities, India launched the India Semiconductor Mission (ISM 1.0) in 2021 with an outlay exceeding ₹76000 crores. The mission provides up to 50% fiscal support for semiconductor fabs, display fabs, and ATMP facilities, alongside a Design Linked Incentive (DLI) scheme to promote domestic chip design and innovation. By combining capital incentives, infrastructure support, supply-chain strengthening and talent development, ISM seeks to enhance technological self-reliance and integrate India into resilient global value chains.

With the transition to ISM 2.0 in February 2026, the focus shifted from ecosystem initiation to consolidation and deep-tech strengthening. The updated framework emphasises indigenous equipment manufacturing, materials development, advanced packaging and next-generation chip design. Supported by calibrated industry participation, including the Tata Electronics - PSMC fabrication partnership at Dholera and expanded GPU deployment under the India AI Mission, India has moved from policy intent to manufacturing execution. With ten major projects approved, the national objective is a \$100-110 billion semiconductor market by 2030 and 70-75% domestic self-sufficiency by 2029.

Stakeholder Alignment and Institutional Roles

Silicon sovereignty requires coordinated action across government, industry, academia and defence institutions. Government must ensure policy

continuity and fiscal incentives. Industry must deliver capital investment and manufacturing discipline. Academia must produce intellectual property and skilled engineers. Defence institutions must define trusted hardware standards and anchor demand for secure components. An aligned ecosystem transforms semiconductor ambition into a tangible national capability.

The expansion of AI infrastructure requires corresponding energy capacity. As highlighted in *"Empower, Be Chipper"* (The Times of India, 16 February 2026), advanced GPUs cost approximately \$30000 per unit, and India's deployment of over 38000 GPUs has generated significant data centre energy demand.

Leveraging India's IT and AI Strength

India's global leadership in Information Technology (IT) services and AI engineering offers a strategic advantage. Even as fabrication capacity matures, India can accelerate progress through a strong fabless ecosystem focused on IP development, system-on-chip (SoC) design and AI accelerators. Software capability without hardware control operates within externally defined silicon constraints.

AI expertise can optimise fabrication processes through predictive maintenance, yield enhancement analytics, and digital twin modelling. Software engineers can transition into semiconductor design automation and hardware security roles. Thus, India's software strength acts as a multiplier, offsetting fabrication lag and accelerating ecosystem maturity.

Academic Inclusivity - The National Talent Engine

In his address on 14 February 2026, Shri Ashwini Vaishnaw, the Hon'ble Minister for Electronics and Information Technology, emphasised that India's semiconductor journey has evolved from global scepticism in 2022 to international endorsement by 2025. A defining strength of this transformation is nationwide academic inclusion.

More than 315 universities are training over 70000 engineers in semiconductor design using advanced EDA tools. Institutions across diverse geographies integrate chip design, fabrication exposure, including Semi Conductors Ltd (SCL) Mohali, and validation processes into academic curricula. Under ISM 2.0, the Chips to Start-ups programme is being expanded to 500 universities. This distributed educational framework ensures that semiconductor capability is nationally embedded rather than regionally concentrated. Under Semicon 2.0, this academic inclusivity supports the ambition to build deep-tech semiconductor companies and positions chips as the hardware foundation of India's AI strategy. Inclusive education thus becomes the backbone of long-term silicon sovereignty.

Human Capital and Technical Embedding

Sustained semiconductor capability requires advanced technical

depth. M.Tech programmes in VLSI design, semiconductor fabrication, nano electronics, RF systems, power electronics, and secure micro-architecture must align with national mission objectives. Industry-academia collaboration, fabrication-linked internships, and mission-driven fellowships can accelerate capability development. Mid-career professionals from the IT sector can transition into hardware-intensive roles through structured skilling pathways. Infrastructure may be constructed within years; expertise demands sustained generational investment.

AI Impact Summit 2026

During the AI Impact Summit panel discussion on 17 February 2026, **“Stacked for Scale: Semiconductors and Foundational AI,”** the Additional Secretary and CEO of the India Semiconductor Mission articulated a clear national ambition for India to transition from a semiconductor consumer to a global architect of AI hardware. He outlined the evolution from ISM 1.0 focused on design incentives and initial fabrication and packaging approvals, to ISM 2.0, which expands into advanced-node R&D, equipment manufacturing, materials and ecosystem depth.

Emphasising India’s structural advantage of hosting nearly 20% of the world’s semiconductor design talent, three emerging semiconductor start-ups highlighted their focus during the panel-

- **Agrani** – Building GPUs from scratch to compete globally.
- **C2I Semiconductors** - developing power-management chips crucial for AI infrastructure.
- **Mind (Mindgrove Technologies)** – Specializing in **low-power SoCs** (System-on-Chips) designed for domestic device ecosystems, including Internet of Things (IoT) and Edge Computing.

Framing the journey as a 20 to 25 year strategic marathon, the keynote underscored compute sovereignty, scalable AI infrastructure, and the creation of globally competitive “fabulous” companies as central to India’s long-term semi-conductor and AI leadership vision.

Futuristic Imperatives

Emerging domains such as AI accelerators, neuromorphic processors, quantum-resistant cryptographic chips, and edge-compute architectures will define the next technological frontier. India must secure mineral supply chains, promote open hardware architectures such as Reduced Instruction Set Computer - V (RISC-V), and consider strategic compute reserves to buffer against global supply shocks. Compute ambition without energy planning risks structural bottlenecks. Semiconductor sovereignty must align with renewable energy growth, grid resilience and sustainable power generation. Energy infrastructure is inseparable from digital infrastructure.

Conclusion

Semiconductor and GPU control now shape speed of innovation, economic resilience and strategic autonomy.

Sovereign silicon capability safeguards continuity, autonomy and confidence in national development. India’s progression from ISM 1.0 to ISM 2.0 reflects strategic awakening and institutional resolve. In the digital century, national strength will increasingly be measured in fabrication resilience, compute autonomy and technological depth. **Silicon sovereignty is the structural foundation upon which sustainable national power must stand.**

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Col (Dr) Virendra Mishra

THE TEJAS TAKES OFF - LCA'S FIRST FLIGHT

I still remember that crisp Bengaluru morning of 4th January 2001—the day the Tejas first took to the skies. Twenty-five years have passed since that moment, yet it remains etched in my mind with the sharpness of an afterburner plume at night. India was about to cross a threshold many thought impossible—the first flight of our own **Light Combat Aircraft (LCA)**, a dream nurtured over decades, and realized through sheer perseverance, courage, and conviction. Looking back now, the memories swirl in a mix of people, machines, and moments—each as vital as the others in making that memorable day possible. I can still feel the familiar hum of anticipation, the rustle of flight suits, the tense roar of afterburners. And then—that sudden collective exhale from all of us watching as the LCA took wing and soared into history.

Beginnings: The Call of a Dream

My association with the LCA programme began in June 1992, right after graduating from the Test Pilot School in May that year. Back then, the programme was just starting to find its feet. In fact, when Squadron Leader Uday Shankar and I were posted to the fledgling National Flight Test Centre (NFTC) in 1993, Aeronautical Development Agency (ADA) then was little more than a big circular modern building, big dreams, and many dedicated souls determined to give India its own modern fighter aircraft. Those were heady, uncertain times. The nation's last indigenous fighter, the HF-24 Marut, had flown over three decades earlier, in June 1961. The Marut was a product of another era—modern for its time, but with conventional aerodynamics.



The test pilots, Wing Commanders Rajiv Kothiyal (left) and Raghu Nambiar (right) standing in front of the LCA

The LCA, by contrast, was conceived as a truly modern aircraft: an unstable, quadruplex digital fly-by-wire system, a compound delta wing configuration, and a composite airframe that would make it as light as it was agile. To be part of that transformation was a privilege of a lifetime, and in some ways, an enormous responsibility. We were quite literally writing the operating manual as we went along.

Designing a Cockpit from scratch in those early years, my work revolved around several crucial aspects-cockpit design, the Mission Preparation and Data Retrieval (MPDR) systems, and the control laws that would eventually govern how the pilot's hand and foot movements translated into flight. The control laws were the very soul of a fly-by-wire aircraft. If they were wrong or unstable, the aircraft could become unflyable in microseconds. To contribute to their evaluation and refinement, I participated in extensive in-flight simulations in the United States, testing the handling qualities of the LCA virtually before the actual hardware was ready. Each of these activities brought us closer to a real aircraft that would someday fly safely on its own. I was posted back to a Mirage 2000 Squadron in August 1995.

Between the Mirage and the Iron Bird

While most of my peers remained embedded in flying squadrons, I often found myself living a double life-shuttling between the comfortingly familiar Mirage 2000 squadron and the fascinatingly experimental world of NFTC, ADA. Even though I had formally returned to the Mirage by then, NFTC remained a second home in spirit. There, we spent countless hours working on the Real-Time Simulator (RTS) and the Iron Bird-the massive ground-based rig that replicated the aircraft's control laws, hydraulic systems and avionics architecture.

Return to the Fold

By 1999, as the dust of the Kargil conflict settled, I was deputed back to NFTC. The programme had matured-systems testing was in its final stages, and the LCA's first flight was just about a year and a half away. I was now a Wing Commander, sharing the flight line with Wing Commander Rajiv "Koty" Kothiyal, who had been nominated as the pilot for the first flight. I was designated as the backup pilot-a role that, ironically, carries as much pressure as actually flying the aircraft. There's a quiet psychology to being the backup: you train, you brief, you rehearse every step, knowing you may not touch the controls that day-but must be fully ready to do so with zero warning. That pressure would soon test us all.

The Rehearsals

As the date drew near, every single element was rehearsed-repeatedly, and with the precision of a military campaign. We even used a MiG-21 Bis

from Aircraft and Systems Testing Establishment (ASTE) as the stand-in LCA for some sessions, choreographing take-off sequences, chase formations, and emergency recoveries exactly as they would occur on the big day. Two Mirage 2000s were assigned as chase aircraft, and detailed standard operating procedures were written to govern every radio call, every visual position, and even the video angles for airborne filming. In flight testing, professionalism is safety. Improvisation is inevitable-as things rarely go exactly as per set plans-but preparation is essential for spotting the pitfalls before they strike.

Morning 4 January 2001

That winter morning in Bengaluru dawned bright, clear, and full of quiet electricity. I could sense that something extraordinary and magical was in the air. Before any flight, however, comes the simple ritual no pilot ever escapes: the medical clearance. That morning, Squadron Leader Anjali Alam from



LCA TD1 at Bengaluru Aero India show 10 February 2007 (Photo Credit Pradeep, en.wikipedia.org)



4th January 2001, Wing Commander Rajiv Kothiyal in the cockpit of the LCA TD1 on its first flight – as captured from the chase aircraft

Institute of Aviation Medicine, a sharp and meticulous medical officer, was in charge of that formality. Poor Koty, like many seasoned aviators, suffered from a mild case of “white coat syndrome”—his blood pressure invariably spiked in medical tests. We all joked about it that day, trying to lighten the tension, but somehow, the mercury stayed steady enough for him to be cleared. Inside the briefing room, the atmosphere was electric. The Chief of Air Staff himself—Air Chief Marshal AY Tipnis—was present, slated to fly in the second chase Mirage. Senior ADA officials, DRDO scientists, and Indian Air Force (IAF) officers filled the room. A detailed brief had already been completed the evening before. That morning, it was mainly about reaffirming the plan for the distinguished visitors. We went over abort sequences, chase aircraft formation changes, telemetry coordination, and post-landing taxi procedures.

The Ritual of Start-Up

At the tarmac, the LCA Technology Demonstrator 1 (TD-1) stood on the flight line, gleaming in the sunlight—compact, elegant, and very Indian. The start-up and pre-takeoff checks were excruciatingly methodical, almost ruthless in their precision. The LCA’s fly-by-wire system required a

series of diagnostic tests that consumed nearly ten minutes. Every subsystem was probed, every sensor cross-checked, every redundancy verified. There were protocols for how many times a test could be reattempted if a flag was thrown up. Many times before, we had seen green lights flicker to red—a single failed channel delaying entire days of effort. That morning, as we watched from the chase cockpit, Koty’s calm voice crackled over the radio: “**FBW (Fly By Wire) test... green.**” That single sentence released all our tension. We could all breathe again.

The Flight Line

I was strapped into the lead Mirage 2000, with Squadron Leader Suneet Krishna, a test pilot from ASTE, in the rear seat, carrying a video camera. In the

second Mirage sat Wing Commander T Banerjee, with Air Chief Marshal Tipnis in the rear seat. I also carried one of the newly introduced Sony digital still cameras—a novelty at the time. There was something poetic about the formation: two French-built delta-wing Mirages escorting India’s own delta-wing creation, a symbolic passing of the torch.

The Moment of Truth

I lined up and rolled first, followed ten seconds later by the second chase. We took off cleanly, circled into position, and established visual contact with Koty, now lined up on the runway. “**LCA cleared for takeoff,**” came the voice from the Test Director, and I quickly tightened my turn to position myself so I could join up with the LCA. I then cleared Koty to roll. My eyes stayed glued to the LCA as she began to roll—graceful, determined, all raw potential. Then, almost imperceptibly, the nose lifted, and she broke contact with the ground. India was airborne again—on her own wings, at last. For a moment, absolute silence enveloped the cockpit. Then came a rush of gratitude, relief, pride—and a kind of disbelief that all those years of drawings, arguments, and simulations had finally become a living, flying machine.

Telemetry Falters

Barely seconds into the flight, trouble crept in. The telemetry link with the ground—our all-seeing eye into the aircraft’s heart—had been lost. Streams of digital data, parameters, and vital performance readings simply stopped updating. In test flying, that’s a serious issue; telemetry is

the nervous system of flight safety. The Flight Test Director immediately declared the failure. The plan now was to keep things simple: basic handling checks, visual system validation, speed calibration, and immediate recovery for landing. Flying close, I could sense the tension of the moment. Koty, however, sounded completely in control. The LCA, for its part, looked rock steady.

A Close Escort

Because the LCA lacked an air data boom, we had no accurate pitot-static readings to derive precise airspeed. The control laws for the first flight were thus flown with fixed gains, adding another degree of vulnerability. I had taped small "look-up tables" to my canopy-for converting the Mirage's calibrated airspeed (in knots) to the LCA's (in kilometres per hour), and feet to metres for altitude. I called out numbers periodically to help Koty validate his HUD readings. "Speed looks good. Attitude stable," I called over the R/T. "Navigation system matches well." The LCA kept its landing gear down throughout, as per plan, to preclude unnecessary risks. Flying close, I conducted a detailed visual inspection: no leaks, no flutter, no anomalies. She was as solid as we had hoped.

Lining Up for History

Together we three steered toward the long final approach for Runway 09. I held formation slightly low and aft of the starboard side of the LCA, letting my camera capture her against the sunlit haze of the Bengaluru skyline—a moment frozen forever in my memory and a few treasured photographs. Banjo stayed further to my right. As Koty turned onto long final, the aircraft glinted briefly in the light, poised, composed, and utterly beautiful. The touchdown was smooth, with barely a puff

of smoke from the wheels. The tail chute was deployed as per plan. All in the air and on the ground must have been relieved as the LCA rolled out gently, taxied clear, and came to a halt exactly where the landing inspection team waited.

Reflections on a Quarter Century

Looking back now, twenty-five years later, I feel a deep, enduring pride in what that flight represented—not merely as an aviation milestone, but as a quiet triumph of Indian scientific will and perseverance. The LCA was the outcome of a vast, tightly knit effort, drawing together teams from multiple organisations in a complex, interlocking enterprise. It was a formidable managerial challenge, with well over a

thousand men and women working in concert to lift us into the sky and carry India's long-cherished dream aloft. The Light Combat Aircraft programme faced scepticism at every turn-over feasibility, capability, funding, engines, timelines, and even purpose. Many doubted whether a nation that had, for years, lacked an active indigenous fighter design base could realistically produce an aircraft of this sophistication. Yet, on that magical January day in 2001, with one unassuming take-off and a single, graceful 18 minute long circuit of the airfield, we demonstrated that India could once again imagine, design, and fly an advanced combat aircraft of its own.



Air Marshal Raghunath Nambiar, PVSM, AVSM, VM & Bar (Retd), is an Experimental Test Pilot commissioned into the LAF as a fighter pilot in June 1981. He retired as Commander-in-Chief, Western Air Command, after leading Eastern Air Command, serving as Deputy Chief of Air Staff, and as Senior Air Staff Officer across three Commands. He has extensive experience on Mirage 2000 with over 2300+ hours on type. He commanded No.1 Squadron, was Air Officer Commanding Air Force Station Jamnagar, and Commandant ASTE Bengaluru. In Kargil 1999, he flew 25 missions, attacking Tiger Hill with a precision Laser Guided Bomb-delivering five of LAF's eight such strikes and was awarded the Vayu Sena Medal (Gallantry). He was a Project Test Pilot for the LCA Tejas and was awarded a Bar to VM for flight testing it.



**Air Marshal
Raghunath Nambiar**

WATER MANAGEMENT: IS TAMIL NADU PREPARED FOR FUTURE CHALLENGES?

Wars have often been fought to secure resources, and water disputes have resulted in violent clashes between communities. Water shortages are evident and human society needs to ensure clean fresh water availability to survive. This extremely comprehensive data backed overview of the water crisis facing Tamil Nadu gives an idea of the gargantuan problem – a dire situation.

Water is fast becoming the defining resource challenge of our time. As climate change intensifies and rainfall turns erratic, Tamil Nadu faces a growing gap between water availability and demand. Once a land renowned for its sophisticated water systems under the Cholas, the state now confronts shrinking lakes, polluted rivers, depleted aquifers, and massive runoff lost to the sea. Without urgent, scientific water management and ecological restoration, food security, drinking water access, and economic stability will be at serious risk.

There is growing concern that a third World War could be fought over water. Moreover, the adverse effects of climate change have begun to manifest even earlier than anticipated. As a result, ensuring global food security has emerged as a major challenge.



The author standing near Mettur Dam in Salem District

The best solution to address this challenge is effective water management. If we are to successfully overcome the challenges we will face in the future, greater awareness about water management must be created in Tamil Nadu, which was once ruled by the Cholas who excelled in water management. Water management is not a complex issue and is, in fact, quite simple. Water management is storing one month monsoon rain and utilizing it for the next 11 months judiciously.

Rainfall in Tamil Nadu

With regard to Tamil Nadu and the other southern states, Tamil Nadu receives an average annual rainfall of 965.60 mm. Neighbouring states such as Andhra Pradesh receive about 966 mm annually, and Telangana receives around 950 mm. The rainfall in these three states is about 20% lower than the national average of 1200 mm.

In contrast, Karnataka receives about 1248 mm annually, which is close to the national average. Kerala receives as much as 3100 mm of rainfall per year-over 250% of the national average. The reason for Kerala's heavy rainfall is that the Western Ghats, which stretch across the state, block the Southwest Monsoon winds and cause intense rainfall. Since the Southwest Monsoon winds do not effectively cross the Western Ghats into Tamil Nadu, the state receives relatively little rainfall from the Southwest Monsoon.

One of Tamil Nadu's distinguishing features is that it receives rainfall from both the Northeast Monsoon and the Southwest Monsoon. Through the Northeast Monsoon, Tamil Nadu receives about 600–650 mm of rainfall, and through the Southwest Monsoon, about 300–350 mm. Unfortunately, this total rainfall is still insufficient to meet the state's irrigation needs.

Although both monsoons extend from June to December, until about 40 years ago, the number of rainy days during this period used to range from 45 to 50 days. When approximately 950 mm of rainfall was spread over such a long duration, storing the water was relatively easy, and the damage caused by rainfall was minimal. Due to climate change, the total rainfall is now concentrated within just 30 to 35 days. When higher volumes of rain fall within a shorter time span, storing the resulting water becomes a major challenge. Moreover, intense rainfall occurring within a short period leads to greater damage.

For instance, in Kayalpattinam in Tuticorin District, Tamil Nadu, 960 mm of rain fell within just 24 hours on December 18, 2023. Similarly, in Avalanche in the Nilgiris district, 911 mm of rain was recorded in 24 hours on August 9, 2019. Previously unknown cloudburst events have now become frequent, with rainfall that should normally be spread over an entire year pouring down in a single day. As a result, not only is water wasted, but the extent

of damage has also increased significantly.

Tamil Nadu's Water Requirement

For irrigation needs alone, Tamil Nadu requires 1260 TMC to 1500 TMC of water annually. One TMC is one thousand cubic feet. One Cubic Foot contains 28.31 litres. So, essentially one TMC is equal to 2831 crore litres of water.

There are 34 major rivers flowing through Tamil Nadu, including the Cauvery and Vaigai. Along the regions through which these rivers flow, there are 17 major deltas and 127 sub-deltas. From rainfall received in these river basins and from allocated river water sharing, Tamil Nadu receives an average of 865 TMC of water annually. This is not sufficient for the state's needs.

According to calculations by the Cauvery Tribunal, rainfall in the Cauvery catchment areas within Tamil Nadu alone contributes 227 TMC. Since this large quantity of water is received within a very short period, it also cannot be effectively stored. In such a situation, the



Veeranam Lake in Kattumannar Koil Taluk, Cuddalore District, Tamil Nadu



Pollution in Mettur Dam, Salem District, Tamil Nadu

best form of water management would be to store the excess water received during heavy monsoon periods and use it later. However, Tamil Nadu lacks adequate infrastructure for this.

Lack of Water Storage Infrastructure

Even to store the already insufficient water, Tamil Nadu does not have adequate infrastructure. There are only four dams in Tamil Nadu with a storage capacity of more than 10 TMC, as under:

- Mettur Stanley Dam – 93.47 TMC
- Bhavanisagar Dam – 32.80 TMC
- Parambikulam Dam – 13.45 TMC
- Periyar Dam – 10.57 TMC

Similarly, the following dams have a storage capacity between 5 and 10 TMC:

- Sathanur Dam – 7.32 TMC
- Vaigai Dam – 6.09 TMC
- Manimuthar Dam – 5.51 TMC
- Papanasam Dam – 5.50 TMC

Apart from these, the following six dams have capacities between 1 and 5 TMC:

- Pechiparai Dam – 4.35 TMC
- Amaravathi Dam – 4.04 TMC
- Aliyar Dam – 3.86 TMC
- Perunchani Dam – 2.89 TMC
- Thirumoorthy Dam – 1.74 TMC
- Krishnagiri KRP Dam – 1.66 TMC

The total storage capacity of the above dams is 198.29 TMC. Across India, there are more than 5700 significant dams, whereas in Tamil Nadu, there are only 17 dams with a capacity above 1 TMC.

Storage Capacity of Lakes

A few decades ago Tamil Nadu had 41127 lakes, with a total storage capacity of 347 TMC. The total storage capacity of these lakes was much higher than the combined storage capacity of all major dams in Tamil Nadu, including Mettur Dam, Vaigai Dam, Bhavanisagar Dam, Amaravathi Dam and Sathanur Dam.

Sadly, more than 15000 lakes have disappeared in Tamil Nadu. Of the approximately 27000 lakes currently in use, most are not properly maintained, and their storage capacities have significantly reduced. Because of lack of desilting and maintenance of lakes, ponds and other water bodies, their storage capacity has fallen to less than half. Experts estimate that the effective storage capacity of lakes and ponds may have reduced to less than 200 TMC, while the effective storage capacity of dams may have reduced to less than 150 TMC.

Rainfall Pattern and Storage Challenges

If the 865 TMC of water Tamil Nadu receives from various sources were distributed evenly over time, it could be stored in existing dams and lakes. However, rainfall in Tamil Nadu occurs mainly during monsoon seasons. Consequent to climate change, rainfall that should occur over a period of two months now often falls within just two days. Resultantly, most of the rainwater cannot be stored and flows away.

Decline in Cultivated Area

Due to lack of irrigation sources, Tamil Nadu’s cultivated area has decreased significantly. Studies confirm that over the past 45 years, the cultivated area has reduced by approximately 1.617 million hectares equivalent to 4 million acres (40 lakh acres). A study conducted by the State Land Use Research Board with financial support from the Tamil Nadu State Planning Commission found that the share of cultivated land in Tamil Nadu’s total geographical area has declined from 48% to 36%. This decline occurred between 1971 and 2016. Independent studies have also confirmed this trend.

Absence of Check Dams

There are less check dams to store surplus monsoon water, hence

large quantities of Cauvery water flow wastefully into the sea. It has been 90 years since Mettur Dam was built, and during this period 3010 TMC of water released from Mettur Dam has flowed into the sea unused. This figure includes only the water released from Mettur Dam and does not account for rainfall directly over the Cauvery basin.

The 800 km long Cauvery River flows through Tamil Nadu for 416 km. Hydrological studies suggest that 30 check dams can be constructed across the Cauvery that could store up to 15 TMC. So far only one check dam has been constructed at Mayanur in Karur district. A second check dam is under construction at Nanjai Pugalur, also in Karur district.

The Kollidam River, which branches near Tiruchirappalli, flows for about 150 km. In the early 2000s, hydrology experts recommended constructing one check dam every 10 km - building 10 check dams along 110 km of the Kollidam River that could store 10 TMC of water. By constructing check dams in both Cauvery and Kollidam rivers 25 TMC of water can be stored that could provide irrigation to more than 500000 acres (5 lakh acres) of land.

Impact of Sand Quarrying

While adequate check dams have not been constructed across the Cauvery and Kollidam rivers, large-scale sand quarries have come up. This has severely affected irrigation. Excessive sand mining lowers the riverbed level. When the riverbed drops, irrigation canals (which are at a relatively higher elevation) cannot receive water flow properly. Consequently, even if large volumes of water are released into rivers like the Cauvery, water cannot effectively flow into irrigation canals. Thus, sand quarrying is one of the major reasons for the decline in

irrigated agricultural areas.

The Palar River

The Palar River originating in the Nandi Hills of Karnataka, flows for 93 km in Karnataka, 33 km in Andhra Pradesh and 222 km in Tamil Nadu. Despite flowing only 33 km in Andhra Pradesh, 22 check dams have been constructed there across the Palar River. In contrast in Tamil Nadu, except for one check dam built during the British rule near Vellore, no other check dams were constructed until recent decades. Due to my continued advocacy, a few check dams have now been constructed in places like Vallipuram and Vayalur in Kanchipuram and Chengalpattu districts.

Once upon a time, the Palar River used to flow in flood like milk—hence the name “Palar” (Milk River). But due to upstream check dams in Andhra Pradesh blocking water, it has now almost become like a desert river. Additionally, effluents from leather tanneries and chromium waste in Tirupattur, Vellore and Ranipet districts

have turned the Palar into a polluted black river.

Pollution - Rivers Turning into Sewage Channels

Water management is not just about implementing new irrigation projects. Protecting existing irrigation sources and preventing pollution are equally important. Due to uncontrolled discharge of waste into rivers, many rivers once worshipped as sacred are now turning into sewage drains. According to a report released in October 2025 by the Central Pollution Control Board, 623 rivers were studied across India and 296 polluted river stretches were identified across 271 rivers in 32 states.

River stretches with Biochemical Oxygen Demand (BOD) above 3.0 mg/L are classified as polluted. Among these, stretches with BOD exceeding 30.1 mg/L are classified under Priority Class I (most polluted). There are 37 such Priority Class I locations across India, of which five are in Tamil Nadu.

Among them, three are in Salem



The author standing on the bank of the polluted Thamiraparani River in Thirunelveli



Chemical foam in Kelavarappalli Dam, Hosur, Krishnagiri District, Tamil Nadu

district, namely Sarabanga River, Thirumanimutharu River and Vasishta River. In the Vasishta River, BOD levels are as high as 120 mg/L—about 4000 % above the permissible limit. Other highly polluted rivers in Tamil Nadu include the Cooum, Adyar, Cauvery, Thamirabarani, Bhavani and the Vaigai Rivers.

The Cauvery. The Cauvery River flows 384 km in Karnataka before entering Tamil Nadu. Due to domestic sewage discharge, it becomes polluted even before crossing into Tamil Nadu. From Mettur to Kumbakonam, sewage discharge continues at multiple points including chemical - industrial effluents and dyeing effluents.

Noyyal River. The Noyyal River originates in the Vellingiri Hills of the Western Ghats near Coimbatore. It flows clean and medicinal in nature until Alandurai. After passing through Coimbatore city, pollution begins. By the time it reaches Tiruppur and Karur districts before joining the Cauvery, effluents from textile dyeing units and industries turn it into one of the most polluted rivers in the world. Though the river remains clean up to Alandurai, it becomes disease-causing afterward. A river that should serve as a drinking water and irrigation source for six million people has now become a river farmers resent. It must be revived and restored.

South Pennar (Thenpennai). Originating in Karnataka, the South Pennar reaches Kelavarappalli Dam in Krishnagiri district carrying heavy pollution

loads. Foam mixed with toxic waste rises up to half a km high and spreads across a five km radius. This contaminated water serves as irrigation and drinking water for six districts up to Cuddalore. Though the National Green Tribunal has ordered action to prevent pollution, effective implementation is necessary.

Bhavani River. The Bhavani River originates in the Nilgiris, flows through Keralam (Mukkali, Attappadi), and reaches Pillur Dam. Pollution begins thereafter. On its way to Bhavanisagar Dam, garbage-including wedding waste and market waste—is dumped into the river. Therefore, drinking water supplied through 18 drinking water schemes from the Bhavani

has developed a foul odour. Thousands of dyeing units polluted this river, which was once worshipped as a sacred river.

Vaigai River. The Vaigai River originates in the Meghamalai and Varusanadu Hills, flows through five districts including Madurai, and ends near R.S. Mangalam Lake in Ramanathapuram district. Due to waste discharge, the river has turned into a sewage channel. The river also suffers because of insufficient water from Mullaperiyar Dam and encroachment of 150000 acres in Meghamalai catchment areas that were converted into tea estates. Earlier, annual floods were common; now even a flood once in 10 years is considered rare, because of thousands of acres of land converted into Tea Estates in the catchment area.

Thamirabarani River. The Thamirabarani River originates in the Pothigai Hills of Tirunelveli district and flows 125 km before meeting the Bay of Bengal at Punnakayal. Once compared to copper-infused purity, today it is polluted along many stretches. At Papanasam, about 100 tons of old clothes are dumped annually during rituals. Near Cheranmahadevi, 2.5 million litres of untreated industrial effluents are discharged daily. In Tirunelveli, sewage discharge has turned it into a polluted river. Like the Thames in London and the Singapore River, these rivers must be restored through structured plans.

Importance of the Western Ghats

Tamil Nadu's water management cannot be separated from the Western Ghats. The Ghats stretch covers 160000 sq km and provides 325–350 mm of rainfall annually to Tamil Nadu which contributes 40% of the moisture needed. Most major rivers of Tamil Nadu originate here. Studies by IIT Mumbai show that reduction in forest cover in the Western Ghats reduces daily rainfall in Tamil Nadu by one to 2.5 mm

and increases average temperature by 0.25°C. Therefore, protecting the Western Ghats is crucial.

Chennai's Drinking Water and Three Rivers

Chennai's daily drinking water requirement is 1200 million litres and the current supply stands at 985 million litres. The annual requirement is 15 TMC.

Chennai is naturally blessed with three rivers namely Cooum River, Adyar River and Kosasthalaiyar, which provided fresh water. Unfortunately all the three rivers are highly polluted. The huge Pallikaranai Marshland which once covered 12500 acres acted as a flood absorber and Ground Water aquifer. Now only 2500 acres remain due to encroachments. This is a major cause of both floods and droughts in Chennai.

Despite receiving 1276 mm annual rainfall, Chennai lacks adequate storage infrastructure. Its four reservoirs (Chembarambakkam, Cholavaram, Poondi, Red Hills) have a combined capacity of 11.05 TMC. If heavy rain falls for five continuous days, they fill up-and excess water flows wastefully into the sea.

Rainwater is allowed to flow into the sea, while seawater is desalinated and supplied as drinking water (350 million litres daily from three desalination plants). Desalination plants are generally used in Desert Countries having rainfall below 50 mm per year. This is a clear example of poor water management, spending crores of taxpayer's money annually.

Conclusion

Water management is extremely vital to ensure food security and protect people. Both mitigation and adaptation strategies for climate change must be implemented by governments and citizens alike, ensuring against climate change and global warming.

If corrective action is not taken, within 15–20 years, rainfall may decline, droughts may increase, flash floods may intensify and food shortages may become frequent. Citizens and civil

society must collectively pressurize governments to act decisively. Proper water management will ensure food security, drinking water security and protection from droughts and floods.



Dr. Anbumani Ramadoss completed his MBBS from Madras Medical College and then worked for a year and a half as a medical practitioner at Nallalam, a small village near Tindivanam. In 2003, Anbumani did a course on macro-economics from the London School of Economics.

He was a member of the Rajya Sabha, and was the Minister of Health and Family Welfare in the Central Government from 2004 to 2009 as a part of the UPA Government. As the Union Health Minister, Anbumani established the National Rural Health Mission (NRHM) in 2005 to provide primary health care to women and children living in the rural parts of India. His other achievements included introducing 108 Ambulance services throughout India, banning smoking in public places, bringing pictorial warnings in tobacco products, banning Gutka in the country, eradicating Polio in India, introducing the Food Safety Standards Act of India (FSSAI), and initiating the Traditional Knowledge Digital Library (TKDL). He was elected to the Lok Sabha, from Dharmapuri, Tamil Nadu in 2014. He is the President of the Pattali Makkal Katchi party, presently a part of the NDA (National Democratic Alliance). Anbumani also heads a NGO Pasumai Thaayagam, which was founded in 1995. The NGO focuses on Environmental Protection, Sustainable Development and Social Equity. It has planted millions of trees, desilted hundreds of lakes and built check dams to conserve water.



Dr. Anbumani Ramadoss

THE BATTLE OF COLACHEL 1741

The narratives of India's history between the 16th and 20th Centuries CE are replete with accounts of how European powers prevailed over Indian kingdoms abetted by superior weaponry, strategy and tactics on the battlefield. However, in this larger generalisation, there are instances when Indian strategic brilliance resulted in the defeat in battle of a European power and prevented it from not only expanding its influence, but its eventual withdrawal from India. Such a definitive victory was the defeat of the Dutch in the Battle of Colachel on 31 July 1741.

The Macro Picture in that Century

The Indian landscape of those times was fractured, with numerous kingdoms and principalities. Their mutual animosity was leveraged by the British, the French, the Portuguese and the Dutch to European advantage, leading to the deliberately spun myth that they came with superior intellect and warcraft, while simultaneously accentuating this shortfall amongst the indigenous population.

Anizham Thirunal Marthanda Varma, or simply Marthanda Varma founded the Kingdom of Travancore in 1729. In the early 18th Century, Kerala's Malabar Coast was divided among many small kingdoms. Marthanda Varma adopted an expansionist policy and conquered many neighbouring territories of smaller kingdoms, enabled by a Nair Army. This expansion threatened the spice trade of the Malabar Command of the Dutch who sourced spices from the smaller kingdoms of the region through monopoly contracts. In 1733-34, Dutch procurement from the Malabar stopped completely due to Marthanda Varma's expansionism and territorial conquests.

Until 1739, the Dutch attempted varying measures to redress the adverse effects on their interests caused by Travancore, especially Marthanda Varma's deliberate policy to exclude the Dutch from the spice trade. The Dutch Governor of Ceylon, Gustaaf Willem van Imhoff, personally met Marthanda Varma, urging him to concede to Dutch demands failing which van Imhoff threatened a Dutch invasion of Travancore. Marthanda Varma not only dismissed the threat,



A Victory Pillar stands at Colachel Beach today to commemorate the historic Battle of Colachel

but went on to reply that he was contemplating invading Europe some day!

Challenging the VOC in its Heyday

Marthanda Varma’s defiance of the Dutch is especially remarkable in light of the global predominance that the Dutch enjoyed in the 18th Century. The Dutch had taken on the mantle of a global hegemon a century earlier from the Portuguese and would concede this status to the British only by the early 19th Century. The Verenigde Oostindische Compagnie, the VOC or the Dutch East India Company was formed in 1602 as the first joint stock company with 1800 investors to corner greater profit from the spice trade by eliminating competition from other Europeans. The strategies employed were bribery, co-option and failing these, brute force. By the mid-17th Century, the VOC gained control over modern day Indonesia, establishing their base at Batavia, today’s Jakarta, and employed genocidal violence to establish and maintain their monopoly over commodities such as clove and nutmeg in the spice trade. At its peak, the worth of the VOC was greater than the combined worth of today’s Apple, Amazon and Microsoft. The VOC would eventually decline in 1798, after nearly 200 years.

As of 1739, the VOC was still a formidable force to reckon with. It was the unquestioned trading behemoth of the day. And Marthanda Varma invoked the ire of the Dutch when he threatened their profits and was dismissive of their threats. Van Imhoff wrote to his superiors in Batavia that the Dutch business in the region was in "complete ruin", and would have to be saved through "violent redress". Thus, began the Travancore-Dutch War of 1739.

The Travancore-Dutch War

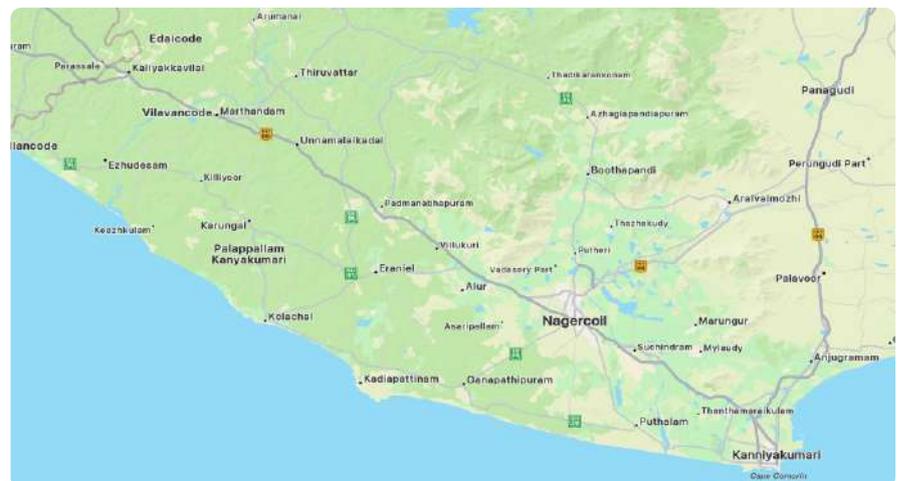
The Dutch command at Malabar received reinforcements from Ceylon in

late 1739. Assisted by aggrieved local kings who harboured grievances against Travancore, the Dutch launched multiple attacks on Travancore forces occupying territories of neighbouring kingdoms. Marthanda Varma’s forces faced many reverses from November 1739 to February 1740. A major constraint on Marthanda Varma was that he was being simultaneously attacked by Chanda Sahib, the Nawab of Arcot along his Southern frontiers.

The Dutch launched a second campaign against Travancore in November 1740. Marthanda Varma responded by capturing Dutch forts and outposts between his capital of Padmanabhapuram (in Kanyakumari District of Tamil Nadu) & Kochi (Cochin) and taking possession of the goods stored in Dutch factories. The Dutch reacted to this Travancore offensive by landing a force on the coast closest to Padmanabhapuram to directly threaten Travancore’s capital. This landing occurred at Colachel, where the Dutch established a small outpost,

garrisoned some troops there and then marched inland towards Padmanabhapuram. Travancore forces put up strong resistance and succeeded in stalling the Dutch offensives, forcing them to retreat to Colachel. Thus began the siege of Colachel by Travancore’s forces. The Dutch despatched a number of ships as reinforcement to Colachel, which laid anchor off the coast.

The Mukkuvar community, the fisher folk of Malabar, played a critical role in the ensuing Battle of Colachel. Faced with strong resistance on land, the Dutch attempted to enrol the Mukkuvars into collaborating against Marthanda Varma, by employing them to build fortifications, and act as guides for reinforcing Colachel from the Dutch outpost at Kanyakumari. The Mukkuvars, on their part, remained fiercely loyal to their King and compromised many Dutch endeavours. This led to the Dutch launching punitive naval bombardment of Mukkuvar fishing villages along the



Colachel is in the lower left half of the map along the coast. Padmanabhapuram is to its North East.



Eustachius De Lannoy of the Dutch East India Company surrenders to Maharaja Marthanda Varma of the Kingdom of Travancore after the Battle of Colachel, 1741 CE. (Depiction at Padmanabhapuram Palace) (credit commons.wikimedia.org)

Initially employed to train the bodyguards of the Maharaja, he was then entrusted to organize the Travancore army on European standards, introducing gunpowder and firearms, replacing melee weapons that were then being used in the kingdom. He increased the Regiments and improved defence fortifications significantly. De Lannoy was also a skilled military strategist. His military skills, combined with the statesmanship of Maharaja Marthanda Varma, proved very effective in subsequent military expeditions and annexations of the Northern kingdoms up to Kochi including Quilon, Kayamkulam, Pandalam, Edapalli, Ambalpuzha, Kottarakkara among others. Happy with the services of de Lannoy,

coast. The Mukkuvars also contributed by lining up their catamaran oars in upright positions with pots on top to masquerade as scarecrows to deceive the Dutch regarding Travancore troop numbers at night. These loyal and valiant actions of the Mukkuvars would play a decisive role in the battle to follow.

Slowly and surely, Marthanda Varma's forces tightened their vice-like grip over the beleaguered Dutch forces at the garrison of Colachel. On 29 July 1741, during an artillery bombardment, a Travancore cannonball landed on a barrel of gunpowder inside the Dutch camp. The resulting fire destroyed the rations of the besieged garrison. With their stocks depleted, the Dutch surrendered on 31 July to Travancore forces. Marthanda Varma himself received the surrender of the Dutch Captain Eustachius De Lannoy and his men.

The Dutch surrendered on the condition that they would be allowed to move to Kanyakumari with their weapons. However, Marthanda Varma refused to honour this condition and imprisoned 24 Europeans at the Udayagiri Fort. Later, he returned their weapons and asked them to join the Travancore Army. De Lannoy and some others agreed to work for Marthanda Varma.

De Lannoy, of Flemish origin and employed with the Dutch, entered the service of Marthanda Varma and began the modernisation of Travancore forces.

Marthanda Varma elevated him to the post of Valliya Kapithaan (the Great Captain) of the Travancore forces.

Being a Christian, de Lannoy was prohibited from entering the Royal Palace at Padmanabhapuram. The Udayagiri Fort was instead earmarked as his residence which was rechristened as Dillanai Kottai (de Lannoy's Fort). Eustachius de Lannoy would continue to serve Travancore and Marthanda Varma loyally for 36 years till his death in 1777. He was buried at the Udayagiri Fort where his cemetery continues to attract visitors up to this day.

Lessons from Colachel

The Battle of Colachel is a unique chapter in India's history as the only battle and campaign in which Indian forces succeeded in defeating a European power. Marthanda Varma achieved this feat at a time when the Dutch were at the apogee of their power and influence.

Marthanda Varma and his troops were brilliant in strategic clarity and tactical valour. His troops fought valiantly on the field while the sovereign wisely chose the right operational moments to launch them against the Dutch. Marthanda Varma sustained a protracted campaign despite being stretched on multiple fronts.

He attempted to resolve the impasse favourably through diplomatic outreach, failing which he remained prepared to fight and impose his will. Throughout the build-up to the campaign, he tried, successfully at times, to enlist the support of the French at Mahe and the British who had a trading post at Edava.

Marthanda Varma was a willing learner. He observed the superior military skills and tactics of the Dutch and was shrewd to enrol the services of Dutch soldiers such as de Lannoy to raise the professional

standards of his forces by introducing European tactics and weaponry. As a King, he gave generous support to modernisation efforts. These would serve the kingdom of Travancore well in the next few decades, when Tipu Sultan's forces attempted to invade Travancore in 1789, nearly half a century later. By then, de Lannoy had successfully helped Travancore create a string of forts called the Nedumkotta. The Nedumkotta was a 48 km long defensive fortification constructed between 1762 and 1775, stretching from Kodungallur on the sea coast to the Western Ghats. The defensive lines consisted of a ditch, sixteen feet wide and twenty feet deep, with a thick bamboo hedge, a slight parapet and rampart and bastions on rising grounds almost flanking each other from one side of the lines to the other. The construction of such a continuous line of fortifications is a unique feature in the annals of Indian military history and was a direct outcome of the Battle of Colachel fought twenty years earlier.

Support of the Mukkuvar community helped Travancore triumph over the superior Dutch Navy whose ships were sabotaged at harbour and prevented from interfering in the battle unfolding on land. These aspects have been validated based on Dutch historical records by academician Mark de Lannoy and were published in 1997 in the Leiden University, Netherlands.

The humiliation at Colachel inflicted a deep psychological scar on the Dutch. Over the next few years, the Dutch would abandon their trading ambitions in India. They were forced to sign the Treaty of Mavelikara in 1753 with Travancore, marking the end of Dutch influence in India forever. Thus, the Battle of Colachel achieved the rare distinction of an Indian kingdom defeating a European power at its peak.

The British, however, remained observant on the sidelines and would assert themselves much later. The Royal Travancore bodyguards who were trained by de Lannoy would join the Indian State Forces Scheme in 1935, to be designated as the 1st Travancore Nayar Infantry, Travancore State Forces. This Battalion was integrated into the Indian Army in 1951 and joined the Madras Regiment in 1954 when it was designated as 9th Battalion of the Madras Regiment. The Parade Ground at Pangode Garrison of the Indian Army at Thiruvananthapuram is called the Colachel Parade Ground.

End Note

The Battle of Colachel is a historic accomplishment by Indian forces over a European colonial power. It proves Indian statecraft and military acumen, something that has been denied in prevalent and established narratives. Acknowledging this historical truism would serve to inspire our future generations of the martial traditions of our nation and dispel incorrect perceptions regarding the relative lack of martial virtues among our forebears.

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Brigadier Sanjay Kannothe, VSM was commissioned into 8 Gorkha Rifles in 1997. An alumnus of Rashtriya Indian Military College, Dehradun and National Defence Academy, Pune, he has wide operational experience and has served as Instructor at Infantry School and Defence Services Staff College. After commanding his battalion, he has also done a tenure in MS Branch, Army Headquarters. He is presently attending the National Defence College Course in New Delhi.



**Brigadier
Sanjay Kannothe**

230 SIGNAL UNIT IN THE 1965 INDO PAK WAR

230 Signal Unit (SU) was in the forefront of the 1965 Indo-Pak War in the Western Sector. Equipped with a brand new P-30M Russian Radar, it looked deep inside Pakistan, provided Air Defence (AD) cover and gave early warning of enemy air activity. Several successful air to air engagements, including the first ever air to air kill of a Sabre by a Gnat, was executed under the control of 230 SU. Little wonder that the Pakistan Air Force (PAF) attempted to target the radar on 29 occasions as chronicled by Colonel Mandeep Singh, Commanding Officer (CO) of 45 AD Regiment, which was deployed to provide terminal AD to the radar. These are the reminiscences of Wing Commander KVGK Sastry, who was a young Fighter Controller posted to 230 SU during the 1965 Indo—Pak War.

230 SU was formed on 04 May 1965 at the time of Kutch Operations and equipped with the brand new P-30M 'S' Band Russian Radar. The maximum range of detection was more than 350 kms. For height finding, the radar used the V-Beam principle and had a height accuracy of 500 metres within 100 kms range and 1500 metres beyond 100 kms. The SU was located at the Northern most part of Amritsar city, in agricultural fields enclosed within an area of 100 metres x 100 metres. The radar was installed on an eight feet high ramp. There were no obstructions around the radar and the pickup was excellent. Being close to the international border, we could look deep into Pakistan and could monitor flying activity at medium altitudes even beyond Sargodha.

The CO of the newly raised unit was Wing Commander K Dandapani, a pilot, the Senior Technical Officer (STO) was Squadron Leader Lakhmir Singh, and I was one of the seven Fighter Controllers posted to the unit. The STO and some 15 technical personnel were trained in Russia on the radar. After induction, we learnt about the new radar and honed our skills.



P-30 Khrustal Radar (Photo globalsecurity.org)

We also monitored the flying activity across the border and noted that there was no noticeable or unusual trend in the flying. We kept round the clock vigil and kept feeding information about the Air Activity in the area of their interest to the forward bases of Adampur, Halwara and Pathankot.

Prior to raising of 230 SU at Amritsar, there was practically no radar cover in the Punjab and Jammu Sectors. There was a vintage ANTPS-1E Early Warning Radar at Ferozpur and another at Jammu. These were practically of no use to us. There was one refurbished American radar system comprising MPS 11 (for surveillance) and MPS 16 (for height finding) at 311 SU at Patiala which was set up in 1962/63. 16 SU at Ambala had another radar, which functioned as the Control Centre. These radars were in depth and were unable to provide adequate AD cover to the frontline air bases. So it was essential to locate a radar between the front line air bases and the International Border (IB). A brand new Russian Radar, which came as a part of the MiG 21 induction, was thus placed at Amritsar. The SU was set up in a hurry without creating any infrastructure.

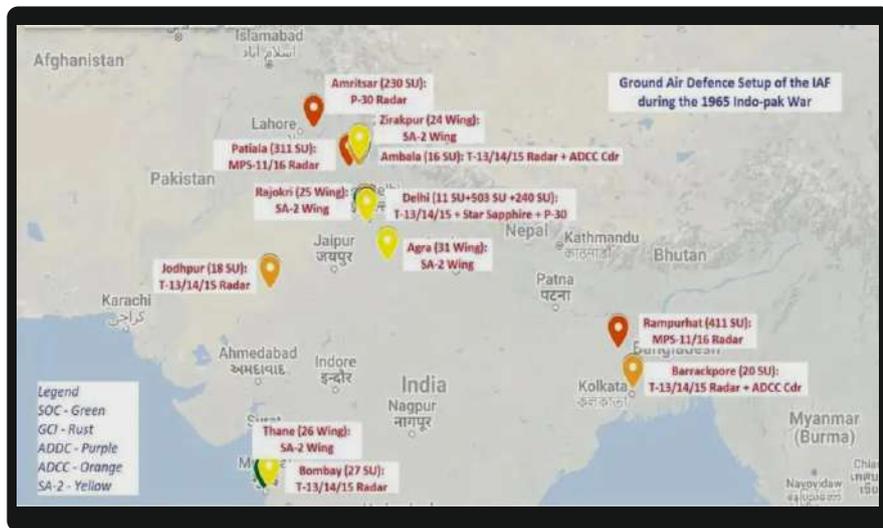


Image Credit iafhistory.in

The War Begins

On 1st September afternoon, we picked up intense air activity over the Chhamb sector. We had not been informed that Pathankot air base had launched sorties for providing air support to the Indian Army in Chhamb. It was only when some aircraft that were airborne for a mission were overdue, that Pathankot base started inquiring whether we had any pick up on them. We had no pick up on the aircraft in question. Sadly, it was later confirmed that four Vampires, airborne from Pathankot, had been shot down.

On 3rd September, around 9 a.m. or so, we detected a formation of Pakistani fighters West of Pasrur, at about 5000 metres altitude, heading North. We scrambled a mission of four Gnats from Pathankot and vectored them towards the enemy formation. I recall that AJS Sandhu and Trevor Keelor were pilots in the Gnat formation. The formation was under the control of 230 SU and was being constantly fed target information like heading, speed, height, location, etc., and guided into a position of advantage. The target formation was flying at a speed of approximately 400 Knots. Our fighters established visual contact North of Pasrur and engaged them. In the ensuing combat, Trevor Keelor claimed a kill on the Sabre, the first air to air kill by the Indian Air Force (IAF). Trevor Keelor was

awarded a Vir Chakra for his action. Additionally, the Fighter Controller, Flight Lieutenant KY Singh who was controlling the Gnats, was awarded a Vishisht Seva Medal. During the manoeuvring, one of the formation members got separated from the others, and could not re-join the formation. He decided to return to base and land, but mistakenly landed at Pasrur instead of Pathankot, despite repeated warning from the SU.

On 4th September, there was once again a repeat of what happened on 3rd September. The Target Formation of four aircraft, with similar parameters and same flight profile was tracked by our Unit. Pathankot was informed and four Gnats and two MiGs were scrambled. Our Gnat formation was so well positioned that they could have shot down all four aircraft of

the enemy formation, but unfortunately, their guns jammed. Only VS Pathania could actually fire at his target, a Sabre, and shot him down. It was most frustrating to see the targets lined up as sitting ducks, and you are unable to fire at them. We were dejected as we saw them get away.

The MiG formation leader, Wing Commander MSD Wollen fired his Air to Air Missile at the retreating Sabres, but did not get a hit. Perhaps because of the proximity of the target to the ground, the missile may have gone astray. Later that day, Pakistan Radio News incorrectly reported that one of their Sabres was shot down by a MiG.

On 6th September in the afternoon, we observed heightened air activity across the border. Four formations were airborne and joined up into a single formation of around 16 aircraft, heading towards Pathankot. The formation was still 15 minutes away from Pathankot when Base Operations Pathankot was informed of the impending threat. We constantly kept informing Pathankot of the impending threat. Besides the Controller, our CO also spoke to OC Flying, Pathankot. OC Flying was very sure that nothing would happen to the Base. His response was, "No @%&* would dare to come and attack us". They had to pay a very heavy price for their obstinacy. We lost 11 aircraft on the ground, unfortunately nicely lined up for the Pakistani strike. OC Flying was sacked and the Station Commander was reprimanded by the Chief of Air Staff. After the incident, all the bases in the Sector realised the importance of the early warning provided by the SU. From then on, till the end of operations, the inputs provided by the SU to the bases were well appreciated by the bases.

Because of the location and performance of the Russian Radar, 230 SU was one of the primary targets for the enemy. But it was a small and difficult target. For the AD of the SU, the AD Regiment had deployed 12 x L-60 and 6 x L-70 Guns around the SU. There were two to three raids daily during the war. The enemy succeeded in damaging the SU only once, when they came at a very low level and attacked the Radar Antenna with .5 inch Front Guns. The cables in the antenna got damaged. The Radar was repaired within 36 hours and put back into operation. After the first two days, we were quite used to the Air Raid sirens at dawn, midday and dusk. Our AD Regiment was very active and would aggressively engage any incoming raid. They shot down the aircraft which had put our radar out of action for 36 hours. We Controllers continued with our primary duties without worrying about the raids.

The bond between fighter pilots and controllers was amazing. Air Marshal Rajkumar, who was in Adampur in No. 1 Squadron during the 1965 War recalled that they were totally dependent on 230 SU for control and inputs, and the support they received was excellent. He also recalled the excellent camaraderie between the pilots and the controllers. In fact, when I was posted out from 230 SU, pilots of the squadrons at Adampur came to Amritsar to attend my farewell.

It is a matter of pride that 230 SU was in the gallery seat of the 1965 Indo-Pak war and participated actively. The radar stayed operational throughout except for the disruption of 36 hours, despite the best efforts of the PAF to target the unit. The morale of the unit remained high and the SU was involved in all the operational missions flown in our area of operations. In recognition of the role of 230 SU, Wing Commander K Dandapani, the CO and Squadron Leader Lakhmir Singh, the STO

were awarded the Ati Vishisht Seva Medal. Flight Lieutenant KY Singh was awarded the Vishisht Seva Medal.

Subsequent to the war, the need for strengthening our AD was realised and Air Defence Ground Environment System (ADGES) was conceived on the lines of NATO Air Defence Ground Environment (NADGE). The present Integrated Air Command and Control System (IACCS) followed as a later development. I am really fortunate to have been involved in the development of interception techniques between 1966 and 1969 at 230 SU. Thereafter too I continued to work for the development and integration of our AD Systems. It is heartening to see how well the AD systems worked during **Operation Sindoor**.



Wing Commander Kumbhapati Venu Gopala Krishna Sastry, VSM (retd) was commissioned in June 1963.

During the 1965 Indo-Pak War, he was a Fighter Controller in 230 SU, which played a critical role in the conflict. He later served in various operational Radar Signals Units, and attained the highest category (Cat Aye) rating for Fighter Controllers. For his AD background and professional excellence, he was specially selected and posted to the Programming and Simulation Centre, Bombay, on its inception in 1974, to work with the Tata Institute of Fundamental Research (TIFR). He made a significant contribution to the development of the operational software package for the Automatic Data Handling System (ADHS). The radar tracking software, the heart of the ADHS software, developed personally by Wing Commander Sastry, is comparable to such software available anywhere in the world. In recognition of this immense contribution and pioneering efforts, he was awarded the Vishisht Seva Medal on 26 January 1985. Though he took Premature Retirement in 1990, Wing Commander Sastry remained involved in the development of AD Command and Control Systems. He was involved in the integration of four generations of the Systems namely, the Semi-Automatic Data Handling System (SADHS), the Fully Automatic Data Handling System (FADHS) and finally the Integrated Air Command and Control System (IACCS). He was also involved in integrating MRSAM from 2014 to 2018.



**Wing Commander
Kumbhapati Venu Gopala
Krishna Sastry**



Kong Tang Lamu Tunnel

MY KAILASH- MANSAROVAR YATRA 2025

The **Kailash Mansarovar Pilgrimage** is a spiritual and life changing event in the lives of Hindus, Buddhists and Jains. The **parikrama** around the holy mountain is extremely tough, but remains a revered moment in one's lifetime. A fascinating first person account of the **Yatra**.

Kailash Mansarovar trek had been one item on my Bucket List for a long time. So when I came across an email thread in one of the *Fauji* groups in February 2025, offering an avenue which could make this dream come true, I just jumped in. The link in the email took me to a WhatsApp group led by Aajay Rao planning a *Yatra* in June 2025. Soon this group swelled to a membership of more than 300 members, many of whom were Non Resident Indians.

The group leader and admin Aajay had a no nonsense approach. He advised everyone to prepare themselves physically and mentally for this arduous venture.

- Walk everyday. Start with five kms and increase by two kms every week till you hit 20 kms.
- Be mentally strong, meditate and visualise yourself walking in thin Tibetan air.
- Invest in good trekking equipment. Specially shoes and down jackets.



Revered Mount Kailash in the background, an exhilarating presence felt by the author

As June approached and the serious ones deposited the *Yatra* expenses with Aajay, I was keen to do the Inner and Outer Kora. I was not worried about physical fitness. With a 40 year stint in the Indian Army and my passion for running and trekking, I was quite fit after nine years of retired life. At 65, I was the oldest member of the group. I did not tell anyone in the group about my *fauji* background. Sometimes people feel awkward talking and sharing space with a Brigadier of the Indian Army. I just wanted to be a regular member of the group.

I also explored the *Yatra* organised by the Ministry of External Affairs, offering 5/10 batches of 50 *Yatris* to travel through Uttarakhand/Sikkim crossing over at Lipulekh/Nathu La Pass, respectively. A website 'kmy.gov.in' was launched for accepting applications. The *Yatris* were to be selected from among applicants through a fair, computer-generated, random and gender-balanced selection process. The requirements were bureaucratic (rejection oriented), one asking for a BMI of 25. So I did not even apply.

We had deposited our passports in Delhi with a contact for processing with the Chinese Embassy. The Pahalgam incident / Operation Sindoor and its aftermath combined with the usual Chinese opaque and slow response to Indian *Yatris'* visa and other permissions, prompted Aajay to announce that the

Yatra is being cancelled. The 03 June start was a NO GO but Aajay came up with a 23 June option.

The idea of the trek kept taking a more defined shape with each passing day. The complete group was getting together in Kathmandu on 23 June. To avoid any Chinese scrutiny, Aajay decided to show me as a retired farmer in the *Yatra* permission forms.

I landed at Tribhuvan International Airport, Kathmandu at 0930 hours on 24 June 2025. We were a group of 22. The initial briefing by the tour operator scared everyone. He put the fear of God in most when he narrated the paranoia of Chinese authorities about anything Dalai Lama. Any picture or mention in the mobile phone could deny entry into Tibet. The

Chinese have stopped using '**Tibet**' instead they call it **Xizang**.

We left Kathmandu around 9:30 am on 26 June. By early evening we were at Syphru Beni or Syphru Bensi in Ruswa valley, the base town for all treks around Gosainkund and Langtang National Park. Aajay gathered everyone for a walk up to a stupa built on the hillside. He was keen that everyone acclimatised and not get HAS - high altitude sickness. Several of us were already on Diamox.

No word about the Visa till then. We were supposed to go till Timure but some groups were already waiting there. Hotel accommodation was not available there. We staged up to Timure at 1900 metres after lunch on 27 June as the earlier batches had moved out.

28 June Timure

During the morning walk around a km from our hotel, we came to a big concrete bridge (Maitri bridge built by the Chinese) where two streams with turbulent waters were merging. One is the Trishuli, the other is an unknown entity flowing down an adjacent valley. The Chinese call this point '**Resuo**'.

On the Nepal side of the bridge is a ramshackle hutment which houses the Nepal Customs office, whereas there is an imposing tall modern structure on the other side of the bridge with the Chinese Immigration and Customs building behind a large steel gate. There are separate gates for the large trucks going across.

At around 10 am, we got our passports, visa and permission for the *Yatra*. The documents were sent by the tour operator in a helicopter which landed on a small helipad by the river side. After a quick lunch, we walked to the Tibet entry point. The Nepal Customs check was friendly



At Ashtapad, Nandi Mountain in background

and perfunctory, over in a few minutes and by 12:30 pm, we lined up on the Maitri Bridge to enter Tibet. Everyone was a bit nervous, quietly standing in a queue like school children, at their best behaviour, scared of being ticked off by the Chinese guards. But it turned out to be an anticlimax. The whole process was orderly and efficient. We went through passport check, biometric recording (Chinese are filling up their databases), luggage scanning without a hitch. The whole process for the 22 of us took about half an hour and we marched into Tibet.

We finally started for Keirung/Gyirong (2700 metres) around 4 pm. It is about 30 odd kms to the North. Known as the **“Backyard of Mount Everest”**, Gyirong Valley is famous for its lush vegetation and high oxygen levels. The Chinese are really working on improving the infrastructure in this remote corner of Tibet. We reached Keirung at around 7:30 pm. The time on our phones had now shifted to Beijing Time, 2:30 ahead of Indian Standard Time. The sun was still quite bright, in summer at this latitude, there is sufficient daylight till 10 pm. We

were taken to the police station where our passports were checked and photos taken.

29 June Keirung/ Gyirong to Zhong Ba

Keirung/Gyirong (2700 metres) is a small modern town, situated on the East bank of Kyi Long Tsangpo - the source stream of river Trishuli. It has well maintained roads with traffic signals. All neatly laid out, clean and bright. There is hardly any pedestrian or vehicular traffic but plenty of big expensive cars parked on the roadsides. There are many stores and restaurants but hardly any customers. The hotel we were staying in was nice and clean. Rooms were comfortable with hot water and all other amenities.

We were up in the morning at 6 am and planned to move after a hot breakfast. The plan was to spend the night at Zhong Ba, covering around 350 kms and about the same distance the next day to Mansarovar. We had been moving on G216 Highway ever since we entered Tibet. G216 runs North to South from Hongzhazui in Fuhai

County on the Chinese border with Mongolia, and extends South to the boundary with Nepal in Gyirong County. After some time we came across the Kong Tang Lamu Mountain which stands tall at 5236 metres, and is not only a natural wonder but also a sacred site for the local Tibetans. Its towering peaks and serene landscapes make it a place of pilgrimage and spiritual reflection. The road over Kong Tang Lamu Mountain is winding and steep, with a dramatic elevation change of 2436 metres from Gyirong County Town up to the pass. The road is often more treacherous than the **“72 turns of the Sky Road”**, with narrow curves and steep inclines that require careful navigation. But now the almost five kms long Kong Tang Lamu Tunnel (4800 metres) has been bored under this pass by the Chinese. With very modern proper signage, it is very impressive, saves time and also provides relief from motion sickness to affected travellers from the grinding climb through the winding road route up to the pass.



On the bank of Mansarovar Lake

We halted for lunch at a lovely windy place (4666 metres) beside a lake, most probably the Peiku Cut Lake - the biggest lake in Shigatse Prefecture. The lake (elevation 4590 metres) is about 60 km North of Mount Shishapangma. The G216 meets G219 short of Saga and we turned West towards Saga - Zhong Ba - Mansarovar and reached Zhong Ba (Altitude 4580 metres) at 8:06 pm.

30 June Zhong Ba to Mansarovar

We reached Mansarovar (4590 metres) around 3 pm. **Lake Mansarovar**, so blue and mesmerizing, the highest freshwater lake in the world, is relatively round in shape with a circumference of 88 km and a maximum depth of 100 metres (330 feet). In Hinduism, it is believed that Lord Brahma created the lake to provide a divine bathing place for his sons after their journey. The Buddhists revere it as the site where the Buddha's mother was brought by the Gods to bathe. In Jainism, the lake is linked to the first *Tirthankara*, who attained *Nirvana* in the Himalayas.

No bathing is allowed so everyone just took off their shoes and took a symbolic bath with few drops of holy water sprinkled on the head. We did the *Parikrama* of holy Mansarovar by bus encountering the adjacent crescent moon shaped Lake *Rakshas Tal*

after some time. Mansarovar overflows into the *Rakshas Tal* via the Ganga Chhu. It is popularly believed that *Rakshas Tal* was created by Ravan, and unlike Mansarovar, its water is salty and lifeless. Some people also call Mansarovar and *Rakshas Tal* as the Yin-Yang of nature. Buddhists believe that Mansarovar and *Rakshas Tal*, represent light and darkness respectively. The sources of the Rivers Indus, Sutlej, Brahmaputra, and Karnali lie in the vicinity of this region.

01 July Swami Narayan Ashram, by Lake Mansarovar

We stayed at Swami Narayan Ashram on the banks of Mansarovar for the night. It provided very basic accommodation, just a bed with blanket and quilt, five to a room, basic facilities, and outdoor toilets. Pooja is allowed in a glass

house, but not on the lake bank. We got the first glimpse of Mount Kailash around 9 pm as the clouds parted. Everyone chanted - '**Har Har Mahadev**'. The holy mountain kept playing hide and seek with the clouds.

02 July Darchen

We started for Darchen at 9:40 am. Passing through the one km strip between *Rakshas Tal* and Mansarovar, our group reached Darchen at 10:25 am and checked into Hotel Okday (nice clean rooms). Darchen at 4670 metres (15321 feet) is situated right in front of the sacred mountain, Mount Kailash and is the starting and ending point for the *Parikrama/Kora* of Mount Kailash.

Before lunch we took a side trip to *Ashtapad*, a place of utmost religious importance to Hindus, as it is considered to be an abode of Lord Shiva. Jains also revere this mountain because it is believed to be the place where Rushabhadev gained *Nirvana*. Situated at an altitude of 4800 metres, every stone of this mountain is regarded as an incarnation of gods. Next to *Ashtapad* is Nandi Parvat, located just in front of Mount Kailash. The shape of the Nandi Parvat resembles the Nandi Bull (the *vahana* of Lord Shiva). This is one of those revered places where you'll feel the presence of gods at every step. After a nice slow walk of about 35 to 40 minutes, we reached the base of *Ashtapad* at 12:10 pm. The sky was absolutely clear, astonishingly blue with whips of white clouds, almost heaven!

Himavan Mountain stands towering to the South of Darchen. In Hindu mythology, the birth of Parvati to the mountain Lord *Himavan*



Near Swami Narayan Ashram by Lake Mansarovar

and his wife Mena is primarily understood as a cosmic event meant to lure Lord Shiva out of his ascetic withdrawal and into the realm of marriage and household life. As Shiva's wife, Parvati represents the life-affirming, creative force that complements Shiva's austere, world-denying nature, thus balancing the two poles of asceticism and householder life in Hindu philosophy. We returned to Darchen for lunch, collected our passports, and packed our rucksacks for the three day Parikrama.

The Parikrama

The plan was to move by bus to **Yam Dwar**. The Parikrama involves:

- **Day1.** Darchen - Dirapuk (4700 metres) - Bus 5 km, Trek 15 km.
- **Day2.** Dirapuk - Zutulpuk (4790 metres) - Trek 22 km via Dolma La (5630 metres).
- **Day3.** Zutulpuk - Darchen - Trek 9 km, Bus 3 km.

We were up at 5:15 am, and reached **Yam Dwar** at 11:27 am. After the three rounds ritual at the Dwar, we started for Dirapuk along with many other *yatris*, some on foot, some on horseback, some with porters. Yaks loaded with supplies are part of the trekking caravan. After a few hours

the Western face of Mount Kailash becomes visible. At the tea house, around 4 pm, we stopped for lunch right in front of the Western face. It is a magnificent view. **Har Har Mahadev!!**

We came across plenty of wildlife in this high altitude wasteland - marmots, hares and wild asses. The hike turned out to be 15 -16 km instead of the general perception of about 12 km in our group. The complete group closed in by 7:30 pm at Hotel ShishaBangba, Dirapuk (4700 metres). A very basic hotel, four to a room, toilet out in the open – but with a splendid view of the North face of Mount Kailash.

In the evening after our Sherpas had served us a hot dinner in our rooms, some of the fellow *Yatris* started having doubts about continuing the *Yatra*. The long trek has taken its toll. Umesh, our Nepali guide checked everybody's oxygen levels. My readings were 83 (oxygen) and 51 (heart rate). He felt my heart rate was too low. I told him that elite athletes have heart rates in fifties, and that I would be OK. Four people in our group decided to drop out. I could barely sleep, kept tossing and turning, wondering if I would be able to climb up Dolma La the next day! It was a long night.

03 July Crossing over the Dolma La

Having hardly slept, I was up at 5:00 am. A bright clear morning, we started our climb to Dolma pass at 7:30 am. The *Yatra* route has Hindu devotees, some on horseback, some with porters, others like me with their packs on their backs, climbing up through the thin air. The Kailash is also revered by Tibetan Buddhists / Bon people. Some of them are doing the *Parikrama* while becoming prostrate at every other step. They have aprons, knee pads and elbow pads to tackle the stony underground leading up to Dolma pass. Some have their pets and dogs along. In between Yaks loaded with cooking stores are also sharing the same route. Every now and then, a horse handler calls out and we trekkers stepped aside to give the rider a pass.

Every rise appeared to be the final point, the colourful Tibetan prayer flags strung along the mountain sides, a sort of signal for the arrival of the Dolma pass. I finished the long arduous climb up to Dolma pass (5630 metres) around 1:40 pm. One co-Yatri was carrying some prayer flags and we strung up the flags and prayed to Lord Shiva. A nice



At the Nepal Tibet Border - Resuo.

cool breeze was blowing, the flags fluttered and suddenly we felt elated. The thin air with low oxygen content no longer bothered us, we felt rejuvenated. Lord Shiva has breathed life into our lungs.

As we started descending, a mesmerising sight appeared on our right. Gauri Kund with its brilliant shimmering blue waters was surreal and magnificent. It was a long tiring descent to Shapje Dojak.

It started raining, we got into ponchos, hail followed, and we took shelter in a Tibetan tent. Nice hospitable people. Intermittent rain followed, we got wet but managed to avoid getting drenched. Thereafter I maintained a good pace and enjoyed the rest of the trek. I reached the nightstay hotel at Zutulpuk around 8 pm. A decent neat place, four to a room but toilets as usual would be outside. I slept like a log after a hot dinner.

04 July Zutulpuk to Saga

We started at 6:15 am from Zutulpuk. It was still dark and we walked with the forehead lamps on. Having rained the previous day, the track was full of puddles. We walked to the finish point of the outer Kora, reaching the end point at 8:45 am, the place is called Chung Do. It was an enjoyable trek with some

difficult stretches. The buses picked us up from Chung Do and our *Parikerama* was over.

We reached Darchen at 9:20 am after a short bus ride. A last look at Mount Kailash, it had lots of snow on the South and East face, probably it had snowed up there the previous day. We stopped at noon at the Kailash Mansarovar view point for a last view and pictures.

The drive to Saga was long, with the same scene outside, low hills, green grass, no trees, yak and sheep grazing intermittently, a long endless road, with speed limit of 70 / 50 for passenger cars / buses. Some heavy trucks moving, occasional bikers loaded with camping gear, most cars were good for off roading. Locals were on 3 wheelers which served as load carriers as well. There were a few

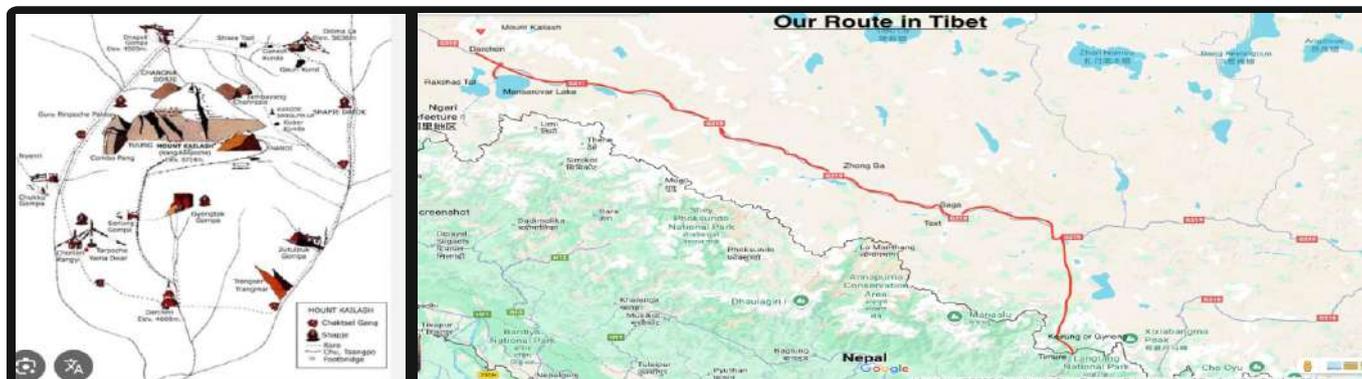
small ghost towns, with lots of buildings but hardly any people. Very dirty toilets though, just cemented holes in the ground, stinking. But the general infrastructure and roads were good. Tele Communication network is all prevalent along S219, the main Tibet highway. We reached Saga (4600 metres), our place for the night stay at 7:50 pm.

We were staying at Hotel Shanga Quadran or Hotel Jiaxie on the main highway. There was a lot of heavy traffic on the main highway, the S219. We met other groups in the hotel lobby, on their way going up to Kailash. They were envious that we had completed the *Parikerama*. Most of them were anxious and worried, seeking advice. We were nodding as veteran *Yatris* and high altitude experts, doling out advice to the poor uninformed souls. Some of them wanted reassurance and blessings - I am sure my thick white beard was the key for this reverence.

05 July Saga to Gyirong/Keirong

It was bright and sunny and we started off at 10 am. Veering off S219 onto S216, we turned South towards Gyirong/Keirung. Enroute we stopped to click some pictures of the mountain Sheesha Pangma. We drove through the five km long tunnel across the mountain range at 4680 metres. We stopped near Thaka Taso monastery, which is high up on the mountain. Mila Repa meditated here for years. Jilonggou scenic service station, Chakar monastery were a few names put up on boards in English. This was an oddity as normally all signage was in Chinese characters.

In ancient Tibetan texts, Mila Repa, a famous Buddhist sage, is said to have ascended Mount Kailash after a spiritual contest with his Bon



Left. The Inner Kora Parikrama Route (Credit kailash-yatra.org). Right. Map showing the highway route taken in Tibet from the Nepal Border.

counterpart, Naro Bon-Chung. However, this ascent is considered symbolic and metaphysical rather than a physical climb. Jetsun Milarepa (1052–1135 AD) was a Tibetan Siddha, who was famously known as a murderer when he was a young man, before turning to Buddhism and becoming a highly accomplished Buddhist sage. He is generally considered one of Tibet's most famous yogis and spiritual poets, whose teachings are known among several schools of Tibetan Buddhism.

We stopped for lunch at Kaire waterfall, a picnic spot. There were a few shops and some people enjoying the scenic waterfall. The water spray of the beautiful waterfall was cold and refreshing. A lady had a shop in a small trailer selling coffee and some knickknacks. A beautiful spot, one can also spot Manaslu, the 8th highest peak in the world. This part of the valley is very pretty and fertile, with lots of fields and trees after the barren landscape of the Tibet plateau. We reached our Hotel Phuntsok Khamsang at 3:15 pm.

06 July Return to Kathmandu

We left the hotel in Gyirong for Timure border post at 7:15 am. After a routine crossing at Chinese customs, the timings suddenly changed from Chinese

time in the Mobile phones. Clearing Chinese customs at 0900 am Nepal time, we entered Timure, cleared Nepal customs and immigration. The road from Timure to Syphru Bensi is bad, almost non-existent. It was dark by the time we reached Kathmandu for a good bath and hot dinner at Hotel Vaishali. I spent the next two days 7/8 July in Pokhra and took the flight back to Delhi from Kathmandu on 09 July 2025.

As I look back, the images of Mount Kailash remain etched, not only in my mind, but possibly deep inside my inner being. A vivid Yatra, I was blessed to have done the Parikrama around Mount Kailash. **Har Har Mahadev!!**



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Brig Subhash Katoch

INSV KAUNDINYA: RECLAIMING INDIA'S MARITIME LEGACY

India's engagement with the maritime domain constitutes an integral and enduring dimension of its civilizational history. Long before the emergence of modern political boundaries, the seas functioned as India's principal medium of interaction with distant regions. Archaeological evidence from the Indus Valley

Civilisation indicates the existence of dockyards, overseas trade, and maritime capability, suggesting that early Indian society was not exclusively land-oriented but deeply responsive to monsoonal patterns and oceanic systems. India's civilizational presence across Arabia, Africa, and Southeast Asia was transmitted primarily through maritime networks rather than territorial expansion. In this context, the induction of the stitched vessel **INSV Kaundinya** assumes significance as a contemporary effort to revive and reinterpret India's maritime heritage.

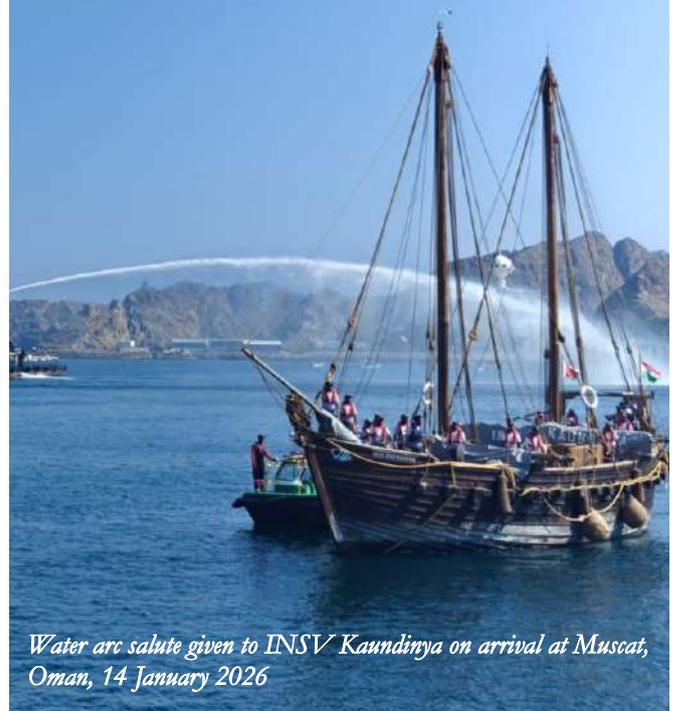
Bolstering a Maritime Tether

INSV Kaundinya, based on iconographic evidence from the Ajanta Cave murals, represents a reconstruction of a fifth-century stitched ship constructed without metallic fastenings and bound instead by coir derived from coconut fibre. Such construction techniques were neither rudimentary nor experimental; on the contrary, they produced structurally flexible and resilient hulls well suited to prolonged monsoon navigation. Archaeological discoveries at **Ras al-Jinz** on the Omani coast, including the remains of a sewn vessel dated to approximately 2500 BCE, corroborate the centrality of stitched ships in facilitating maritime exchange between **Meluhha** (the Indus Valley region) and **Magan** (ancient Oman). These routes sustained the circulation of copper, carnelian beads, timber, frankincense, and ceramics over extended periods.

The decision to undertake a voyage from Porbandar to Oman is therefore historically and symbolically grounded. For



INSV Kaundinya on the high seas



Water arc salute given to INSV Kaundinya on arrival at Muscat, Oman, 14 January 2026

much of antiquity, Oman occupied a pivotal position within the Indian Ocean trade networks, functioning as an intermediary linking South Asia with Mesopotamia, the Mediterranean world, and Eastern Africa. Indian merchants, Omani sailors, and Arab navigators participated in a shared maritime culture structured around monsoon-based navigation and open-sea voyaging. The *Kaundinya* voyage sought to reactivate these historical routes rather than merely commemorate them.

The name *Kaundinya* further reinforces the vessel's civilizational symbolism. In Southeast Asian historiography and tradition, Prince Kaundinya is remembered as a mariner whose voyage to Cambodia and marriage to the Naga princess Soma marked the emergence of one of the earliest Indic-influenced polities in the region. This incident reflects processes of cultural transmission mediated through maritime mobility rather than political domination.

Comparable traditions, such as the account of Princess Suriratna's sea journey from Ayodhya to the Korean peninsula, underscore the role of maritime routes in facilitating early inter-regional cultural exchange.

This continuity of maritime interaction was further reflected in the prominence of Muscat as a major entrepot in the western Indian Ocean, particularly noted for luxury goods collectively remembered in Indian sources as the **'Jewels of Muscat'** (i.e. remarkable project to reconstruct the 9th century Arab trading ship). Omani ports functioned as critical nodes linking Indian merchants with markets across Arabia, the Persian Gulf, and East Africa, facilitating the circulation of pearls, precious stones, dates, fine textiles and bullion. Indian trading communities, particularly from Gujarat and the Malabar Coast, were deeply embedded in Muscat's commercial and financial life, contributing to its emergence as a hub of regional exchange. Rather than representing a rupture from earlier interactions with Dilmun and Magan, this phase marked an evolution of long-standing Indo-Omani maritime networks, adapting to shifting political and economic contexts while preserving the Indian Ocean's character as a shared commercial and cultural space. The ancient stitch ship marks 70 years of diplomatic relations between India and Oman.

Reviving Ancient Stitched-Ship Techniques

The archaeological remains of the dockyards like those unearthed from Lothal and various other historic sites corroborate advanced maritime engineering and sophisticated planning. In bygone ages, from these docks, traditional sea craft sailed far and wide into the vast oceans in pursuit of trade. Thus, the roots

of India's shipbuilding tradition run deep into these forgotten times. The earliest records of sea voyages come from the **Rigveda**, which contains anecdotes of sailing across the **Samudra** (ocean). The Tamil traders who crossed the sea are revered in **Sangam** literature while the accounts of travellers such as Marco Polo, Fa Hien and Hiuen Tsang provide detailed descriptions of India's seafaring mastery.

The traditional watercraft were designed and developed in accordance with regional topography and the nature of the seabed, using locally available and durable wood. Panini's *Ashtadhyayi*, dating to the 5th century BCE, mentions a variety of timber species used in ship construction. Exploration of the remains of a Surat-built *Cara* merchant vessel, found abandoned enroute to England, also confirmed the extensive use of timber in its construction. Archaeological evidence from Harappan sites, along with Patanjali's work from the 2nd century BCE, mentions the use of

Devadaru or Deodar wood for the construction of different parts and components of the ship. Further, many foreign records refer to the use of Indian teakwood, *sissoo*, black wood, and ebony for shipbuilding.

The Tankai method was utilised to create the structure of the ship, an ancient technique involving the stitching or sewing of wooden planks together using coir cords. Hammering the iron nails to secure the planks was consciously avoided, due to their susceptibility to rust when exposed to salty Ocean waters. The stitched planks were then treated with fish oil that bound the structure together and produced flexible hulls capable of withstanding rough ocean conditions, making them ideal for long-distance voyages. Archaeological evidence from a shipwreck of a stitched ship salvaged from Sri Lanka in 1961 demonstrates the effectiveness of this technique.

Evidence found in Buddhist *Jatakas* and Jain texts gives the idea that



INSV Kaundinya at Muscat, Oman



Flagoff Ceremony at Muscat, Oman on 08 February 2026

Charting a Course Through History

As the rightful custodian of India's rich maritime heritage, the Indian Navy initiated the stitched ship project through an agreement between the Ministry of Culture and the Indian Navy in July 2023. Under the watchful eyes of **Babu Shankaran**, the master shipwright, a team of skilled artisans from Kerala undertook the construction of the vessel at the Hodi Innovations Shipyard in Goa. With no surviving blueprints of any such traditional vessel, the Indian Navy played a central role in the project, overseeing the design, relying entirely on iconographic sources. While traditional shipbuilders and the Navy collaborated to recreate the hull,

these ancient ships were propelled by wind, while numismatic evidence, such as *Satavahana* coins dating from the 2nd century BCE to the 3rd century CE, reinforces the use of wind for navigation. Alongside these sail-powered vessels, ships that relied on effective steering mechanisms were also widely used. These ships had high stern and a projecting bow along with large rudders for effective steering. The solid bulkheads running both across and along the hull provided additional structural strength.

Much like a stitched cloth, this 65-foot-long vessel is meticulously sewn to perfection using a needle and a Coir rope. Techniques documented in the *Yuktikalpataru* were replicated, resulting in the successful reconstruction of a fifth-century stitched ship. The Coir, made out of coconut husk, binds the wooden planks of the hardwood together, giving the stitched ship the much-needed strength to sail the rough seas. The stitching itself is performed with specialised needles, following the traditions of the ancient shipbuilding methods. Frankincense, a natural gum derived from the *Salai* tree found across the subcontinent, is applied between the wooden joints to ensure a firm bind. Finally, fish oil is applied overall to the structure to enhance the ship's durability, while the external hull is treated with a brick red pigment for its appealing colour. The ship is rigged with highly manoeuvrable square sails made from panels of linen that allows it to efficiently sail under the wind.

the technical aspects were validated through hydrodynamic model testing at the Department of Ocean Engineering, IIT Madras, and internal technical assessment.

The ship's construction was done meticulously over the span of several months, relying on the traditional knowledge of craftsmen and sound naval expertise. The project marked a significant milestone in India's efforts to rekindle its '*maritimity*', providing invaluable insights into the traditional knowledge systems of ancient seafarers. The Indian Navy inducted the stitched ship as **INSV (Indian Naval Sailing Vessel) Kaundinya** during an induction ceremony at the Naval base in Karwar on 21 May 2025, presided over by the Hon'ble Minister of Culture Shri Gajendra Singh Shekhawat. The vessel also bears cultural motifs to evoke and celebrate India's glorious maritime past- from the *Gandabberunda* the double-headed eagle and the Sun on the sail to a depiction of *Simha Yali* on the bow and a Harappan-style stone anchor on the deck.

The vessel started its maiden voyage from Porbandar in Gujarat to Muscat in Oman on 29 December 2025. The vessel, operated by the Indian Navy, was crewed by four officers and 13 sailors under the command of Commander Vikas Sheoran. After an adventurous expedition of 17 days navigating the vast expanse of the Arabian Sea using traditional sailing methods, *INSV Kaundinya* reached the historic shores of Muscat on 14 January 2026 marking the successful completion of a voyage that symbolised the revival of India's ancient maritime traditions. *INSV Kaundinya* was given a water salute upon arrival. The welcome ceremony organized at the port, was graced by His Excellency Azzan Al Busaidi, Under Secretary, Ministry of Heritage and Tourism of Oman. The other dignitaries were from the Indian Navy, Royal Navy of Oman, Royal Oman Police, Coast Guard and other ministries.

Traditional Indian and Omani cultural performances were held during the official welcome ceremony.

The Return Voyage

On 8 February 2026, *INSV Kaundinya* was formally flagged off on her return journey to India from the historic Sultan Qaboos Port, marking the successful conclusion of a landmark maritime expedition. The return flag-off symbolised both operational achievement and cultural reconnection between two ancient maritime civilisations. It exemplifies the Indian Navy's commitment to preserving and promoting the nation's rich maritime legacy.

Marking the successful completion of a remarkable voyage - a testament to endurance, seamanship and India's rich maritime heritage - *INSV Kaundinya* finally sighted land ending her historic ocean passage and reached her mother coast on 02 March 2026 at the cruiser wharf naval dockyard, Mumbai. On arrival she was formally flagged-in by Shri Sanjay Seth, Raksha Rajya Mantri (Minister of State for Defence) along with Vice Admiral Krishna Swaminathan, Flag Officer Commanding-in-Chief, Western Naval Command. Addressing the occasion, the minister underlined the national significance of the project highlighting that the historic voyage would serve as an inspiration for the youth of the country. The Hon'ble Minister also greeted the crew on the occasion of the Holi festival. Speaking on the occasion, Vice Admiral Krishna Swaminathan praised the crew for their dedication and valour. The grand occasion was graced by His Excellency, Mahboob Issa Alraisi, Consul General of the Sultanate of Oman. The ceremonial entry of *INSV Kaundinya* was welcomed with a water arc salute and was witnessed by senior officers, veterans, historians and maritime enthusiasts.

The Revival of a Lost Maritime Past

INSV Kaundinya seeks to revive India's long-lost maritime links across the Indian Ocean. It highlights India's historical engagement with trans-oceanic trade and cultural exchange, emphasising the continuity of maritime knowledge, navigation techniques, and coastal community expertise. The voyage symbolises

India's re-emergence as a civilizational power in the Indian Ocean Region. While reviving traditional shipbuilding skills, promoting indigenous knowledge systems, the voyage resuscitates India's civilizational maritime identity. The project illustrates that India's push towards *Atmanirbhar Bharat* doesn't forget its past and encompasses reflection towards traditional knowledge and sailing craft.

The stitched ship project exemplifies the convergence of India's ancient maritime heritage with contemporary maritime-consciousness, adaptive construction and scholarship, demonstrating how historical knowledge can be revived through meticulous reconstruction. By drawing on traditional techniques, iconographic evidence, and the expertise of coastal communities, the project provides a tangible link to India's seafaring past.

Reflecting upon the voyage, Economic Advisory Council member Sanjeev Sanyal, who was on board the ship, shared that "*ancient India was based on risk-takers, adventurers, merchants who went out, discovered new markets and new lands, spread culture, but also imbibed new ideas from them*". The Indian Embassy in Muscat stated that "*the voyage stood as a symbol of maritime, cultural and civilizational ties spanning more than 5000 years between India and Oman*".

INSV Kaundinya stands as a testament to India's efforts to reclaim and celebrate its maritime inheritance. Beyond the technical achievement, the project underscores the existence of a connected oceanic world sustained by indigenous knowledge systems, stitched-ship technologies, and monsoon navigation, while also illustrating how India is employing maritime heritage as a tool of cultural diplomacy and historical recovery rather than mere commemoration.



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Commander Kalesh Mohanan



Lieutenant Navdeep Singh on commissioning at Officers Training Academy, Chennai.

OUR FEARLESS FIGHTER

VALIANT
LIEUTENANT NAVDEEP SINGH,
ASHOK CHAKRA (P)

Summer months witness several intense counter infiltration operations along the Line of Control (LC), as Pakistani terrorists try to sneak across to cause mayhem in the scenic paradise - Kashmir Valley. This is the story of a valiant young officer who was killed in action in a violent encounter with infiltrating terrorists in Gurez Sector of Kashmir in August 2011.

Gurez – Enthralling and Spellbinding

The Kishanganga River flows silently through the Gurez Valley in North Kashmir, with the mighty Great Himalayan Range forming its Northern edge. The valley is amongst the many splendid vistas of Kashmir, its natural sheen untouched by excessive human activity, primarily due to its remoteness. Due to heavy snowfall, the Razdan Pass closes in winters, and the Gurez Valley remains cut off for six months of the year.

Periodically the peace and tranquil surroundings are shattered by gunfire, as Indian troops confront Pakistan's devious designs, when Pakistani terrorists try to enter Kashmir through this rugged terrain. 15 MARATHA LIGHT INFANTRY (LI), a steadfast and operationally seasoned battalion was inducted into Kanzalwan in this serene and amazing Valley in June 2011, and tasked for counter infiltration and counter terrorist operations. The troops soon became familiar with the difficult terrain and attuned themselves for the expected encounters with the enemy. The Battalion maintained round the clock vigil along the LC and adopted a proactive summer strategy.

Navdeep - Our Fearless Fighter

Navdeep Singh Bains was born into a military family hailing from Gurdaspur District of Punjab. His father, Subedar



Senior commanders and Maratha soldiers with some of the killed terrorists. Lieutenant General S A Hasnain, the then 15 Corps Commander is 5th from right.

Major and Honorary Captain Joginder Singh, had served in the Bengal Sappers for 30 years. His grandfather was a Junior Commissioned Officer as well, making him a third-generation soldier. Navdeep did his initial schooling from Army Public School, Tibri Cantt and Senior Secondary from Government College, Gurdaspur. The young boy was thus well versed with military life and environs and looked forward to a life in uniform. After his graduation in 2006, he went on to get a postgraduate degree in Management from the Army Institute of Management, Kolkata. He then chose to follow his family tradition to serve in the Army and joined Officers Training Academy, Chennai.

After commissioning into the Army Ordnance Corps on 19 March 2011, Lieutenant Navdeep Singh joined 15 MARATHA LI for the infantry attachment. He excelled during the pre-induction training at the Corps Battle School in Kashmir, and was given charge of the Ghatak Platoon, a specialized sub-unit within the infantry battalion that is trained and equipped for high-risk missions (The name "*Ghatak*," meaning "killer" or "lethal" in Hindi, aptly describes the sub unit's operational focus and orientation).

Operation Bagtor

The battalion Intelligence and Surveillance Detachment was regularly analysing the intelligence inputs received from higher HQ and other sources and unconfirmed reports had revealed the likelihood of infiltration attempts through the Kishanganga River and Durmut Forest. Consequently, the battalion deployed ambushes along the Valley floor to intercept any attempts.

Ready for Action. At around 0030 hours on 20 August 2011, the battalion surveillance cum ambush party deployed in general area Bagtor North detected the movement of terrorists across the Kishanganga River along the Durmut Forest. Three terrorists were seen crossing the river using a rubberised boat. The party continued observing the terrorists and alerted all ambushes in the area. Two ambushes, one under Lieutenant Navdeep Singh with one Junior Commissioned Officer (JCO) and eight soldiers and one ambush under one JCO with eight soldiers were deployed on the Southern bank of the Kishanganga River; these two ambushes were to cover the selected killing ground. Four more ambushes were deployed along the likely escape routes. The

surveillance cum ambush party at Bagtor North was augmented with additional troops.

In the meantime, the terrorists who had reached the Southern bank sent the boat back to ferry more terrorists from the far bank. Six more terrorists crossed the river in the rubberised boat. The Marathas lay in wait silently – like hunters waiting to pounce on the prey. Around 13 to 15 terrorists reached the Southern bank and started moving along the river with utmost caution. It was evident that this group of terrorists was highly trained, motivated and experienced. They did not know at that time what awaited them and what was about to unfold in the coming moments.

The Intense Firefight. At approximately 0130 hours, Navdeep's ambush on the banks of the Kishanganga River spotted a few terrorists moving towards them. It was in those moments of wait and silence that Lieutenant Navdeep displayed raw courage and nerves of steel. The ambush parties waited for the terrorists to come close and then sprang the ambush with intense firing. The terrorists too reacted with automatic fire

and hand grenades. In the ensuing firefight, Lieutenant Navdeep killed three terrorists. As is often the case, it is the first exchange of fire that generally decides the ensuing success of close encounters. The firefight with the terrorists continued for about 30 minutes.

During the retaliatory fire of the terrorists, Lieutenant Navdeep's buddy sustained a splinter injury while neutralizing one terrorist. The officer sensing the grave danger to his buddy and disregarding his own safety shifted him to a safe location and continued engaging the terrorists. He killed one more terrorist at close range. However in the close quarter battle, he sustained a gunshot wound on his head and fell unconscious. The fire fight continued and the ambush party killed three more terrorists. In the action, the second ambush party commander also killed two terrorists who were trying to flee. While killing the third terrorist, the JCO also sustained a splinter injury on his head. The firefight stopped at around 0200 hours. The ambush party saw some terrorists jumping into the river and being swept away.

Some terrorists started fleeing towards the far bank. To prevent these terrorists from escaping, the surveillance party at Bagtor North brought down heavy volume of fire on these fleeing terrorists, and one of them fell dead on the spot. A few terrorists' bodies were seen being washed away along the river towards Pakistan Occupied Kashmir. The wounded Lieutenant Navdeep was evacuated to the road head at around 0300 hours and onto the Army Base Hospital at Srinagar, but unfortunately succumbed to his injuries.

In this exceptional counter infiltration operation, 13 terrorists were killed, and many weapons, ammunition and equipment like radio sets, night sights were recovered from the slain terrorists.



Citation



**SS-4448A, LIEUTENANT NAVDEEP SINGH,
ARMY ORDNANCE CORPS/15 MARATHA LIGHT INFANTRY
(POSTHUMOUS)**

(Effective date of the award: 20 AUGUST 2011)

Lieutenant Navdeep Singh was Ghatak Platoon Commander of 15 MARATHA LIGHT INFANTRY deployed in the High-Altitude Area near Line of Control. On receiving information about the infiltration of a group of terrorists at about 0030 hours on 20 August 2011, the officer gauged the likely route of the terrorists and laid ambush at the appropriate spot. When the terrorists were spotted, the ambush was sprung by the officer himself. An exchange of intense fire ensued. Leading from the front, the officer eliminated three terrorists at close range. On seeing another terrorist approaching their positions, with utter disregard to his personal safety, the officer swiftly changed his firing position. While doing so, he got hit by a bullet on his head. He nevertheless managed to eliminate the fourth terrorist.

Further, displaying utmost bravery and comradeship, he pulled an injured fellow-soldier to safety and kept firing till he became unconscious due to excessive blood loss. Lieutenant Navdeep Singh displayed indomitable spirit, determination and exceptional bravery while putting down the terrorists and making the supreme sacrifice for the nation.



**Colonel Girish's Reminiscences
– An Extract from
India's Most Fearless, Volume 2**

A few months after the operation held in August 2011, the Commanding Officer of 15 Maratha Light Infantry, Colonel Girish invited Lieutenant Navdeep's father to visit the unit in Gurez, to see for himself the place where his son had laid down his life fighting the terrorists. Colonel Girish recalls, *'When Subedar Joginder Singh arrived, I took him to the 'sangar' from where Navdeep had fired his last bullet. It was a very emotional moment for both of us. Navdeep's father bent down, dug his hand into the earth and grabbed a fistful of soil from the place where his son had stood fighting. I can't describe how moving that sight was. There are absolutely no words. It can only be experienced. I think he could feel Navdeep's presence there. I saw that look on his face. He touched the fistful of soil to his forehead.'*

On Republic Day 2012, Lieutenant Navdeep's father was escorted to the President's dais to receive his son's posthumous Ashok Chakra. His father is a brave man, he did not break down, and accepted the award like a soldier, remembers Colonel Girish. *'It was my life's proudest moment, but I kept thinking that Navdeep should have been there to receive this honour.'*

In Gurdaspur, a ceremonial gate was constructed in his memory, and a local college stadium renamed in his honour. His birthday, 8th June, is celebrated every year at the gate, where his parents set up a 'chhabeeel' and langar, ceremonial stands with food and sweetened water. On his death anniversary, 20th August, his parents organize a memorial function at the college stadium.

Aftermath

Navdeep's tragic death sent shockwaves throughout his hometown, Gurdaspur. Thousands gathered to pay their respects to the brave officer who had laid down his life for the safety of his country. He was cremated with full military honours in Gurdaspur. At his funeral, many who shed tears for him did not know him or his family. Mourners were drawn not by compulsion, but respect for a soldier who made the ultimate sacrifice, defending the country.

Lieutenant Navdeep Singh had displayed indomitable spirit, strong determination and exceptional bravery while leading the Ghatak Platoon in close combat with a highly trained and motivated group of terrorists and laid down his life. For his exceptional bravery and conspicuous courage, he was awarded the Ashok Chakra

posthumously. His extraordinary courage, commitment to service and exemplary performance in combat stand tall as an exemplar of military leadership against all odds.

You have done the Nation, the Indian Army, your Regiment and your family proud, Navdeep.

(The author acknowledges the inputs provided by The Maratha Light Infantry Regimental Centre, Belagavi, 15 Maratha Light Infantry and Colonel (now Brigadier) Girish, the Commanding Officer during the action).

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Major General SS Deusi, VSM (Retd) was commissioned into 18 MARATHA LI on 09 June 84. He commanded the unit in Counter Insurgency operations in Jammu & Kashmir and Andaman & Nicobar Islands. The unit played a stellar role in carrying out rescue and relief operations when the tsunami struck the islands on 26 December 2004. The officer commanded an infantry brigade in the semi-desert sector and a mountain division in North Sikkim during the Doklam crisis. He retired as ADG Assam Rifles in September 21. He is settled at Mhow and actively involved in developing military leadership and management of national security. He is the Secretary of the Mhow Analysis and Research Society, a Mhow based Knowledge Resource Group of veterans.



**Major General
SS Deusi**

REMARKABLE JOURNEY OF MURLIKANT PETKAR

FROM PARALYSIS TO PARALYMPIC TRIUMPH

Murlikant Petkar's life is a powerful testament to courage, resilience, and the ability to transform personal challenges into moments of national pride. As India's first Paralympic gold medallist, his story is one of triumph over the odds. Born on November 1, 1944, in the quaint village of Peth Islampur in Maharashtra's Sangli district, Petkar's life has been marked by a series of incredible experiences—spanning struggle, military service, a life-altering injury, and a glittering sports career. This narrative highlights his early years, Army service, the transformative injury he faced, his remarkable achievements in sports, family life, and the accolades he earned, showcasing how an invincible spirit can rise above adversity.

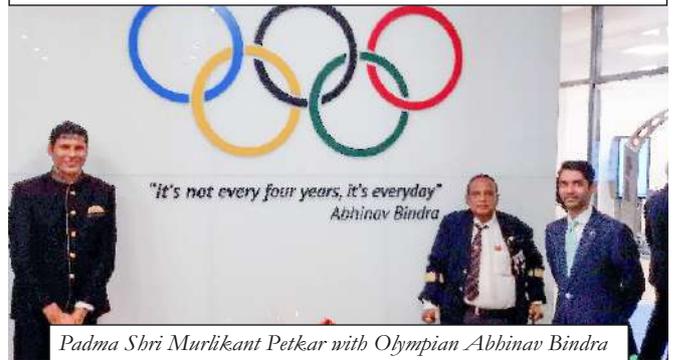
Early Life: Humble Beginnings in Maharashtra

Growing up in a simple household, Murlikant was one of five siblings, with his father working as a tailor and his mother managing the home. From a young age, he exhibited exceptional athletic talent and a fierce passion for sports. Whether it was wrestling, athletics, or hockey, he thrived on competition and proved his strength time and again. One particularly memorable childhood event occurred when he claimed victory over the village headman's son in a wrestling match. While this earned him a scolding and a form of ostracism from his village, it also affirmed his remarkable skill.

Another pivotal moment came when Murlikant witnessed KD Jadhav—India's first Olympic medallist after Independence—being felicitated by villagers. The honour and admiration he saw that day left an imprint on his heart and sparked dreams that would guide him toward greatness. In his village, Murlikant earned the nickname **"Chandu,"** a name that would one day resonate well beyond the borders of rural Maharashtra.



Left Photo. Petkar during swimming trials before the 1972 Heidelberg Paralympics. Right Photo. Laurels and Accolades. Murlikant Petkar, India's First paralympic Gold Medallist. An icon of courage and resilience.



Padma Shri Murlikant Petkar with Olympian Abhinav Bindra



Receiving the 'ARJUNA AWARD' for Lifetime Achievement from Smt Droupadi Murmu, President of India in 2024

Enlisting in the Indian Army

Hoping to create a brighter future for himself, Murlikant moved to Pune, where his paternal aunt supported his decision to join the Indian Army Boys Battalion. The Army provided him with much more than just structure; it instilled in him discipline, purpose, and a platform to hone his athletic talents. Murlikant was inducted into the Corps of Electronics and Mechanical Engineers (EME) as a Craftsman (Armourer) and trained at the 1 EME Centre, Secunderabad. It was during this rigorous training that he showcased his boxing prowess, standing out in a field dominated by formidable competitors.

His hard work and skill paid off when he earned his spot to represent the Indian Army in 1964 at the International Services Sports Meet in Tokyo, competing in the flyweight category. This milestone was just the beginning of a remarkable journey filled with accolades and achievements that would define his life.

Military Service and Injury

Murlikant Petkar's life took a decisive and irreversible turn while he was serving with the Indian Army in a forward operational environment in Jammu & Kashmir during a period of constant hostilities. During his active military service, which was marked by extreme physical stress, harsh terrain, and the constant demands placed on soldiers operating in conflict zones, he suffered a severe medical setback that resulted in the permanent paralysis of his lower limbs. The circumstances surrounding this turning point have been viewed differently over time, shaped by the era, conditions of service, and later popular portrayals. However, what remains undisputed is that the injury occurred in the line of duty. It brought his active military career to an abrupt end, confining him to a wheelchair.

Simultaneously, it set the stage for one of the most remarkable acts in Indian sporting history.

Rehabilitation and the Birth of a Champion

For many, such an injury would have shattered any dreams of sporting glory. For Petkar, however, it marked the beginning of a new journey and a remarkable reinvention that would define his legacy. Confined to a wheelchair, he spent nearly two years in rehabilitation, drawing on the mental strength and discipline he had developed in the military. After transferring to the Artificial Limb Centre in Pune, he began rebuilding his upper body strength. Initially prescribed as therapy, swimming became a source of liberation. In the water, his disability lost its debilitating hold. Sports once again gave him purpose, direction and identity.

Murlikant left the army in 1969, married Usha in 1972, and the couple

settled in Pune. They raised four daughters and a son. In 1978, he joined TELCO (now Tata Motors) in the public relations department, where he worked with distinction until retiring in 1999. Unfortunately, his wife Usha passed away in 2010.

Transition to Para-Sports: Defying Paralysis

Within two years of his injury, Petkar became the Maharashtra State Champion. He excelled across an astonishing range of disciplines, including shot put, javelin, discus, weightlifting, table tennis, and archery. This versatility was unprecedented and spoke of an undaunted spirit that refused to be confined by physical limitations. In 1968, he represented India at the Summer Paralympics in Tel Aviv, competing in table tennis. That same year, he won a Gold Medal in the 50-metre freestyle at the International Games in Moscow, marking India's entry into the world of water sports. He



ITS NOT OUR DISABILITIES, ITS OUR ABILITIES THAT COUNT. Murlikant Petkar being felicitated by General Bipin Rawat in Pune.



Murlikant Petkar (standing fourth from right) with the EME Ultra Run Team in 2018

continued to win nationally and internationally throughout the 1970s and 1980s, amassing over 50 medals and setting multiple world records. He remained competitive well into his forties.

International Dominance and Paralympic Glory

Between 1969 and 1973, Petkar dominated international para-sports, achieving many successes, including:

- Gold Medal in the 50-metre freestyle at the Stoke Mandeville International Paraplegic Meet (1969).
- Multiple medals at the 3rd Commonwealth Paraplegic Games in Edinburgh (1970), where he was honoured by UK Prime Minister Edward Heath.
- The pinnacle came at the 1972 Summer Paralympics in Heidelberg, Germany. Petkar competed in the 50-metre freestyle and won the Gold Medal with a world-record time of 37.33 seconds, becoming India's first Paralympic gold medallist. Petkar also reached the finals in javelin throw, precision javelin, and wheelchair slalom, underscoring his all-around excellence.

Awards and National Recognition

His achievements in the sporting arena led to national recognition, including:

- The Shiv Chhatrapati Award, the highest sports honour in Maharashtra (1975). This was the first time a paraplegic athlete received the award.

- The Padma Shri (2018), conferred by the President of India.
- The Arjuna Award for Lifetime Achievement (2024).
- The Army Sports Lifetime Achievement Award.
- The Rajratna Puraskar.
- Numerous institutional honours.

Legacy: An Enduring Inspiration

Now in his eighties, Murlikant Petkar resides in Pune. Swimming pools at Aundh Military Station and at 3 EME Centre, Bhopal, bear his name, a rare honour reflecting the esteem in which he is held by the Corps of EME and the Indian

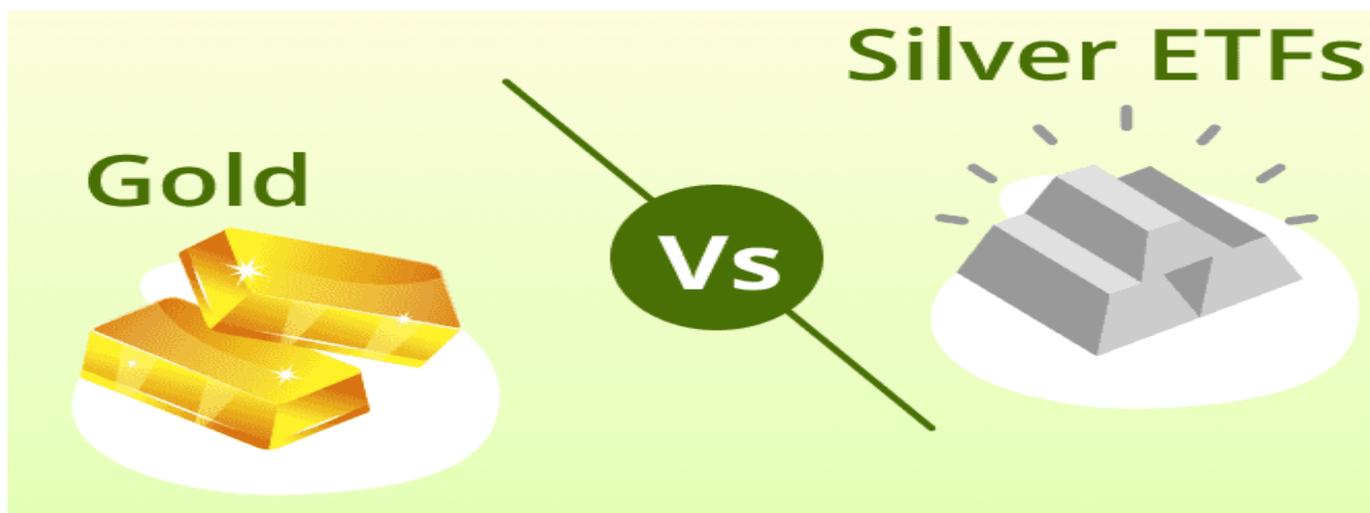
Army. He continues to be felicitated at Corps Reunions and at major military events, revered as a soldier and a pioneer. His life affirms a timeless truth: disability does not end greatness; it just reshapes it. From village lanes to war service, from paralysis to Paralympic glory, Murlikant Petkar did more than win medals, he carved a path for generations. In a nation of over a billion, he was the first to rise to international recognition in Indian para-sports. And in doing so, he taught India how to conquer overwhelming odds.



Lieutenant General Tumul Varma, AVSM, SM, VSM (Retd) was commissioned into the Corps of EME on 15 December 1984. He has commanded 654 EME Battalion and 508 Army Base Workshop. His other notable stints include service in the UN Mission in Somalia, in MS Branch Army Headquarters, and as the DDG Budget Cell at VCOAS Secretariat, Army Headquarters. He has also been an instructor at Defence Services Staff College, Wellington and at MCEME, Secunderabad. An M. Tech, he secured a competitive vacancy to Staff College, and has attended HDMC and APPPA Courses. In 2024, he was awarded a PhD. On promotion to Lieutenant General, he took over command of 101 Area in Shillong and was later appointed as the DGEME. He is located in Greater Noida and is now an Advisor to several corporate firms.



Lieutenant General Tumul Varma



IS GOLD & SILVER THE NEW EQUITY?

India's Enduring Bond with Precious Metals

India's historical connection with gold and silver dates back to agrarian traditions, where these metals served as collateral during crop failures. The practice of showcasing family wealth through ornaments at weddings continues to provide financial security for brides. In the 1990s under Manmohan Singh, pledging gold reserves helped avert an economic collapse in India, paving the way for liberalization. With India importing all its gold and an annual demand of around 800 to 900 tonnes, rupee depreciation can amplify returns for domestic holders. Silver, traditionally overshadowed by gold, is gaining traction due to its industrial uses, highlighting the resilience of both metals. Household holdings of gold exceed 25000 tonnes, as per World Gold Council estimates emphasizing their significance beyond just investment.

Evolution to Paper Investments

Before 2010, physical forms of gold dominated the market, but they were plagued by theft risks and high making charges that eroded returns. The introduction of Gold Exchange Traded Funds (ETFs) around 2007

revolutionized access to gold investments. These ETFs allow investors to buy and store gold through mutual funds, providing a hassle-free trading experience on stock exchanges. Mutual Funds store bullion with custodians like Brink's, and enable daily National Stock Exchange/Bombay Stock Exchange trading. Gold and Silver ETF Assets under management hit ₹60000 crores by 2025, with inflows surging post-COVID.

Silver ETFs have also emerged (e.g., ICICI Pru Silver ETF since 2022), offering investors a convenient way to invest in silver without the physical hassles. The costs of ETFs are lower compared to physical investments (0.5-1% expense ratio), with liquidity comparable to stocks and tax benefits after two years (12.5% Long Term Capital Gains). Notably, gold index funds suit non-demat investors.

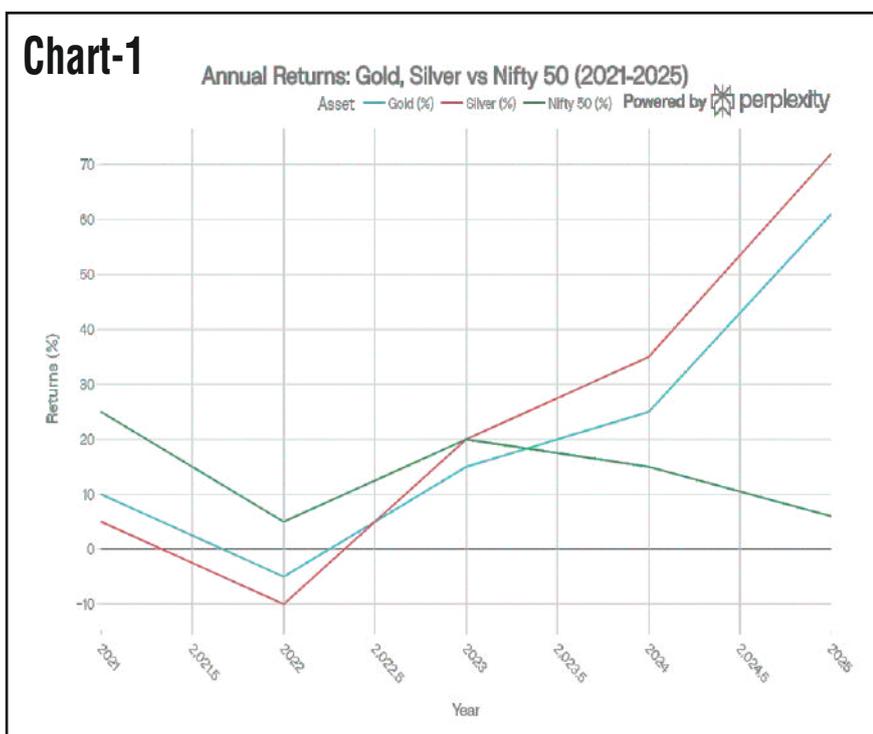
Stellar Performance Outshining Equities

In recent years, uncertainties such as the pandemic, de-dollarization and geopolitical tensions like the Ukraine War have driven the prices of gold and silver higher. Gold prices have doubled in INR terms, while silver has seen even greater increases. MCX gold hit ₹123450/10 gms in October 2025 and silver touched ₹150282/kg. The performance of precious metals has outpaced that of equities, with silver showing a 165% return over five years compared to 111% for the Nifty 50 index, as can be seen in the

chart below. While equities may have a higher long-term return, precious metals serve as a hedge during market downturns.

Period	Gold (%)	Silver (%)	Nifty 50 (%)
2025 YTD	61	72	6
1-Year	55	High	8
3-Year	38	Strong	14
5-Year Abs	130	165	111
10-Year CAGR	17	Volatile	13

approximately 1000 tonnes per year between 2022 and 2024, with China and Russia leading the way. The Reserve Bank of India is holding about 880 tonnes, after buying modestly in 2025. India's push towards solar energy and electric vehicles has increased the demand for silver, which plays a crucial role in these industries. Silver's dual role shines with 50% industrial demand (electronics, solar, Electric Vehicles). India's 100GW+ solar push and Electric Vehicle targets (30% by 2030) spikes needs as the silver content in panels/EV batteries is approximately 20 gm/unit. The global forecasts are that demand of silver may triple to 1.2 Billion ounces by 2030.



This Chart illustrates annual returns divergence, with silver's volatility yielding peaks amid industrial booms.

Global and Domestic Catalysts

Central banks worldwide have been increasing their gold reserves adding

Gold-Silver Ratio Insights

The gold-silver ratio, which indicates the relative value of the two metals, suggests potential for silver catch-up based on current trends. This metric (oz silver per oz gold) signals relative value: low (<40) favours silver rallies; high (>80) indicates gold dominance.

The chart-2 in the next page highlights fluctuations, with current highs suggesting silver catch-up potential.

Strategic Portfolio Integration

Experts recommend allocating 10-15% of a portfolio to gold and silver (10% gold, 5% silver) for diversification. Back tests have shown that a mix of gold and equities can optimize returns over the long term. 32% gold + 68% equity optimizes Sharpe ratio over 20 years. In the 2022 equity crash, gold cushioned 20% drawdowns. Also, using SIPs in ETFs (Nippon Gold Bees, HDFC Silver) and rebalancing annually can help investors manage risks and maximize returns. Financial analysts have always advised against chasing rallies.

Allocation	Expected Return	Volatility	Sharpe Ratio
100% Equity	12%	18%	0.67
85% Eq +15% Gold	11.5%	15%	0.77
68% Eq +32% Gold	11%	14%	0.79

Conclusion: The New Equity Complement

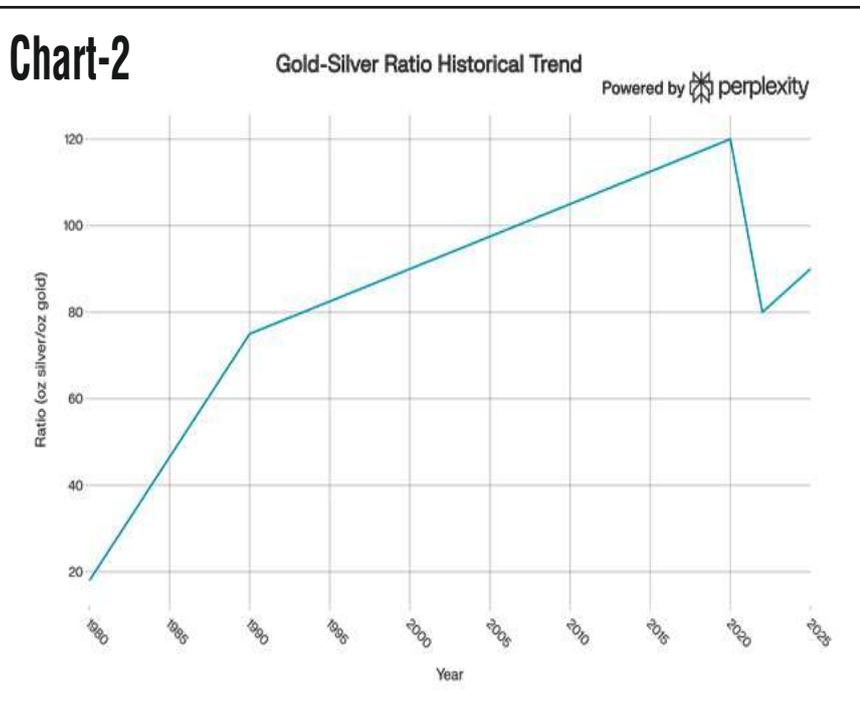
Gold and silver are not replacing equities but enhancing them as a "new equity" for their strong performance in recent years. With India's cultural affinity for precious metals and favourable macroeconomic tailwinds, a 15% allocation to gold and silver can enhance the resilience of investment portfolios. Consulting with financial advisors and investing in regulated ETFs can provide security and stability in precious metal investments.



Babu Krishnamoorthy

Babu Krishnamoorthy has spent the past 25 years as a financial adviser and entrepreneur, and is the Chief Sherpa at Finsberpa Investments Pvt Ltd. A money coach, he helps people dream big and achieve life goals. He helps them plan and execute their financial plans in a manner that is predictable. He loves meeting people and spends his spare time reading non-fiction & is an amateur runner (with over 15 half marathons and one full marathon completed). He has authored many books including "Unlock Secrets to A Wealthy Life".

He is available at babu.k@finsberpa.com (www.finsberpa.com)



Risks and Outlook for 2026

Factors such as rate cuts, geopolitical events, and advancements in green technology could drive gold and silver prices lower in 2026 (gold could reduce to ₹80,000/10 gm, and silver may drop to ₹120000/kg). However, risks such as a strong US Dollar, equity market rebound and a supply revamp could impact their performance. It is important for investors to not exceed a 15% allocation to precious metals (metals are not income generators) and to blend them with other investment options like SIPs and Mutual Funds for holistic wealth.

INTERNATIONAL FLEET REVIEW 2026 AND MILAN 2026

Mid-February, from 15 February 2026 onwards was a hectic and eventful period in Visakhapatnam, when the Indian Navy hosted ships and delegates from 74 nations for the International Fleet Review and MILAN 2026. We sail you through the vibrant and colourful ceremonies, which were conducted with professional skill and perfection.

MILAN Village

The week kicked off with the inauguration of the MILAN Village on the evening of 15 February 26 by the Flag Officer Commanding-in-Chief, Eastern Naval Command, Vice Admiral Sanjay Bhalla, AVSM, NM. The Village remained open throughout the duration of ships being in harbour for MILAN 26 (that is, from 15 to 21 February 26). The MILAN Village provided facilities for entertainment, interaction and culinary experiences.

The MILAN Village also showcased India's cultural diversity, incorporating elements from various States and Union Territories. Visitors experienced an enthralling array of folk dances, traditional music bands, handicrafts and exquisite crafts that reflected the country's timeless artistry. Adding to the charm, the event also featured a wide variety of authentic regional cuisines, offering a culinary journey through India's incredible diversity of flavours. The MILAN Village was an immersive experience, blending art, culture, food and festivity.

The International Fleet Review 2026

The International Fleet Review (IFR) 26 commenced with an elegant Presidential Banquet, on the evening of 17 February 2026. The Banquet was graced by Smt. Droupadi Murmu, the President of India, along with eminent international, national and state dignitaries, including political representatives, heads of

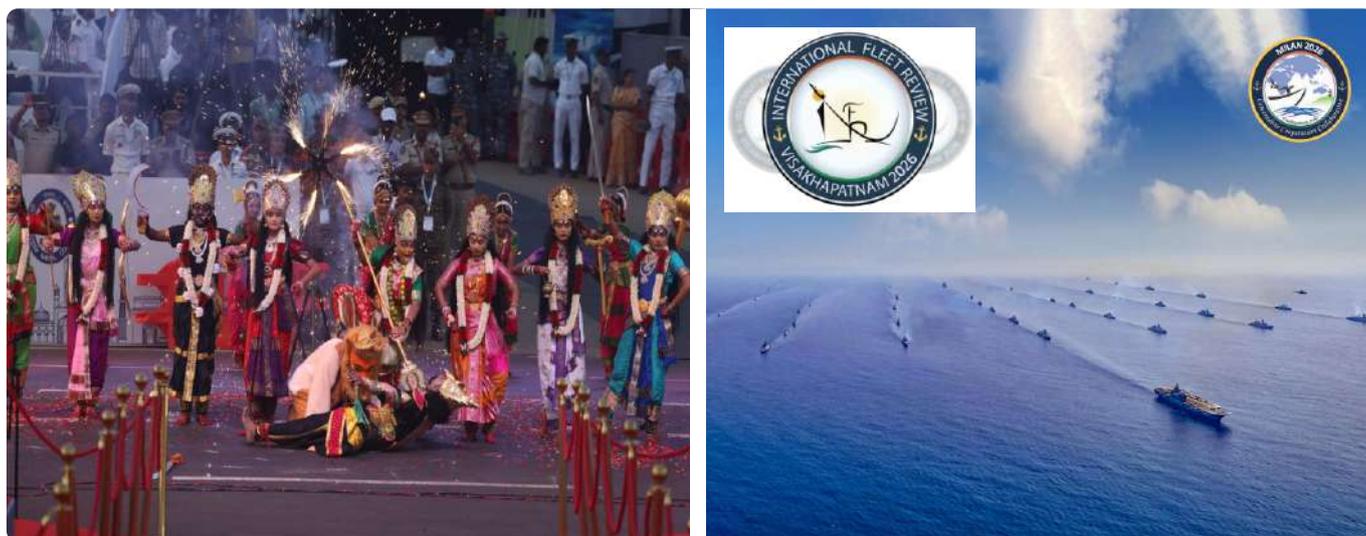


Smt Droupadi Murmu, President of India at the IFR, 18 February 2026, with Admiral D K Tripathi, Chief of Naval Staff and Shri Chandra Babu Naidu, Chief Minister Andhra Pradesh.

delegations from participating nations and senior military and government officials. The Presidential Banquet served as the formal start of the IFR 26 proceedings.

So what is an IFR? The IFR is a ceremonial assembly of International Naval Delegations, Ships, Submarines and Aircraft, during which the President, as Supreme Commander of the Armed Forces, reviewed the Fleet at Visakhapatnam on 18 February 2026. The event showcased maritime strength, cooperation and camaraderie whilst reaffirming sovereign oversight. India has previously hosted IFRs in 2001 at Mumbai and in 2016 at Visakhapatnam. The event is termed as IFR when there is participation by ships from friendly foreign countries. If only Indian vessels participate then, it is termed as Presidential Fleet Review (PFR). 12 editions of PFR have been conducted so far with the last one being held at Visakhapatnam in 2022.

The IFR Logo. The artistic lines of the IFR Logo represent the initial letters of the International Fleet Review, namely I, F and R. They are embellished to also represent the three dimensions of the Navy - the ship, the submarine and the aircraft. The inner circle is washed with the colours of the Indian tricolour and a rising sun framing the Aircraft, the outer circle displays the event, the year and the venue.



Left Photo. Cultural Pageant in International City Parade. Right Photo. Ships at sea in MILAN 2026. Inset. IFR 2026 Logo.

The International City Parade

The International City Parade held on the evening of 19 February 2026 commenced with an Air Power Demonstration by Indian Naval Aircraft and Helicopters. This was followed by the City Parade, featuring marching contingents and military bands from the Indian Army, Navy, Air Force and Coast Guard, alongside Foreign Contingents with their ceremonial bands. The parade also saw participation from the National Cadet Corps, Sea Cadet Corps, and Navy Children School, reflecting the spirit of the youth. A harmonious fusion of military ceremony, culture and art, the City Parade blended vibrant cultural troupes with artistic tableaux that celebrated India's maritime heritage and diversity. The City Parade culminated with a ceremonial illumination of ships anchored off the coast, followed by a synchronised display of fireworks, laser lights and drone formations. Together, these events offered a fitting celebratory finale to IFR 26.

MILAN 2026

Exercise MILAN 2026, the Indian Navy's premier multilateral maritime exercise was conducted from 19 to 25 February 2026. The MILAN Opening Ceremony was held on 19 February 2026 at the Samudrika Auditorium, Naval Base,

Visakhapatnam marking the formal commencement of the Multilateral Naval Exercise, MILAN 26. Shri Rajnath Singh, Hon'ble Raksha Mantri addressed the gathering as the chief guest. The exercise culminated on 25 February 2026 with a closing ceremony conducted onboard India's indigenous aircraft carrier, INS Vikrant, off the coast of Visakhapatnam.

Held under the theme '**Camaraderie, Cooperation, Collaboration**', MILAN 2026 witnessed participation on an unprecedented scale, comprising 42 ships and submarines and 29 aircraft. These also included 18 ships from the participating Friendly Foreign Countries. Apart from integral helicopters onboard the Friendly Foreign Country ships, maritime patrol aircraft from France, Germany and USA also participated.

MILAN 2026 commenced with a Harbour Phase that featured bilateral engagements, Subject Matter Expert Exchange programme and the International Maritime Seminar. Professional interactions were complemented by cultural exchanges, cross-deck and outstation visits. Technological demonstrations and the MILAN of Young Officers interaction facilitated the exchange of best

practices, while friendly sports fixtures enabled informal interaction.

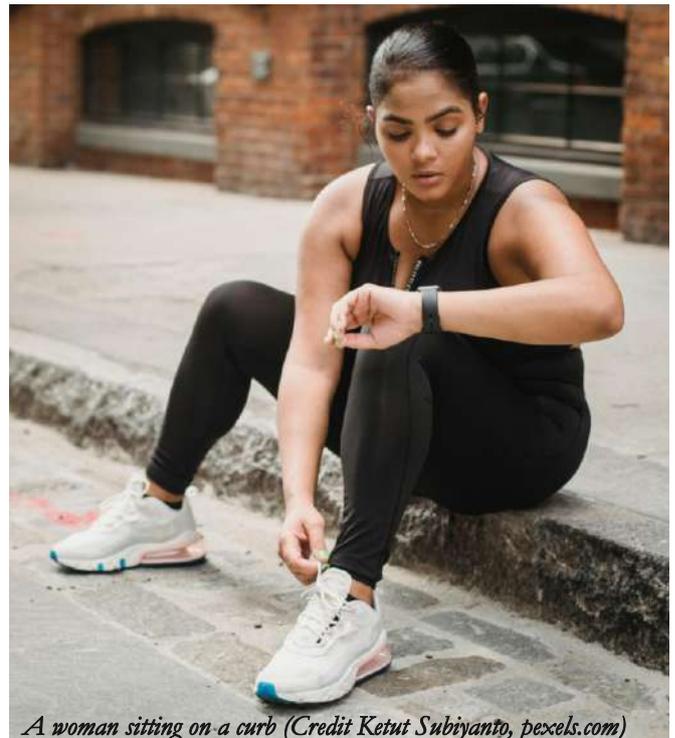
This was followed by the Sea Phase, which comprised high-intensity operational drills focused on advanced warfare disciplines including integrated air defence and antisubmarine warfare exercises, maritime interdiction operations, surface strike coordination, communication exercises, and cross-deck flying operations, enhancing interoperability and collective readiness. Live firings as part of surface gun shoots and FPM drills as well as anti-air firings were also undertaken. Emphasis was placed on real-time coordination, joint mission planning and logistical support at sea.

The MILAN Cultural Evening, held on 18 February 2026 at the Eastern Naval Command Sailors' Institute Lawns, was a formal yet warm gathering of Naval Personnel from around the world. Held under the starry Visakhapatnam sky, the evening featured cultural performances and multi-cuisine dining. It provided an occasion for enhancing friendships and bonhomie, whilst reflecting on the shared purpose that brings global navies together.

■ Lt Gen JS Sandhu (Retd) Editor

WEARABLE AI: THE NEW REVOLUTION

We are aware of these tiny electronic devices, we wear on our wrists that can help us track heart rate, physical activity, blood oxygen levels, sleep cycles and more. However, Dr Renuka David delves into future trends, such as Hormone-Sensing Wearables, which are poised to transform the industry.



A woman sitting on a curb (Credit Ketut Subiyanto, pexels.com)

In today's demanding world, peak physical fitness, mental sharpness, and emotional resilience are aspirational and non-negotiable. And hence wearable technology is quietly emerging as a powerful ally for service personnel, their families and civilians. From counting steps to analysing sleep and even predicting stress, these small devices are helping people take charge of their well-being in ways that were unimaginable just a decade ago.

Wearable tech refers to electronic devices that can be worn on the body. These include smart watches, fitness bands, sunglasses and smart rings. What began as simple step counters, has evolved into sophisticated health monitors capable of tracking heart rate, physical activity, blood oxygen levels, sleep cycles, ECG and more. For Armed Forces personnel who often operate in high-stress and physically demanding environments, these insights can support smarter training, faster recovery, and better long-term health.

What Wearable Tech Can Help Us Achieve Today

Currently, available wearables offer a surprisingly comprehensive picture of daily health. Most devices track steps, distance, calories burned, heart rate, blood oxygen level and activity intensity. This means real-time feedback on physical readiness. Instead of relying purely on periodic medical checks, individuals can now monitor trends continuously.

One of the most valuable features is heart rate variability (HRV) monitoring, which provides clues about stress and recovery. A dropping HRV can signal fatigue or overtraining, which is a critical information to maintain peak performance, without risking injury. Similarly, blood oxygen monitoring has gained importance, particularly for those at high altitudes.

Veterans in their golden years have also been able to monitor activity levels and heart health, while teens use fitness tracking to build healthier daily routines. In many ways, wearable tech has shifted healthcare from reactive to preventive.

The Next Frontier: Hormone-Sensing Wearables

While today's devices already offer impressive insights, the next wave of wearable technology promises to go significantly deeper, into the body's biochemical signals. Researchers and health technology companies are in the final stages of developing wearables capable of continuously monitoring hormones through sweat, interstitial fluid, or minimally invasive skin sensors. These are called Hormone-Sensing Wearables.

Hormones are the body's chemical messengers. They regulate mood, metabolism, sleep cycles, reproductive health, stress responses, and energy levels. Unlike heart rate or step count, hormonal changes often occur silently and sometimes un-noticed until symptoms develop. Continuous hormone monitoring could change that!

Imagine a wearable device that alerts you when cortisol (the stress hormone) rises and then remains elevated, far too long to signal chronic stress leading to fatigue, hypertension and burnout! Or a device that tracks insulin trends, helping users understand how their body responds to different foods and physical loads. For those in high-pressure environments, such insights could support better nutrition timing, recovery planning and mental resilience.

Metabolic health is another promising area, where these wearables could help users understand patterns related to weight gain, fatigue, or energy crashes. Instead of generic diet

advice, individuals could now receive personalised recommendations based on their body's real-time signals. For the Armed Forces, this opens the door to precision fitness and nutrition, optimised for each individual rather than a one-size-fits-all approach.

Why This Is Especially Important For Women

As Women's Day has just passed by, let us pause to think of all the conversations we have had on health and wellness for women and girls. These wearables might bring us a step closer to walking the talk. For women in the Armed Forces and military families particularly, hormone-sensing wearables could be transformative. Female physiology is naturally cyclical, with hormonal fluctuations across the menstrual cycle affecting energy levels, mood, sleep quality, body temperature, and exercise performance.

Currently, many women rely on manual cycle tracking or symptom diaries, which can be inconsistent. Advanced wearables could automatically detect hormonal patterns related to ovulation, premenstrual changes, and recovery needs. This has important implications not just for reproductive health but also for training optimisation and mental well-being.

For example, certain phases may be better suited for high-intensity training, while others may require more recovery and nutrition support. Hormone-aware wearables could help women plan workouts, manage mood changes, and monitor conditions such as polycystic ovarian syndrome (PCOS) or thyroid imbalances more effectively.

In the long term, such technology could also support fertility planning, premenopause management, and early detection of hormonal disorders-areas where timely awareness makes a significant difference.

The Sleep Revolution and Recovery!

If there is one area where wearable tech has already made a major impact, it is in sleep monitoring. Military life is characterised by irregular schedules, night duties, and operational stress. Sleep often becomes the first casualty, yet science is clear that poor sleep impairs reaction time,

decision-making, immunity and emotional stability.

Modern wearables can track sleep duration, sleep stages (light, deep, and REM), nighttime awakenings, breathing patterns, and even skin temperature changes. Over time, these devices build a personalised sleep profile, helping users understand whether they are truly recovering overnight.

However, it is important to remember that sleep scores are guides, not judgments. The goal is to notice patterns over time rather than worry about a single "bad" night.

Important Caveats to remember from the Doctor's Desk!

Despite their promise, wearables are tools, not medical authorities. Over-reliance or misinterpretation can sometimes create unnecessary anxiety. Users should keep several practical points in mind:

Accuracy varies: Consumer wearables are improving but are not always as precise as clinical equipment. Treat the data as directional, not 100% diagnostic. These devices are mere tools to pick up abnormality. Sometime small technical glitches, probably due to environmental conditions should not activate your panic button.

Avoid data obsession: Constantly checking metrics can lead to stress rather than health benefits. The purpose of

wearable tech is awareness and improvement, not perfection.

Protect your privacy. Health data is sensitive. Users should review device privacy settings and choose reputable brands that safeguard personal information, especially important for defence personnel.

Integrate with medical advice: If a wearable repeatedly flags abnormal readings (such as persistently high heart rate or poor oxygen levels) consult a qualified medical professional rather than self-diagnosing.

The basics still matter: No device can replace balanced nutrition, regular exercise, adequate sleep, and mental resilience practices.

Wearable technology is steadily moving from fitness accessory to personal health intelligence system through Artificial Intelligence. For the Armed Forces community in India, where readiness and resilience are mission-critical, this shift holds enormous promise. Used thoughtfully, these silent companions can empower all of us to take early action, recover smarter, and live healthier lives.

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THE DEATH OF DIPLOMACY

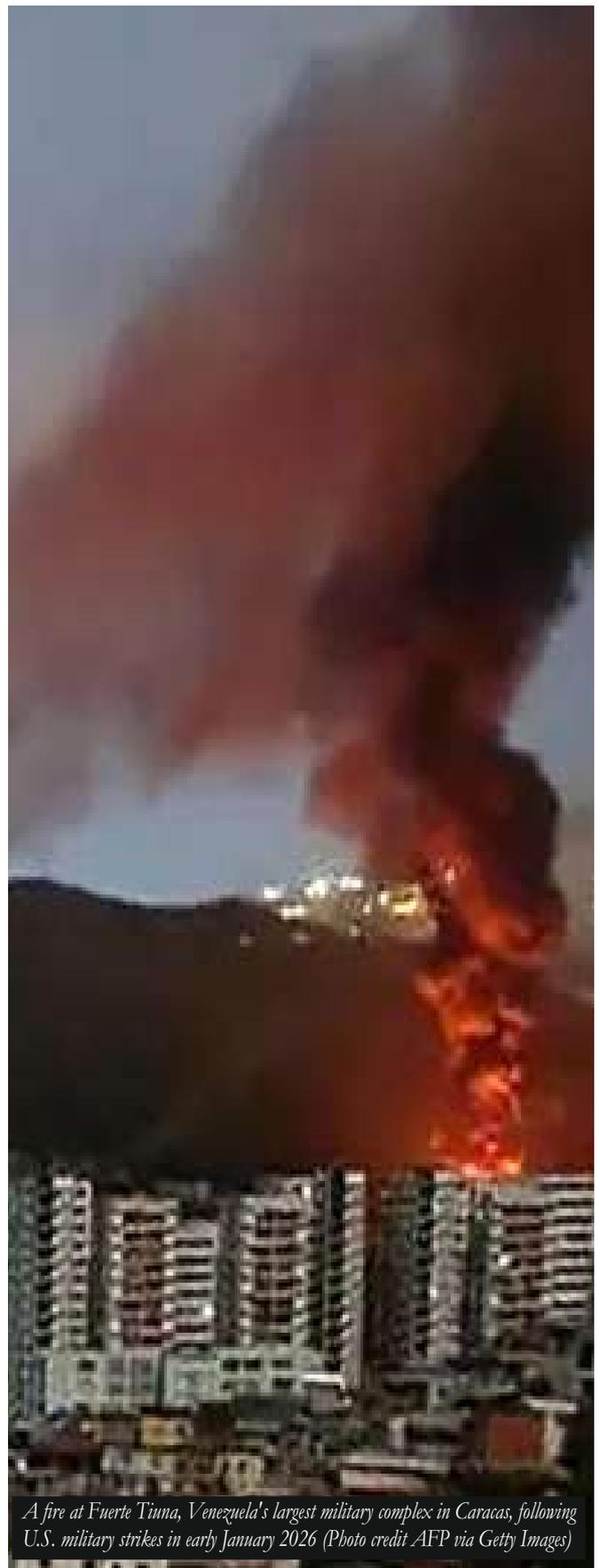
WHY THE CARACAS RAID IS A TURNING POINT FOR INDIA

The early-morning images of a blindfolded Nicolás Maduro being led into a New York detention centre by U.S. federal agents marks the end of an era. For Washington, "Operation Absolute Resolve" is being hailed as a surgical victory for law and order. But for the rest of the world, particularly the Global South, it is the loudest signal yet that the post-war international order has been liquidated.

In the words of former Indian Ambassador to Venezuela, Deepak Bhojwani, the strikes in Caracas were carried out "under the guise of liberty," but they represent a "brazen and defiant" destruction of sovereignty. As India watches this "Geopolitical Wild West" take shape, we must recognize that the implications go far beyond the Caribbean.

The Legal Hollow-Point: Dismantling the UN Charter

The most alarming aspect of the Caracas raid is the sheer transparency of its illegality. Under Article 2(4) of the UN Charter, states are strictly prohibited from using force against the territorial integrity or political independence of any state. The U.S. has attempted to bypass this by framing the invasion as a "law enforcement action" against a drug trafficker — an "indicted criminal" rather than a Head of State.



A fire at Fuerte Tiuna, Venezuela's largest military complex in Caracas, following U.S. military strikes in early January 2026 (Photo credit AFP via Getty Images)

However, as many analysts have noted, there is no UN Security Council resolution authorizing this force, nor was there an "imminent armed attack" that would justify self-defence under Article 51. By treating the capital of a sovereign nation as a crime scene and its President as a common fugitive, the U.S. has created a precedent where domestic indictments take precedence over international treaties. If alleged "criminality" becomes a sufficient trigger for invasion, no leader in the Global South is safe from the reaching arm of a more powerful neighbour.

For India, the crisis creates a painful diplomatic paradox. On the one hand, the India-U.S. partnership is at a crucial juncture, anchored by shared concerns in the Indo-Pacific but shaken by the aftermath of the Trump tariffs. On the other, India's identity as a leader of the Global South is rooted in the principle of non-interference.

The muted response from the Ministry of External Affairs, expressing "deep concern" without naming the U.S, reflects India walking on this tightrope. New Delhi knows that if it vocally condemns Washington, it risks friction with a vital security partner at a time when our trade relations are already in the balance. Yet, if it remains silent, it tacitly endorses a world where unilateralism is the new gold standard. My son Ishaan Tharoor's assessment in The Washington Post, where he is a diplomatic columnist, rings true: we are entering a "more anarchic form of globalization" where "might makes right." For a country like India, which has long championed a multipolar world governed by law, this "Donroe Doctrine" (a militarized Donald Trump version of the 19th century Monroe Doctrine, reserving the Americas as the USA's sphere of influence) is a direct threat to the strategic autonomy we hold dear.

There is a transactional temptation on the part of some to view the fall of Maduro as a win for India's energy security. Having been coerced to cease buying inexpensive Russian oil by US sanctions, we had feared a rise in global oil prices, as increasing demand met constricted supply; but the advent of hitherto-sanctioned Venezuelan oil onto the world market would ease such concerns, since at least in theory the supply-demand imbalance would now be corrected. With the U.S. now effectively in charge of the world's largest oil reserves, there is hope that Venezuelan crude will replace Russian, and ample quantities of crude oil once again flow to Indian refineries at a discount.

But this is a short-sighted calculation. After all, the U.S. has already hinted at an "open-ended control" of these resources to "reimburse" its own costs. If the global energy market becomes a spoils-of-war system, the stability India needs for its growth will be replaced by the whims of a single superpower. We

may get cheaper oil today, but at the cost of an unpredictable international market tomorrow.

The Twilight of Rules

The larger picture this reveals should be of concern to all of us in India. The architecture of our geopolitical reality is shifting under our feet. For nearly eighty years, the globe spun on an axis of predictable, if imperfect, agreements known as the Rules-Based Liberal International Order. That axis is now tilting precariously, threatening to unbalance the delicate equilibrium that has held major power conflict at bay since the mid-twentieth century. We are currently witnessing a profound historical transition: a slide from a system where might is constrained by law, to a darker paradigm where might is the law. The "New World Disorder" is not merely a period of turbulence; it is the dismantling of the consensus that civilization requires a referee.



Nicolás Maduro and his wife, Cilia Flores, in handcuffs after landing at a Manhattan helipad, escorted by heavily armed federal agents (photo XNY / Star Max / GC Images via Getty Images)



U.S. President Trump watches the capture of Venezuelan President Nicolás Maduro (Image by picture alliance / Anadolu)

doctrine views it as an intolerable shackle on national sovereignty. The logic is strictly Thucydidean: *the strong do what they can and the weak suffer what they must*. By treating ancient alliances as protection rackets and international treaties as restrictive business deals, the United States signalled a pivot from being the guarantor of the system to its primary disruptor. The message sent to the world is that law applies only when it is convenient, and that sovereignty is no longer a right inherent to a state, but a privilege enjoyed only by those powerful enough to enforce it.

The erosion of these norms is aggressively contagious. If the United States can unilaterally disregard the sovereignty of a nation like Venezuela - which it did through threatened military intervention, attempted regime change,

To understand the magnitude of this collapse, one must measure the philosophical distance between San Francisco in 1945 and the modern doctrine of "America First." When Harry S. Truman addressed the closing session of the United Nations Conference on June 26, 1945, he spoke to a world that had been incinerated by the unchecked aggression of the Axis powers. Truman's central thesis was revolutionary for a conquering superpower: he argued that security could not be achieved by one nation alone, no matter how formidable its military. He asserted that powerful nations had a duty to use their strength not to dominate, but to serve the common good. As he told the US Congress: "*We all have to recognize—no matter how great our strength—that we must deny ourselves the license to do always as we please.*" The United States, possessing the atomic bomb and half the world's GDP, chose not to build an empire of territory, but an empire of rules. It constructed the United Nations, the Bretton Woods financial institutions, and a framework of international law intended to bind the powerful and protect the weak.

Contrast this vision with the contemporary "might is right" approach to international relations, most starkly illustrated by the Trump administration's foreign policy. Where Truman viewed international law as a necessary shield against anarchy, this modern

maximum pressure campaigns and finally the decapitation of the regime with the "extraction" of President Maduro, all of which lacked a United Nations mandate - it sets a terrifying precedent. When the world's leading democracy decides that the internal politics of a sovereign nation are subject to its own discretion, the taboo against aggression dissolves. The question for other potential aggressors shifts from "Is this legal?" to "Can I do it, and can I afford the consequences?"

The New World Disorder

This breakdown invites a future defined not by peace, but by calculation. China, for instance, watches Western equivocation with intense interest. If sovereignty is porous for the Americans in their backyard, Beijing may calculate that the cost of forcefully "reunifying" with Taiwan would be merely economic and military, rather than moral or legal. Similarly, the Russian annexation of Crimea and the invasion of Ukraine were predicated on the belief that the international community lacked the will to enforce its own rules. In South Asia, one might imagine a scenario where India, facing terrorist threats or a refugee crisis, feels emboldened to act militarily against a neighbour like Bangladesh, knowing there is no global referee left on the field. For decades, the world lived in fear of a single, cataclysmic Third World War. The relief that such a conflict never materialized blinded us to the new, creeping danger: a proliferation of smaller, unchecked wars. We are drifting toward a return to global anarchy, a state where regional hegemony carve out spheres of influence and borders

are only as secure as the armies standing guard over them.

This slide toward anarchy is accelerated by a vacuum of leadership. The withdrawal of the United States from dozens of international organizations and treaties — including the Paris Agreement, the Open Skies Treaty, the World Health Organization and even the India-led International Solar Alliance — was not merely administrative housekeeping; it was a strategic retreat. This isolationism ignores the reality of what the late UN Secretary-General Kofi Annan called "*problems without passports*": challenges such as climate change, global pandemics, and nuclear proliferation respect no borders and cannot be solved by unilateral decrees. A virus does not pause for diplomatic disputes, nor does carbon dioxide recognize a tariff. By exiting the institutions designed to manage these transnational threats, the architects of the withdrawal ensured a fragmented and failing global response.

Furthermore, this retreat creates a geopolitical vacuum that others are eager to fill. Nature abhors a vacuum, and as the United States steps back, China steps forward. Beijing has moved aggressively to reshape institutions like the UN Human Rights Council and the WHO to fit an authoritarian mould, rewriting standards on internet governance and human rights to prioritize state security over individual liberty. The danger is not just that the world becomes less organized, but that it becomes organized by powers that do not share the liberal democratic values that underpinned the post-war era.

The Crumbling Pillars of World Order

To fully appreciate what is being lost, one must anatomize the decaying body of the Rules-Based Liberal International Order. It was built on **four pillars**, all of

which are now crumbling. The **first** was multilateralism, the belief that global challenges are best solved collectively; this has been replaced by bilateral transactionalism and trade wars. The **second** was open markets and economic interdependence, which is now succumbing to the rise of protectionism and strategic "*de-coupling*." The **third** was the universality of human rights, a principle now frequently bartered away for strategic partnerships, as seen in the silence regarding abuses in Saudi Arabia or Xinjiang. The **fourth** was the rule of law, the idea that states are subjects of the law, not masters of it — a principle undermined by the paralysis of the World Trade Organization and the US rejection of the International Criminal Court.

What remains is a hollowed-out shell. The buildings in Geneva and New York still stand, and diplomats still meet, but the spirit of the order is vanishing. As Canadian Prime Minister Mark Carney said in Davos, this is a rupture, not just a transition. We are likely moving toward a

"**Multiplex**" or "**G-Zero**" world, characterized by regional spheres of influence where great powers dominate their neighbourhoods without global oversight. We may see the rise of ad-hoc coalitions of the willing rather than permanent alliances, and a "*digital iron curtain*" that forces nations to choose between competing technological ecosystems. In this new disorder, the only prevailing rule is that there are no rules, only consequences. While the "**might is right**" doctrine may feel empowering to the strong in the short term, it constructs a world that is inherently dangerous, unstable, and unpredictable for everyone in the long run.

This in turn raises a question that strikes at the heart of the current crisis: does the shedding of moral pretence make the United States stronger, or simply lonelier? To answer this, we must acknowledge that the "**Empire of Liberty**" — the narrative construct that sustained American power for



Address by Canadian Prime Minister Mark Carney at the World Economic Forum Annual Meeting, Davos, 21 January 2026 (credit commons.wikimedia.org)



President Donald Trump (left image), and a map of the Arctic Ocean showing Greenland (image credit ndtv.com)

American energy companies are poised to enter a vacuum. So for Trump admirers this looks like strength — a reassertion of the Monroe Doctrine with teeth. Yet, this victory has come at the cost of legitimacy. The message to the Global South is chilling: you are not partners; you are, at best, treasuries to be raided.

The Empire Unmasked: A Solitary Hegemon

However, it is the Greenland crisis that reveals the true cost of this new posture. The attempt to purchase - and potentially coerce - a NATO ally's territory treats Denmark not as a fellow democracy and a military ally, but as a poor relative who can be pressured into a distress-sale. The threat of tariffs on European allies for refusing to sell sovereign territory, though

eighty years — has effectively been dissolved. Historically, empires from Rome to Great Britain eventually reached a stage where the maintenance of order required naked force rather than consent. However, the American Century was unique because it relied on an admirable, if often hypocritical, duality: the iron fist was always gloved in the velvet of "democracy promotion" and "human rights." When the United States intervened in Iraq, Libya or the Balkans, it ostensibly did so (or was able to claim it did so) to save the oppressed or to protect the region and world from gross dangers. This moral narrative was a strategic asset; it lowered the cost of hegemony because it gave allies a reason to follow and enemies a reason to hesitate.

The capture of Nicolas Maduro and the subsequent explicit pivot to "taking the oil" (as Trump unabashedly kept saying) marks the death of that asset. By stripping away the justification of "restoring democracy" and replacing it with the transactional logic of resource extraction, the Trump administration has not just violated a norm; it has destroyed the social contract of the Western alliance. The silence of the once-vaunted moral compass is deafening. In Venezuela, this "might is right" approach has yielded a tactical victory, where the regime is decapitated and

now retracted, is a crossing of the Rubicon. It reclassifies the European Union from a junior partner to a rival sphere of influence. This causes a schism that defines the paradox of modern American power: the United States will appear harder and more formidable in the short term, but become brittle and isolated in the long term.

We are likely witnessing the end of deference. European allies will not attack the United States, but they will inoculate themselves against it. The pushback will not be military, but structural, accelerating the drive for European "Strategic Autonomy." The EU will likely fast-track alternative payment systems to bypass the dollar and evade sanctions (as the BRICS is said to be doing), develop independent military capabilities outside NATO structures, and, most damagingly, hedge their bets by warming relations with China as a counterbalance. By signalling that alliances are merely transactional protection rackets, the United States loses the force multiplier of coalition warfare. In a future conflict, perhaps in the Pacific, Washington may call Europe for aid and find the line dead — or no one ready to pick up the phone.

If the United States ignores sovereignty in Venezuela and treats allies as targets in Greenland, the rest of the world has no incentive to play by American rules. As Trump inaugurates his "Board of Peace" with much fanfare, we may see the formation of a league of the ostracized, where economies and states band together simply to survive American predation. In the twentieth century, the United States was the "indispensable nation" because it provided public goods like security and free trade in exchange for deference. In this new disorder, it is becoming the Yankee Imperium of old leftist caricature: it will be feared for its



Board of Peace meeting at the U.S. Institute of Peace in Washington DC on 19 February 2026 (left photo robertcliftonrobinson.com and right photo AFP)

capacity to disrupt, but untrusted for its capacity to build. Trump's approach bets everything on the idea that raw power is the only currency that matters. He may be right that no single state can stop him today, but history suggests that when an empire drops its mask and rules by fear alone, it doesn't necessarily provoke a single war; it provokes a thousand quiet exits.

In short, the United States is not strengthening its foundation; it is stripping the insulation off its wires. The shock, when it comes, will be uncontained.

Conclusion: A Jungle Without Rules

India has survived and thrived by navigating a world of rules. The Caracas raid replaces those rules with a "jungle" where the strongest predator defines the law. While Maduro's domestic record may have been indefensible from the point of view of most democrats, the method of his removal is an affront to the collective security of every democratic country that felt secure behind its sovereignty and the sheltering carapace of the rules-based liberal international order.

In a world where the old guardrails of international law are collapsing and the "might is right" doctrine is ascendant, India faces an existential challenge. The comfortable diplomatic traditions of the past, particularly the moral posturing of Non-Alignment, are ill-suited for a chaotic era defined by predator states and transactional superpowers. Geographically wedged between a hostile China and an unstable Pakistan, and geopolitically sandwiched between a capricious United States and a declining Russia, New Delhi can no longer afford the luxury of principled idealism. To survive and thrive in this new disorder, India must trade sentiment for a razor-sharp, unsentimental realism.

The cornerstone of this new strategy must be the shift from Non-Alignment to assertive Multi-Alignment. The era of standing apart from blocs is dead because the blocs themselves are dissolving into shifting, temporary coalitions. India must navigate this by engaging promiscuously but warily with all centres of power, effectively

becoming a geopolitical "elephant"—too big to swallow for enemies, yet too substantial and valuable to ignore for friends — while developing the stripes of an economic and technological "tiger". This requires a lithe tightrope walk: deepening strategic engagement with Washington to counter Chinese aggression, while simultaneously maintaining historical ties with Moscow to prevent Russia from becoming a total vassal of Beijing. The logic is strictly pragmatic. If the United States has proven it will abandon allies when convenient, India must be equally transactional, purchasing security and technology where it can without ever selling its soul or outsourcing its sovereignty.

This diplomatic agility, however, is meaningless without the hard power to back it up. The lessons from Venezuela and Ukraine are stark: sovereignty is only as real as the Army defending it. In a world where isolationism is rising in the West and international law is paralyzed, India cannot rely on external



European leaders join Ukrainian President Volodymyr Zelenskyy and President Donald Trump at the White House (Photo Tom Brenner for The Washington Post via Getty Images)

deeply into India's economic and security architecture that they cannot be easily plucked away by Beijing.

Finally, true sovereignty in the twenty-first century is economic. The vulnerability of Europe to Russian energy blackmail and the West to Chinese manufacturing dominance offers a clear warning. India must build an economic moat by "de-risking" from China, reducing critical dependencies in sectors like rare earths, pharmaceuticals and electronics. Simultaneously, it must position itself as the "factory of second choice" for a global economy desperate to diversify. By courting Japanese investment and

security guarantees. The most urgent imperative is to transform "*Atmanirbhar Bharat*" from an economic slogan into a survival strategy. India must rapidly indigenize its military-industrial base, moving away from a dangerous dependence on foreign shields — American supply-chains that could be cut by a whimsical White House, or Russian spares that might be diverted to other conflicts. In the anarchy of the new order, the only reliable guarantee against a Chinese incursion in the Himalayas or the Indian Ocean is the credible, indigenous threat of Indian force.

Beyond its own borders, India must efficiently consolidate its immediate neighbourhood. If the United States can disregard sovereignty in its hemisphere, China will conceivably feel emboldened to do the same in Asia, as evidenced by its "*salami slicing*" tactics and debt-trap diplomacy. New Delhi can no longer afford to be a passive "*big brother*"; it must become an active guarantor of security for South Asia, effectively establishing an Indian version of the old Monroe Doctrine for the Indian Ocean Region. This involves integrating nations like Nepal, Bangladesh, and Sri Lanka so

European technology, India can build the economic muscle required to sustain its military ambitions. In this fractured world, India's goal is not to seek the protection of a crumbling empire, but to build enough internal strength that no empire dares to test it.

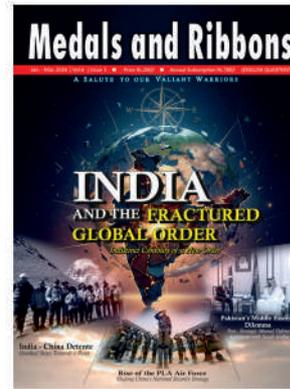
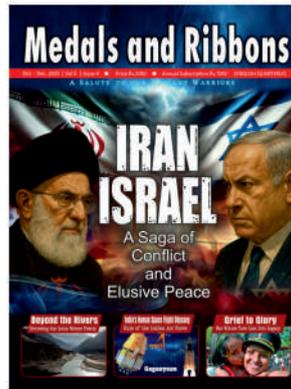
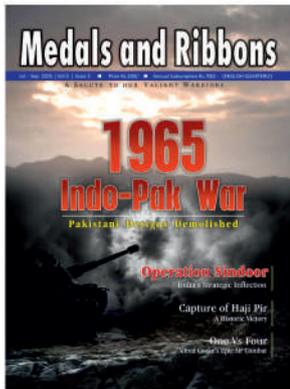
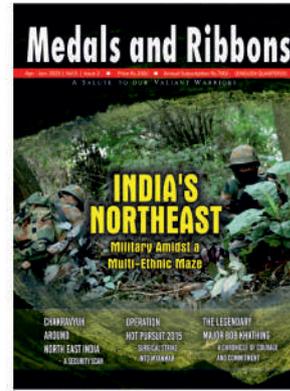
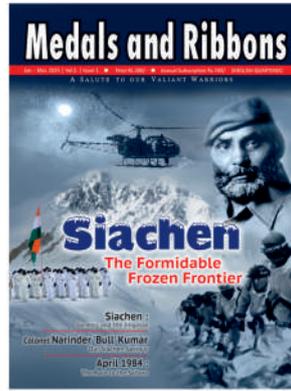
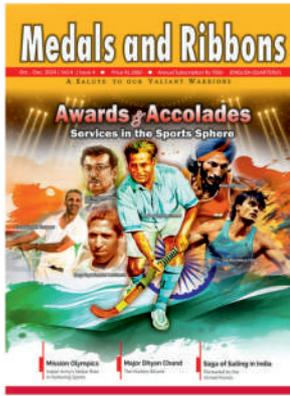
As we adjust our diplomacy to this new reality, India must be more than a passive observer. We must also lead the conversation on restoring the sanctity of the UN Charter. If we do not, we may find ourselves wandering unarmed in the "**Wild West**" of the 21st century, where the only law that matters is the one written by the one with the best weapon and the quickest draw.



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