The Journal of the United Service Institution of India JANUARY-MARCH 2026 USI

# U.S.I. JOURNAL

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*(Estd. 1870)*

## PRINCIPAL CONTENTS



**Vol CLVI** **JANUARY-MARCH 2026** **No 643**

# USI Latest Publications: 2025-2026

| Pub Code | Type | Title of Publication and Author | Price '₹' | Year |
|---|---|---|---|---|
| M-3/2026 | Monograph | COGNITIVE WARFARE BY CHINA AND INDIA'S RESPONSE<br>by Maj Gen BK Sharma, AVSM, SM** (Retd) and<br>Maj Gen Sanjeev Chowdhry (Retd)<br>**USI of India** | 350 | 2026 |
| M-2/2026 | Monograph | SPACE RESOURCES: THE ARTEMIS ACCORDS, INTERNATIONAL LUNAR RESEARCH STATION, AND OPTIONS FOR INDIA by Air Mshl R Radhish, PVSM, AVSM, VM (Retd)<br>**USI of India** | 350 | 2026 |
| M-1/2026 | Monograph | USI ANNUAL UN FORUM 2025: ADVANCING PEACEKEEPING AND HUMANITARIAN IMPERATIVE IN A FRAGMENTED WORLD; edited by Maj Gen PK Goswami, VSM (Retd), Maj Gen AK Bardalai, VSM, PhD (Retd) and Col KK Sharma, PhD (Retd)<br>**USI of India** | 350 | 2026 |
| Adm/SYB-2025* | Year Book | STRATEGIC YEAR BOOK 2025; Editor-in-Chief: Maj Gen BK Sharma, AVSM, SM** (Retd); edited by Maj Gen Sanjeev Chowdhry (Retd), Ms Komal Chaudhary, Mr Vinayak Sharma, and Ms Richa Sharma<br>**M/s Pentagon Press** | 2,950 | 2025 |
| Adm-1/ 2025 | Book | MODERN CONFLICTS AND CHANGING CHARACTER OF WARFARE: IMPLICATIONS FOR INDIA; edited by Maj Gen Sanjeev Chowdhry (Retd), Col Deepak Kumar, Ms Komal Chaudhary, Mr Vinayak Sharma and Ms Richa Sharma<br>**M/s Pentagon Press** | 995 | 2025 |
| CMHCS-14 | Book | HONOURS AND AWARDS OF THE INDIAN ARMED FORCES by Dr Amlesh Kumar Mishra<br>**M/s Pentagon Press** | 1,995 | 2025 |
| CMHCS-13 | Book | THE SUKRANITI: STATECRAFT AND WARCRAFT by Col Pradeep Kumar Gautam (Retd)<br>**M/s Pentagon Press** | 995 | 2025 |
| CMHCS-12 | Book | FORGOTTEN: HISTORY OF HONG KONG SINGAPORE ROYAL ARTILLERY by Col Mandeep Singh (Retd)<br>**M/s Pentagon Press** | 995 | 2025 |
| CMHCS-11 | Book | BECAUSE OF THIS: A HISTORY OF THE INDO-PAK AIR WAR OF DECEMBER-1971 by Air Mshl Vikram Singh (Retd)<br>**M/s Manohar Publishers & Distributors** | 7,995 | 2025 |
| CMHCS-10 | Book | PORTRAITS OF VALOUR: TIMELESS MILITARY ART by Lt Col Arul Raj (Retd); authored by Maj Gen Ian Cardozo, AVSM, SM (Retd); edited by Sqn Ldr Rana Chinna, MBE (Retd)<br>**M/s KW Publishers** | 1,280 | 2025 |
| CMHCS-9 | Book | WAR-WOUNDED DISABLED SOLDIERS, AND CADETS-A REPORT<br>by Mrs Meghna Girish<br>**USI of India** | - | 2025 |
| CMHCS | Book | WE TOO WERE THERE: INDIANS AT GALLIPOLI by Col Tejinder Hundal, VSM, PhD<br>**M/s Manohar Publishers & Distributors** | 3,195 | 2025 |
| CS3/R-121/ 2025 | Book | CIVIL-MILITARY FUSION AS A METRIC OF NATIONAL POWER AND COMPREHENSIVE SECURITY by Lt Gen Raj Shukla, PVSM, YSM, SM (Retd)<br>**M/s Pentagon Press** | 695 | 2025 |
| Adm-UNPK/ 2025 | Book | 75 YEARS OF INDIA'S CONTRIBUTION TO UN PEACEKEEPING by Maj Gen PK Goswami, VSM (Retd)<br>**M/s Pentagon Press** | 895 | 2025 |
| CS3/R-120/ 2025 | Book | ARTIFICIAL INTELLIGENCE, MILITARY TACTICS, BRIDGES AND ASPIRATIONS: ACTION PLAN INSIDE by Brig Pawan Bhardwaj, YSM<br>**M/s Pentagon Press** | 1,295 | 2025 |
| NSP-M-9/ 2025 | Monograph | WHOLE-OF-GOVERNMENT APPROACH TO NATIONAL SECURITY by Lt Gen AK Singh, PVSM, AVSM, SM, VSM (Retd) and Maj Gen Jagatbir Singh, VSM (Retd)<br>**USI of India** | 395 | 2025 |
| M-8/2025 | Monograph | THE EASTERN SECTOR OF INDIA-CHINA BORDER: CHINESE ARGUMENTS, PROBABALITIES AND POSSIBILITES OF RESOLUTION by Dr Geeta Kochhar and Mr Ritesh Kumar<br>**USI of India** | 395 | 2025 |
| M-7/2025 | Monograph | INTERNATIONAL DAY OF UN PEACEKEEPERS 29TH MAY: 75 YEARS OF INDIAN CONTRIBUTION TO UN PEACEKEEPING; compiled by Maj Gen PK Goswami, VSM (Retd)<br>**USI of India** | 395 | 2025 |
| M-6/2025 | Monograph | PAKISTAN ARMY'S STRATEGIC CULTURE: IMPLICATIONS AND THREAT ASSESSMENT by Brig Sanjay Kannoth, VSM<br>**USI of India** | 395 | 2025 |
| M-5/2025 | Monograph | INFORMATION AND CYBER IN NON-KINETIC WARFARE: COUNTER STRATEGIES by Lt Gen DP Pandey, PVSM, UYSM, AVSM, VSM (Retd)<br>**USI of India** | - | 2025 |

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# United Service Institution of India

***For***

***the furtherance of interest and knowledge in the art, science, and literature of national security in general and of the defence services in particular***

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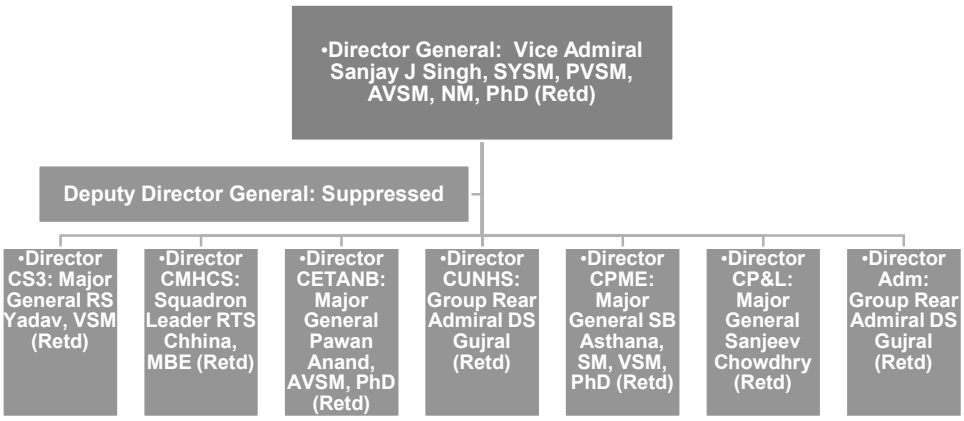

## Auditorium/Seminar Room Rates w.e.f. 01 Apr 2022

| | Capacity | Full Day up to 8 hours | Half Day up to 4 hours | Additional per hour | Additional for Sat/Sun/ Holidays | Security Deposit |
|---|---|---|---|---|---|---|
| Audi | 300 | ₹ 40,000/- | ₹ 25,000/- | ₹ 4,000/- | ₹ 4,000/- | ₹ 5,000/- |
| SR-1 | 70 | ₹ 25,000/- | ₹ 15,000/- | ₹ 3,000/- | ₹ 3,000/- | ₹ 3,000/- |
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| SR-3 | 16 | ₹ 10,000/- | ₹ 4,000/- | ₹1,500/- | ₹ 1,500/- | ₹ 1,500/- |
| Banquet Hall Pavilion | 15,000/- per day<br>**Note:** Due to expiry of contract with service provider the availability of Banquet Hall and Restaurant are likely to be disrupted for a few days. Inconvenience to members is deeply regretted. Recommencement of services will be indicated on the USI website. | | | | | |

**Notes:**

1. 18% GST extra.
2. Armed Forces will be given a 10% discount.
3. For booking mail to - booking@usiofindia.org
4. For event queries, mail to - events@usiofindia.org

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- Overseas annual subscription (By Air Mail) – GBP 50 or USD 80
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1. The USI conducts USI DSSC Aspire- One and Two Course and correspondence courses for Defence Services Staff College (DSSC)- Army, Navy, and Air Force (IAF) and Defence Services Technical Staff Course (DSTSC) – Army Entrance Examinations and Promotion Examinations Parts B and D.

2. The Courses have been remodelled to make it more interactive, and the admission procedure has been simplified to make it user friendly.

3. Membership of the USI is mandatory to join any correspondence course and Aspire One and Two.

4. Schedule of Correspondence Courses 2026.

5. Course Schedules:

| Course | Commencement of Course | Date of Exam | Cost All Subjects | Cost per Subject |
|---|---|---|---|---|
| DSSC (Army) | Second Week of Nov 2025<br><br>**Registration open for 2026** | Sep 2026 | ₹ 9,000/- | Tactics B - ₹ 3,000/-<br>Current Affairs and Military History – ₹ 2,000/- (each)<br>Science and Military Technology – ₹ 1,500/-<br>Tactics A – ₹ 1,300/-<br>Administration and Military Law – ₹ 1,200/- |
| DSSC (Navy) | Fourth Week of Mar 2026 **Registration open for 2026** | Jul 2026 | - | Paper 1 – ₹ 3,000/-<br>(Current Affairs, Military/Naval History and Maritime Strategy) |
| DSSC (IAF) | Second Week of Dec 2025<br><br>**Registration open for 2026** | Jul 2026 | - | Correspondence Course<br>• Military History – ₹ 3,000/-<br>• Current Affairs – ₹ 3,000/-<br>Online Course<br>• Current Affairs – ₹ 4,000/-<br>• Refer to Prospectus available on the USI website for other details |
| Part B | Second Week of Jan 2026 **Registration open for 2026** | Jun to Jul 2026 | ₹ 3,000/- | Tactics, Current Affairs and Military History – ₹ 1,000/-<br><br>Administration and Military law – ₹ 800/- |
| Part D | Fourth Week of Apr 2026 **Registration open for 2026** | Oct 2026 | ₹ 4,000/- | Tactics, Current Affairs and Military History – ₹ 1,500/-<br>Administration and Military law – ₹ 1,000/- |

6. **Contact Programs**. Three contact programs for DSSC/DSTSC (Army)-2025 have been planned. Dates are: CP-I 15-20 Jun 2026, CP-II 29 Jun to 04 Jul 2026, and CP-III 13 to 18 Jul 2026. Separate test papers will be set for each programme. Fees - ₹ 7,000/- per contact programme and ₹ 3,500/- only for material of each contact program.

7. **USI Aspire One** from 01-13 Dec 2025 for all subjects with sample paper was conducted online. **USI Aspire Two** from 04-16 May 2026 for four subjects i.e., Current Affairs (CA), Military History, Science and Military Technology and Tactics – B with mock test will be conducted online. These aspects are also applicable for IAF officers for CA (leg only).

8. Correspondence courses for Special to Corps subjects are not conducted.

9. **Mode of Payment**. Multicity cheque or bank draft payable at New Delhi in favour of Director General USI of India or Net Banking/UPI QR code. Bank details are available on website.

10. **Contact address** : Rao Tula Ram Marg (Opposite Signals Enclave), Post Bag No. 8, Vasant Vihar PO, New Delhi-110057

11. **Email/Website** : dircpme@usiofindia.org/www.usiofindia.org

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13. **Telephones** : Dir CPME – 2086-2325, CPME 2086-2318 or 2086-2321 Extn 207, 208, and 210

14. **Prospectus and Form**: Available on Website and from CPME.

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|---|---|---|---|
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**$**(For 3 years commencing 01 Jan)

***(one year for one course only but applicable for all courses in that year)

## Articles for USI Journal

### Style Sheet

The United Service Institution of India (USI) Journal invites original and unpublished research articles on subjects related to national security, defence, and military history. Articles should not exceed 3,000 words and must be submitted as a Word document via email to direditorial@usiofindia.org. Each submission should include an abstract amounting to no more than 10 per cent of the article length. The article must be organised in group and paragraph headings and include an Introduction and Conclusion. The author must certify that the article has not been published or submitted elsewhere. The Director Editorial reserves the right to edit the manuscript.

All references should be provided as endnotes with complete bibliographic details; a separate bibliography is optional. Articles must be typed in Arial, font size 12, and use English (UK)/English (India). Symbols such as %, &, etc. should be avoided unless essential. Dates should follow the format 24 Jun 2020, and all abbreviations must be spelled out at first use. The end notes must follow the format of Chicago style. Other details are given at https://usiofindia.org/publications.php?category=7.

Submissions must be accompanied by the author's full name, postal address, and a short curriculum vitae of four to five sentences. Serving officers are required to follow relevant publication regulations prior to submission.

On publication, contributors will receive a copy of the journal, three offprints, and a suitable honorarium.

## Additions to the USI Library for the Quarter Ending Mar 2026

During this period a total of **48** new books have been added. Details of the new books are available on the USI Website.

## Research Projects

Members interested in undertaking research projects may submit research proposals to the USI (CS3/CMHCS/CETANB). At present, ten Chairs of Excellence have been instituted in CS3; namely, the Field Marshal KM Cariappa Chair, Admiral RD Katari Chair, Air Marshal Subroto Mukherjee Chair, Professor DS Kothari Chair, Ministry of External Affairs Chair, Flying Officer Amandeep Singh Gill Chair, General Bipin Rawat Chair, Lieutenant General PS Bhagat Chair, Bhawanipur Education Society College Chair, Assam Rifles Chair, Abhay Tripathi Chair and Gandhi Mandela Chair. There are three Chairs in CMHCS; namely, the Maharana Pratap Chair, the Chhatrapati Shivaji Chair and the USI-War Wounded Foundation Chair. Copies of the Rules for Award of Fellowship Grants and Conduct of Research are available on the USI Website.

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## New USI Members

During the period Jan-Mar 2026, 29 registered as new Life Members; 02 have renewed Ordinary Membership and 06 registered as new Ordinary Members.

## Course Members

During Jan-Mar 2026, 134 Officers registered for Course Membership.

# CONTENTS

**January to March 2026**

# From the Desk of the Director, Centre for Publications and Library

It is my honour to present the Jan–Mar 2026 edition of the *Journal of the United Service Institution of India (USI)*. This issue brings together a diverse and forward-looking collection of articles that examine India's evolving strategic environment, the changing character of warfare, emerging technologies, and enduring lessons from military history. Taken together, the contributions reflect the widening scope of contemporary security discourse—ranging from strategic analysis and operational innovation to historical reflection and intellectual debate.

The issue opens with an article by Vice Admiral Sanjay J Singh, SYSM, PVSM, AVSM, NM, PhD (Retd) titled *'India's Strategic Challenges',* which assesses the country's 2026 security environment amid the geopolitical turbulence of 2025, highlighting tensions with Pakistan, West Asian instability, maritime disruptions, and the need for defence modernisation, jointness, and self-reliance. The second article, *'Control of Operational Fires: Necessity of Reconnaissance, Intelligence, Surveillance, and Targeting Brigades',* by Brigadier Prodipto Goswami argues for integrated Reconnaissance, Intelligence, Surveillance, and Targeting Brigades to compress decision cycles and enhance sensor–shooter integration for effective operational fires in future multi-domain conflicts.

The third article by Colonel Dinesh Mayal, PhD (Retd), titled *'China's Global Initiatives Quartet: Weaponising Development, Security, Civilisation, and Governance',* analyses Beijing's four initiatives as an integrated framework to reshape global governance and expand China's long-term strategic influence, particularly across the Global South. The next article by Colonel Ashish Nagaich, SM, and Dr Gopal Bhushan, '*Artificial Intelligence Beyond Large Language Models',* traces the evolution of Artificial Intelligence (AI) and argues that it extends far beyond large language models such as ChatGPT. It highlights the wider ecosystem of AI models and their specialised applications, stressing the need for a broader understanding to responsibly harness AI for practical problem-solving.

The article *'Cyber Security Vulnerabilities of Artificial Intelligence-Enabled Counter Drone Systems: Risk and Resilience Strategies in South Asian Environment',* by Colonel Harmeet Singh and Professor (Dr) Anurag Jaiswal examines cyber risks in AI-driven counter-drone technologies and advocates resilient, multi-layered cyber-defence frameworks supported by indigenisation and robust policy standards. Professor (Dr) Nirmala Joshi, in the sixth article titled '*Indian Perspectives on Eurasia*', examines the renewed geopolitical importance of Eurasia and Central Asia through Mackinder's Heartland theory, highlighting India's historical ties and contemporary engagement through connectivity, defence cooperation, and multilateral platforms.

Colonel Vineet Banga's article, *'Veiled in Shadows: The Role of Women as Spies in European and American Conflicts',* highlights the often-overlooked contributions of women in espionage and their significant role in shaping military and political outcomes. The next article by Colonel Tirath Singh Rawat (Retd), *'Silent Reach, Decisive Strike: The Evolution of Unmanned Warfare',* traces the rise of unmanned systems as decisive force multipliers and calls for doctrinal adaptation, interoperability, and integrated command structures.

Dr Ingudam Yaipharemba Singh's article titled *'Facets of Cross-Border Drug Trafficking in the Manipur–Myanmar Borderland'* examines the nexus between narcotics trafficking, organised crime, insurgency, and porous borders, highlighting its growing implications for regional security. In the tenth article titled '*76 Years of Indo-Philippines Ties and India's Act East Policy'*, Dr Martand Jha explores the expanding strategic partnership between India and the Philippines, highlighting the growing convergence in maritime security, defence cooperation, and regional connectivity under India's Act East Policy. The last contribution by Major HS Mankoo, titled *'Celerity Warfare'*, highlights the importance of speed, synchronisation, and decision dominance in modern conflict, arguing that compressing the observe–orient–decide–act loop will be vital for future multi-domain operations.

This issue also features a contribution from the USI archives titled *'The Cannon and the Cannoneers of Bygone India'* by C Grey, which offers a historical perspective on artillery traditions in India and their evolution over time.

Among the prize-winning essays included in this issue, Commander Arun Kumar Yadav's winning entry for the USI Gold Medal Essay Competition, '*Cognitive Warfare: India's Approach to Influencing Perception and Behaviour'*, examines how modern conflicts increasingly target human cognition through information operations, disinformation, and psychological influence. The essay proposes a whole-of-government framework for strengthening India's cognitive resilience and narrative dominance. The Lieutenant General SL Menezes Memorial Essay Competition winning entry, authored by Group Captain Brijesh Shukla and titled '*Doctrinal Evolution of the Indian Armed Forces Since 1947'*, traces the evolution of India's military doctrine from its early defensive orientation to a more sophisticated multi-domain framework shaped by wars, technological change, and contemporary reforms such as the creation of the Chief of Defence Staff and theatre commands.

The edition concludes with three book reviews. Major General Jagatbir Singh, VSM (Retd) reviews '*Shooting Straight: A Military Biography of Lieutenant General Rostum K Nanavatty'* by Arjun Subramaniam, offering insights into the leadership and professional legacy of one of India's distinguished military commanders. Colonel RC Patial, SM, FRGSP, PhD (Retd) reviews '*Redlines Redrawn: Operation Sindoor and India's New Normal*', which analyses the strategic implications of Operation Sindoor for India's evolving security posture. Finally, Major General Ashok Joshi, VSM (Retd) provides a short review of '*Kashmir in the Line of Fire*' by Major General Ranjan Mahajan, a work that examines the enduring strategic complexities of the Kashmir conflict.

Taken together, the contributions in this issue offer a rich and multidimensional exploration of contemporary and historical aspects of war, strategy, and security. The Editorial Board hopes that this edition will stimulate informed debate, enrich professional military

education, and contribute meaningfully to India's evolving strategic discourse.

We welcome your feedback and suggestions.

Happy Reading!

**Major General Sanjeev Chowdhry (Retd)**
**Director, Centre for Publications and Library**

# India's Strategic Challenges

**Vice Admiral Sanjay J Singh, SYSM, PVSM, AVSM, NM, PhD (Retd)[@]**

**Abstract**

*This article examines India's strategic landscape in 2026 as a direct extension of the turbulence and realignments of 2025. It analyses renewed tensions with Pakistan following Operation Sindoor, persistent instability in West Asia, maritime disruptions in the Red Sea and Arabian Sea, and the broader implications of major power competition. The article also assesses political churn in India's immediate neighbourhood, a cautious thaw in relations with China, and the impact of an increasingly transactional United States on India's strategic and economic choices. It argues that India's foremost imperatives include sustained vigilance against Pakistan-backed terrorism, accelerated defence modernisation under the jointness, atmanirbharta (self-reliance), and innovation framework, deeper jointness, streamlined procurement, and scaled-up indigenisation. Simultaneously, maintaining steady economic growth, safeguarding energy and diaspora interests in the Gulf, and preserving strategic autonomy will be central to India's ability to navigate an increasingly polarised, fluid, and unpredictable international environment.*

India's strategic landscape is an extension of the events and experiences of 2025, with major shifts in strategic relations, old and new security threats, and changes in trade and economic

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This article was authored in Feb 2026. Given the evolving nature of the subject, certain subsequent developments may not be reflected in the analysis.

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relations. The strategic environment and ensuing challenges are likely to expand in 2026. It would be useful to review the year gone by to better examine the challenges that lie in the year ahead.

## The Year Gone By

The world and India faced a tumultuous and challenging 2025. The year started with a resurgent Trump, with the world—and India—getting literally 'Trumped' in several ways during the year. India also faced a reprehensible return of terrorism against innocent civilians, emanating as always from Pakistan, and undertook retaliatory strikes against terrorist havens in Pakistan. In the ensuing short, sharp Operation Sindoor, India displayed remarkable strategic restraint, while Pakistan let loose with its range of conventional arsenal—to find them all effectively countered and becoming practically defenceless against India's next escalatory steps. But, with Pakistan suing for immediate peace, and a clear strategic message having been emphatically sent, India chose to hold back—only to find Pakistan obfuscating their close shave from a decisive defeat. Far from learning the right lesson, Pakistan Armed Forces have portrayed their veritable defeat and sheer defencelessness as a tactical victory and seem to have convinced themselves and their trusting countrymen that they remain an effective force. In the same vein, they have twisted and supplicated before the United States (US) President Donald Trump to get into his favour, with the likely hope that it would provide them a longer term, strategic advantage.

Meanwhile, the Russia-Ukraine War raged on, as did the Israeli military onslaught on Gaza. Attempts to usher peace between the warring sides had limited effect. The Iran-funded Houthis, Hezbollah, and Hamas attempted to apply parallel military and strategic pressure on Israel in 2024-25[1], with the Houthis also targeting merchant shipping in the Red Sea and Gulf of Aden by drones, rockets, and missiles. While Israel undertook highly effective counterstrikes against Hamas and Hezbollah, the Houthi attacks succeeded in reducing merchant shipping around the Bab-al-Mandeb by half[2], but it plateaued thereafter due to defensive and offensive countermeasures by the Western forces. A simultaneous, anything but coincidental or opportunistic, resurgence of piracy in the Somali Basin and Arabian Sea in 2024 failed in the face of robust Indian Navy actions, which were aimed to protect

Indian trade, citizens, and vessels, and practically petered out by 2025.[3]

Israel maintained and escalated its military actions against Hamas, Hezbollah, and Houthis in 2025, and then undertook direct strikes against Iran in Jun 2025, with the US also getting involved.[4] The ensuing military actions sharply weakened Iran and its allied forces in the region, leaving an uneasy tension, intermittent military actions, and with looming resumption of major kinetic actions against Iran. Israeli aerial strikes against Hamas leaders in Qatar in Sep 2025 violated the latter's sovereignty and enhanced concerns of the Arab states.[5] While the latter were generally positive to the US-Israeli strikes against Iran, they were understandably disturbed, concerned, and wary about the effect of an incessant Israel on the rampage in Gaza and increasingly in the region. Saudi Arabia consequently signed a Strategic Mutual Defence Agreement (SMDA) with Pakistan in Sep 2025.[6] A fragile truce was reached between Israel and Hamas in Oct 2025, brokered by President Trump. There has also been a steadily growing schism between Saudi Arabia and the United Arab Emirates (UAE) on their strategic outlook and the latter's relations with Iranian-supported proxies.

In India's immediate neighbourhood, instability and political challenges were evinced in Bangladesh and Nepal. In Bangladesh, the interim government under Muhammad Yunus continued to meander and flirt with Islamists, Pakistan, and China, keeping up a hostile stance against India.[7] Nepal faced unique Gen-Z protests against misgovernance and corruption, which led to the fall of the government in Sep 2025.[8]

Relations with Sri Lanka, Maldives, and China, meanwhile, steadied and improved. The new Sri Lanka government under President Anura Kumara Dissanayake that came to power in 2024 reached out to India and has maintained steady relations since then.[9] Maldives, which also saw a new government coming into power under President Mohamed Muizzu in early 2024, with a sharp 'India-Out' campaign, thereafter displayed pragmatism in power and pursued cooperation in trade, digital payments, health, fisheries, infrastructure, etc.[10]

The stand-off with China after the 2020 Galwan clash and Chinese aggressive stance underwent a thaw in 2025 and saw resumption of several stalled economic engagements and activities.[11] However, given the periodic provocations and rise in tensions over the past decade, India has continued to maintain a cautious, watchful military posture.

## The Year Ahead

India's foremost strategic challenge in 2026 is, ironically, likely to be Pakistan—a country that New Delhi had started ignoring and believing to be no longer a major factor in India's strategic path. Pakistan, however, remains a significant danger—to itself and others—given there is no let-up in its single-minded, visceral opposition to India and its rise. Pakistan has also seemingly failed to draw any of the correct lessons from the Operation Sindoor—or its past conflicts with India. Meanwhile, it has been re-arming and will be militarily better prepared—or at least think itself to be—in the year ahead. It also faces an increasing economic crisis, a fragmented polity under the Army's supremacy, a burgeoning demographic disaster, an increasing push back from Baloch fighters, and a hard take-down from its own creation, the Taliban. Pakistani leadership, primarily Field Marshal Asim Munir, will remain pivotal in the time ahead and bear close watching. He has consolidated power as the new Chief of Defence Forces[12] and has been able to successfully keep the political and military leadership aligned, with former Prime Minister Imran Khan incarcerated—the only political leader opposed to the current Army dispensation while enjoying mass popularity. Pakistani leaders' development of warm personal rapport with President Trump will likely raise expectations of economic and strategic resurgence for Islamabad, boosting their confidence and influencing their strategic moves. The SMDA with Saudi Arabia, and re-armament support from China and Turkey, would further add to the wind under Pakistani sails.

Pakistan's internal problems, however, are likely to remain and only exacerbate, given the poor state of their economy, continuing prioritisation of the armed forces over other national developmental requirements, a polity deficit to cushion reversals and shocks, and security problems with the Baloch and Afghans, especially the Taliban. In a heady, cocktail mix of high confidence

and sense of military preparedness, enjoying tight political control (which may change should Imran Khan get released from jail) and perceiving external strategic support while facing setbacks on the economic and internal security fronts, there will remain a high possibility that the Pakistani Army may encourage or enable further terrorist attacks in India.

It will also not be implausible to consider a pre-emptive strike by Pakistan, if it faces a serious setback of sorts and feels it can prevent retaliation by India through strategic posturing and external support. India and its security forces will have to remain on alert against all such moves by Pakistan, while revitalising diplomatic efforts to hold Islamabad to account for its unabated sponsoring of terrorism.

India's next and biggest strategic challenge will remain its defence modernisation and indigenisation efforts to improve capacity, capability, and sustenance. It is apt that Indian Prime Minister Narendra Modi, while addressing the Combined Commanders Conference in Sep 2025, gave the theme 'JAI'—Jointness, *Atmanirbharta* (self-reliance), and Innovation—to guide defence reforms and transformation. While substantive efforts have been taken towards JAI in the recent years and merit appreciation, it also bears realistic note that the progress has been mainly incremental and evolutionary. Given the emerging strategic landscape, India may find these efforts unable to deliver what is operationally needed, in terms of quantity, quality, and time.

The prevalent slow, languishing, ponderous, and often looped procurement process is the result of India focusing for long on a fair, transparent, and legally impeccable process. This seeks to provide equal opportunity to all providers, while, at times, favoured public sector units, but with concomitantly lesser regard to the needs of national defence and security. The challenge is compounded by New Delhi's inability to model defence and security needs into this sequential, mathematical process to meet audit requirements. This inevitably, and often, leads to capability gaps, forcing short-term imports, albeit with limited numbers, and, thereby, creating long-term dependencies, with inherently lesser sustenance and limited repair or modification capability. The defence modernisation model India follows is of independent agencies that are segmented and often segregated, trying to work in a

coordinated manner. A joint, integrated model adequately empowered to deliver force modernisation will remain essential.

The inherently longer gestation periods for force generation need to be substantively compressed. The revised Defence Procurement Manual 2025 and Defence Acquisition Procedure 2026 are expected to support this requirement. Meanwhile, mainstreaming of the 'Emergency Powers' delegated to services as permanent 'Fast-Track Procedure' will be essential to meet shortfalls, niche requirements, and faster timelines. It is ironical that proven and indigenous systems have been exported, even as they had to await induction into the Indian Armed Forces.

The Innovations for Defence Excellence (iDEX) programme, along with Defence India Startup Challenges, have proved themselves to be enablers of innovation and indigenisation. However, in strategic terms, these can be mostly considered only as a successful 'Proof of Concept', given the lesser numbers involved and associated time-effort-cost matrix for their operational induction, with matching doctrines, training, and integration. The iDEX programme needs to scale up substantially, by a factor of at least 1,000 times, with adoption of a nomination-cum-partnership model, in lieu of competitive bidding, and empowered project management. Where required, the Government of India (GoI) or the Ministry of Defence (MoD) should be able to buy a major stake in the start-ups and niche technology intellectual property rights to safeguard the firm, technological capability, and Indian defence needs. Such firms and their products should be further invested and supported by the GoI or the MoD through repeat orders, with spiral development and scaled up production.

There has been a steady progress in jointness in recent years in multiple areas. The focus, however, has been more on people and institutions than on systems and processes. Partly, for this reason, there has also been a disproportionate attention taken up by the goal of theaterisation through establishment of 'Joint Commands'. However, the latter would not be able to deliver the envisaged results in the absence of jointness in systems and processes. Further, as consistently advocated and argued by the author while in service, the envisaged results of theaterisation need to be examined more deeply to discern the optimal model before concluding that the establishment of 'Joint Commands for

Operations' and reducing the roles of Service Chiefs to 'Raise-Train-Sustain' (RTS) would best meet the desired results. In the author's considered view, the RTS-Operations split model has serious limitations, and may take a long time to settle. India has placed the cart before the horse in focusing on determining the shape, size, location, charter, and resources of Joint Commands, without first undertaking a robust and structured 'Mission Analysis'. There is a pressing, glossed over need to properly analyse the goals of what is needed and desired, and associated assumptions, constraints, and restraints, and then, accordingly work out various models with a 'Strengths, Weaknesses, Opportunities, and Threats' and cost-benefit analysis, and, thereby, discern the optimum model for meeting the goals. Such an exercise has been done in a single service setting within two weeks and should not require more than five weeks as a joint study.

Another major strategic challenge for India in the coming year will be enhancing its economy and trade amidst a sharply polarised world, with 'Trumpian' twists and turns and a fluid international security environment, which may continue to see old and new conflicts over the next year. The barrage of US tariffs imposed on all countries, including an extra dose for India last year, also encouraged it to undertake a slew of economic reforms and strong outreach for bilateral trade deals. This has had good results over the past year and paved the way for the 'Mother of all Deals' with the European Union in Jan 2026. It has also led to an eventual trade agreement with the US, even as the US Supreme Court struck down the earlier Trump tariffs as being illegal without Congress approval. Notwithstanding, the US President retains substantive leeway to impose tariffs under various other clauses, and the full range with Congressional approval. So, the coming year will continue to pose a strong strategic challenge, wherein, India will need to maintain a steady trajectory of economic growth, while navigating between the narrowed strategic choices available, and retaining its strategic autonomy. A strong domestic savings component, steady macro-finances, progressively improved connectivity—roads, rail, ports, inland waterways and digital; a large market with economies of scale, a substantive and young skilled work force, and ongoing economic reforms serve to provide a steady base for India to weather the challenges and turn them into opportunities over the coming years.

The fraught security situation in the Gulf may pose a significant strategic challenge to India as well, given the large numbers of Indians working there, with their substantive annual remittances supporting their families at home, New Delhi's immense energy dependence and interests, and continuing good relations with all sides. The Saudi-UAE schism and Israel-Gaza conflict have put the India-Middle East-Europe Economic Corridor (IMEC) on the backburner. With Saudi Arabia working on an alternative to the IMEC, bypassing the UAE and Israel while including Qatar, Jordan, and Syria, India will need to reach out pro-actively to not be left out of any new trade and economic routes.

The Israel-Gaza truce remains uneasy amidst efforts by a US-led 'Board of Peace' that aims to provide substantial aid for reconstruction of Gaza and a 20,000 strong stabilisation force, whilst bypassing the United Nations. Notwithstanding the laudable aims, given the record of continuing truce violations reported by both sides with persistent and mostly low-level violence, there is likelihood of a fresh outburst of conflict derailing the peace efforts. More significantly, Israel has continued to advocate for military strikes against Iran and has been pressing the US to participate in the same. The US massive naval and air build-up in the region in early 2026, amidst pull-back of troops stationed regionally within striking range of Iran—with demands for Iran to agree to give up its nuclear programme under threat of military strikes—poses a major threat to Tehran.

The risks of military action against Iran are high, especially in early-mid 2026, with all forces poised on both sides and a weakened Iran, whose proxy forces and deterrence strategy have been substantively damaged. The ensuing fall-out could range from limited retaliation by Iran to a wider escalation, depending on the type and impact of any US-Israeli actions, especially on Iranian political and military leadership. The present trend points towards continuing fragility at best, and possible sudden flare-ups with severe impact on regional stability and security.

It will be in India's interests to weigh in diplomatically with all sides, to maintain engagement and leverage relations towards preventing any further deterioration, considering the likely sharp adverse effects that would impact New Delhi directly and indirectly. However, it would also be prudent to prepare for such deterioration, which would need attention to multi-agency contingency plans for

enhancing the safety and security of the 10 million Indians across the Gulf region, India's energy security, and the security of New Delhi's trade and energy routes with the Gulf.

Another major challenge for India will remain its relations with the US, given the sharp tirades and trade tariffs it faced over the past year. It will take time to overcome the setbacks to Indian trust and belief, built up steadily over the past two decades, that the US can be a reliable partner. With the current Trump administration being avowedly transactional, India will need to continue managing and maintaining its relations with the US in similar manner, avoiding direct opposition, progressing issues where there exist mutual convergence and necessity, while hedging its strategy by building self-reliance and relations with other partners. Trade, investment, and economic issues; defence cooperation comprising military sales and exercises; and the Quadrilateral Security Dialogue for multilateral government interactions will likely remain the main pillars of the Indo-US strategic engagement for 2026.

India's relations with its immediate neighbours will continue to need attention, with Bangladesh and Nepal ushering in new governments amidst anti-India sentiment being sponsored in these countries in recent years. Bangladesh has seen the return of the Bangladesh Nationalist Party to power and rise of the Jamaat as the main Opposition, with the Awami League being banned in the recent elections. The last two years of turbulence in Bangladesh will likely take time to settle, with anti-India sentiment and enhanced Pakistani influence probably continuing over the next year. The new government in Nepal will also have to cater to long years of economic problems and governance issues, in which India was a handy bogeyman, before the politico-economic-social situation substantively improves. For this, Nepal will likely reach out to both India and China to maximise its gains.

The increased role and involvement of the US in the recent years in these countries, the continuing influence of China, and likely increased outreach by Pakistan will all need to be factored by India. It will be required to have continued and steady engagement with the new governments in Bangladesh and Nepal—at multiple levels and across the spectrum of political, diplomatic, economic, and military—to strengthen relations and counter internal and external negativity.

Last, but by no means the least, and likely the longest continuing strategic challenge for India would remain China. While the relations have steadied and improved, albeit incrementally and cautiously, over the past year, the underlying strategic differences between the two countries remain. There is little reason to believe that China would seek to settle these. At the same time, China has become India's largest trading partner, with bilateral trade estimated to cross USD 155 bn in 2025—with 87 per cent of this constituting Indian imports from China to Beijing's major advantage. The growth of Chinese national power—economic, industrial, technological, and military—over the past two decades has been simply phenomenal. It has the largest naval force today, which is more than the US, although its combat power and force projection capability is still relatively lesser. China's global outreach and leverage have also grown significantly, supported by its Belt and Road Initiative across Asia, Africa, Europe, and the Americas. It has displayed a rugged approach to its core interests, including in the South China Sea and border areas with India. It has continued to coerce Taiwan, bully the Philippines, and pressure the Association of Southeast Asian Nations. It has strongly supported Pakistan, Russia, Iran, and North Korea. It has built substantive relations and leverage with India's immediate neighbours, including Pakistan, Nepal, Bangladesh, Myanmar, Sri Lanka, and Maldives, which impact Indian interests.

China has posited itself as the next largest power after the US and has become its putative challenger. It has readily pushed back against the US when directly pressured. But, despite its huge power, China has been relatively careful—even calibrated and cautious—in displaying this overtly or directly beyond its immediate neighbourhood. The US-China relations underwent trade and tariff tensions in 2025, before reaching a mutual accommodation towards 2025's end. Further interactions and possible jostling may be expected in 2026, which bears watching with keen interest for its impact on India. This could see progress in the ongoing mutual accommodation towards enhanced cooperation and possible 'G-2'. It may also see further steady curtailment of China's strategic leverage by the US actions in South and Central America, and, thence, the Gulf region, which intentionally or otherwise also target Chinese interests therein. If China gets accommodated in the G-2 format, it will have lesser

reason to similarly accommodate India's interests in Southern Asia. If it comes under pressure, its reactions could be either insular or aggressive, depending on the impact of the pressure on the Communist Party of China and its future. The best-case scenario for 2026 would, therefore, be the maintenance of stability in India's relations and posture with China, allowing time for the other changes and challenges to pass.

The past year has been strategically challenging for India and the world. It has also offered opportunities and thrust to safeguard Indian interests. The coming year portends to be equally challenging but relatively a little more stable, with India getting the measure of strategic fluidity that prevailed, whereupon it is possibly better positioned to address the same.

## Conclusion

India enters 2026 being better prepared but not less challenged. Pakistan's volatility, China's structural competition, instability in West Asia, and an evolving US posture will test India's strategic resilience. The need for credible deterrence, accelerated defence reforms, economic strength, and diplomatic agility is evident. Stability with China, calibrated engagement with the US, and proactive neighbourhood outreach will remain essential. Ultimately, India's ability to integrate military preparedness, economic growth, technological self-reliance, and strategic autonomy will determine whether it merely navigates turbulence or shapes its regional and global environment with confidence.

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# Control of Operational Fires: Necessity of Reconnaissance, Intelligence, Surveillance, and Targeting Brigades

**Brigadier Prodipto Goswami**[@]

**Abstract**

*The article examines the evolving relevance of Reconnaissance, Intelligence, Surveillance, and Targeting (RISAT) Brigades as the central mechanism for enabling operational fires in future Indian military operations. Drawing on lessons from recent global conflicts and India's Operation Sindoor, it argues that modern warfare is defined by multi-domain integration, technologically dense battlespaces, and the decisive impact of non-contact and non-lethal capabilities. The study highlights gaps in India's current intelligence, surveillance, and reconnaissance-targeting architecture and proposes the urgent creation of dedicated RISAT Brigades to synchronise sensor-shooter integration across land, air, sea, cyber, space, electronic, and information warfare domains. It further stresses the need for doctrinal clarity, structural reforms, digitisation, and joint training across all arms and services. The article concludes that compressing the observe–orient–decide–act loop will be central to achieving battlefield advantage, and that India must build integrated operational-level headquarters, strengthen multi-domain competencies, and modernise training to ensure the effective prosecution of operational fires in future conflicts.*

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## Introduction

Recent announcements by India's senior military leadership—including the reorganisation into Rudra Brigades, Bhairav Light Commando Units, and Divyastra Artillery[1] formations—signal the beginning of a doctrinal and structural shift toward multi-domain integration. Coupled with the Chief of the Air Staff's call for rapid enhancement of capabilities and joint operational synergy[2], these announcements reflect an institutional recognition that future wars will be fought simultaneously across the land, air, maritime, cyber, space, and information domains. In recent years, the Indian Armed Forces have rapidly expanded their capabilities and capacities. But while the forces are enhancing their lethality and integration, what is happening on the critical aspect of coordination?

The prolonged Russian–Ukrainian War has thrown up undeniable realities, from the coexistence of multi-generational warfare to the overarching need to upgrade multi-domain operational synergy.[3] The need to rapidly adapt battlefield tactics, techniques, and procedures in response to technological advances while in active combat was also a unique lesson in modern warfare. The lessons emerging from recent conflicts, whether it be Armenia–Azerbaijan, Israel–Hamas and Palestine, Russia–Ukraine or Operation Sindoor, are two indisputable realities. Firstly, non-contact kinetic warfare is here to stay. Secondly, non-lethal fires are an equally important game-changer in warfare.

Against this backdrop, the concept of 'Operational Fires'—the synchronised employment of lethal and non-lethal means for achieving effects at the operational level—demands a coherent, technologically enabled Reconnaissance, Intelligence, Surveillance, and Targeting (RISAT) architecture.

## Operational Fires

Operational fires are a critical component of modern joint warfare, ensuring the seamless integration of land, air, naval, space, and information warfare forces to achieve operational objectives that may have a strategic impact. In joint operations, effective operational fires will enhance combat effectiveness, battlefield dominance, and overall mission success. For the Indian Armed Forces, operational fires will play a crucial role in countering threats from adversaries. They will serve as a force multiplier by shaping

the operational and strategic environment before direct engagements. Presently, the concept of operational fires in the Indian Armed Forces' context is at a nascent stage and needs further impetus.

A strict definition of operational fires is challenging to find; however, a recommended one would be, 'The synchronised application of kinetic and non-kinetic means to achieve lethal and non-lethal effects of all available assets to include fire power, information warfare (including Electronic Warfare [EW], cyber, and psychological warfare) and space warfare resources to achieve operational objectives'. It would empower tactical operations and may also have a strategic effect.

It would be pertinent to differentiate between kinetics and lethality. The kinetic or non-kinetic aspect refers to the weapon system or means of delivery, while lethal or non-lethal is the effect of such a weapon system on the target. Thus, a kinetic weapon system may have both lethal and non-lethal effects. Similarly, a non-kinetic weapon system may also cause a lethal effect. For example, the impact of the Stuxnet virus—a sophisticated cyber weapon or 'Computer Worm' discovered in 2010—on the Iranian nuclear facility, leading to the burnout of the nuclear enrichment equipment. Similarly, in 2020, the Taiwanese water utilities were disrupted by cyberattacks that manipulated data and interrupted the distribution system.[4] Its lethal potential was especially critical during the COVID pandemic that gripped Taiwan at the time, as the lack of a suitable water supply exacerbated the health crisis.

Air strikes are typically kinetic attacks. However, intense bombardment can cause psychological impacts. A case in point would be the surrender by Lieutenant General Amir Abdullah Khan Niazi of the Pakistan army in the aftermath of the Indian Air Force bombing on the Governor's Palace in East Pakistan (modern-day Bangladesh), where he was residing, presenting a befitting example of the non-lethal effect of a kinetic application of force.[5]

## Lessons from Recent Conflicts

**Armenia–Azerbaijan Conflict**. The Armenia–Azerbaijan conflict was the first in recent times amongst near-equals in which technology decided the outcome of the war. A massive drone assault paralysed the Armenian Air Defence. Long-range vectors

and the Air Force followed this up. The ground attack came up last. The conflict underscored the importance of integrating drones, sensors, non-contact kinetic long-range vectors, and missile strikes to achieve battlefield victory. This conflict showcased the decisive effects of drones, loitering munitions, EW, and real-time targeting networks. Technology decided the outcome.

**Russia–Ukraine Conflict**. The Russia–Ukraine conflict is a significant preview of future disputes worldwide. It saw the integrated application of drones (in multiple roles spanning from surveillance and reconnaissance to kamikaze strikes) utilising an international communication system (Starlink) for communication and targeting.[6] The war commenced with a mass application of force, where visuals of massive, armoured formations mobilising across the Ukrainian frontier flooded the media. The Russian airpower, using aircraft as long-range artillery, commenced the show. Soon, the tables started to turn, and the war today is a kaleidoscope of World War II trench warfare to the prosecution of punitive strikes using drones, missiles, and artillery. EW, both kinetic and non-kinetic, information warfare, and cyberattacks by both the warring factions and their supporters worldwide, too, play an intricately woven war narrative. Also of great interest is Ukraine's utilisation of naval drones as a non-naval power to chase the Russian fleet out of the Black Sea.[7] Some key features of the war were:

- Persistent Intelligence, Surveillance, And Reconnaissance (ISR) from satellites and commercial imagery.
- Drones as reconnaissance, strike, and EW assets.
- Naval drones are reshaping maritime battlespace.
- Heavy use of cyber and information warfare.
- Targeting cycles reduced to minutes.

**Operation SIndoor**. Operation Sindoor has brought 'Home' the impact of modern warfare. A community-specific terrorist attack in Pahalgam galvanised the nation to prosecute targeted strikes on terrorist camps deep inside Pakistan and Pakistan-occupied Jammu and Kashmir. However, what continued to unfold till Pakistan waved the white flag was a display of integrated application of resources and forces, albeit at the strategic level. Trade integrated into

modern warfare as a weapon is also manifesting itself not just between the rivals but across the globe. Diplomatic parleys to cease the war continued during the period with vested national interests.

## Challenge of Integrating Operational Fires

The lessons from Operation Sindoor applied to the Indian context continue to unfold. Speaking on the occasion of Kargil Vijay Diwas 2025, the Chief of the Army Staff informed about the changes trickling in with the raising of the Rudra Brigades, Bhairav Light Commando Units, and Divyastra Artillery formations.[8] Loiter munitions and drones are the primary focus of the Indian Army's procurement, with drones being introduced to the infantry battalions as well. Speaking at Ran Samvad 2025, the Chief of the Air Staff cited the coordination in Operation Sindoor as a proof of joint planning and execution to be the reason for its success.[9] The Chief of Defence Staff (CDS), General Anil Chauhan, while warning of a 'Further Evolving' military threat involving long-range precision vectors, has also highlighted the importance of cyber, intelligence, and countering disinformation in any future war narrative.[10] The importance of ISR is also evident from the CDS's announcement at the Defence Space Symposium of launching 52 dedicated ISR satellites, as well as the publication of a military space doctrine.[11]

A comprehensive look at all these developments indicates that the future wars will be primarily dominated by the employment of extensive ISR assets for forewarning, continuous reconnaissance of the area of interest, and assessment of targeting requirements. Targeting will focus on stand-off and long-range weapon systems, whether it be the air force or artillery. The 'Tactical Battle Area', if ground forces join battle, will be dominated by an intensely contested electronic and air space. In addition to the strategic dimensions, the entire tactical and operational battle space will be enveloped by a coordinated effort across cyber, space, diplomacy, and economics.

## Coordinating Effort: Operational Fires

Future battlefields will depend heavily on information, intelligence, and knowledge, and how they connect forces through a networked command, control, communications, computers, combat, intelligence, interoperability, surveillance, and reconnaissance

system. More than ever, the advantage will go to the side which can gather the most critical information, analyse it accurately and quickly, and then rapidly and securely share it along with the associated instructions with forces. Equally important is the speed of analysis, decision making, and targeting, using the right equipment and optimal methods to hit the target.

Across the operational battle space, ISR and targeting is an operations branch responsibility, headed by officers primarily from the Corps or Divisional Headquarters (HQ). However, the staffing of the ISR and targeting command and control centres of both these HQs is done by artillery personnel. There is no single HQ to coordinate RISAT's efforts on a full-time basis. The seven key gaps are:

- **Structural Fragmentation**. ISR is an ongoing process across peace and conflict or near-conflict situations, which is a constant reality along the Northern and Western borders. This is neither collated across the frontier nor archived. There is a complete lack of historical data, and primary reliance is placed on individual knowledge or word of mouth.

- **High Personnel Turnover**. Turnover of personnel erodes institutional memory and, in turn, diminishes understanding of the larger intelligence picture. The rapid turnover of manning personnel is aggravated by a lack of specialisation in the task.

- **Lack of Automation and Artificial Intelligence (AI)-enabled fusion**. While measures to automate are underway, the Indian Armed Forces are a long way from achieving a desirable degree of automation. The integration of AI on this database for intelligence extraction and targeting, if required, is absent as of this date. A case in point is the extensive use of AI by Israel in the recent conflict in Gaza. Their AI system, named Gospel, identified suitable targets post-analysis and presented them to the human interface, significantly reducing the Observe-Orient-Decide-Act (OODA) loop.[12]

- **Multi-domain Integration**. Multi-domain integration leaves much to be desired. At the tactical level, the higher picture is entirely absent. In an intense combat or contact situation, this can lead to fatal errors in judgment and the application of forces.

- **Weak Airspace or EW Spectrum Coordination**. There is an absence of 'Intelligensiation' to comprehend significant inputs, especially across a broad front and from multiple inputs to include the EW and airspace spectrum. In fact, there is currently no single point of convergence for all these inputs.

- **Insufficient Jointness**. Absence of a single, coordinating full-time HQ to the integrated ISR-targeting continuum.

- **Training Shortfalls**. There is a lack of suitably trained officers and other ranks to comprehend capabilities and capacities across the arms, services, and other services, including the Indian Navy, Indian Air Force, Central Armed Police Forces, local and central intelligence agencies, civil administration, and media houses.

## Case for Dedicated Reconnaissance, Intelligence, Surveillance and Targeting Brigades

The emerging battlefield is crowded with digitised tools, data-driven decision making, technology absorption, and grey-zone dominance. There is, thus, an emerging need to redesign the structure to directly support these priorities by enhancing situational awareness, modernising skill sets, and preparing leaders for integrated, technology-intensive operations essential to future battlefield effectiveness. RISAT, as a tool for national security, needs to be streamlined. There is a need to achieve integration within the Indian Army and across inter-service resources to generate a synergised response.

At the tactical level, there is a growing need to coordinate inputs not only from traditional long-range optical and electronic sensors such as the Long-Range Reconnaissance and Observation System and the ELM 2140 ground surveillance radar, as well as from troops in contact, but also to integrate information from Special Forces operating across the front. In addition, inputs from civil intelligence agencies such as the Research and Analysis Wing and the Intelligence Bureau must be fused with open-source intelligence, electronic intelligence, and signals intelligence generated by air force, army aviation, EW, and signals detachments. This coordination must also include the management of airspace for drones in conjunction with divisional and other aerial assets of the artillery, army aviation, and the air force; the

maintenance of a real-time airspace picture through air force and army air defence systems; and effective spectrum management across the front. The ultimate objective is to enable precise targeting of the adversary and isolate hostile forces within the operational depth. Achieving such seamless integration remains a complex task, particularly until full automation and networked systems are realised. Nevertheless, it is clearly an operational imperative in contemporary warfare.

Is there a need to nominate a single HQ for coordination? The question should not be confused with 'Command'. The command of forces and the executive directions undoubtedly remain with the Commander of each HQ. The larger question is: In a fast-paced, future battlefield milieu that requires integrating inputs from various assets and providing near-real-time assessment, along with options for execution, who will coordinate?

Is there an HQ which can do this task? The answer is obviously 'No'. The infantry formation HQ is oriented towards performing specific tasks, while the staff of the divisional or corps HQ is primarily aligned to aggregating information or having specific tasks, such as intelligence gathering, counter-intelligence, overall coordination of operations, synchronising associated logistics, information warfare, etc.

Artillery is not only the second largest combat arm but also the only arm suitably poised to undertake the coordination and prosecution of operational forces. Artillery assets span the entire divisional frontage and depth, covering both ISR and targeting. The natural course of operations entails constant sensor–shooter integration, a hallmark of the arm. While unstated, the principal pivot of all sensor–shooter integration rests on artillery formations across the nation's front. It is, thus, the right time to realign structures based on emerging lessons and make artillery formations responsible for coordinating the RISAT effort across the corps and divisional frontage. The RISAT concept must now evolve to a larger platform that includes not just the sensors available at the operational level but also those across the entire diplomatic, informational, military, and economic environment. The same concept will apply to the 'Shooters', encompassing not only kinetic weapon systems but also EW assets, army aviation and air force aerial platforms, and cyber and information warfare capabilities.

Across the Indian Army, formations are now being equipped with state-of-the-art surveillance platforms, sensor networks, precision drone systems, loitering munitions, and advanced geospatial and EW assets. Integrating these new technologies not only enhances operational capabilities but also requires a significant shift in ISR and targeting methodologies and associated training approaches. Officers must now master a complex array of systems and conduct real-time multi-domain operations to achieve victory. Is the Indian Army fully ready for this role? The answer is an emphatic 'No'. There is a significant need to create structures and realign officer and other ranks training to take on this task.

## Operational Realities

Operation Sindoor has provided the necessary knowledge and experience platform to highlight the necessity of ISR and targeting as a 'Whole-of-the-Army' approach. The need for jointness is an inescapable necessity for future conflicts in the Indian context. Thus, the need to comprehensively absorb 'New Technology Equipment' and RISAT processes to provide an independent and holistic assessment to the Commander in the field is an inescapable requirement.

## Way Forward

**RISAT Brigades**. The raising of a new HQ or reorienting existing ones to explicitly coordinate RISAT and execute operational fires is an indisputable necessity. Modern-day warfare has introduced advanced multi-domain ISR and targeting capabilities, necessitating personnel to be suitably skilled in integrating sophisticated surveillance assets and intelligence for timely operational decisions. There is, thus, a need to equip all ranks with the critical expertise required to effectively man and operate within RISAT Brigades, ensuring they can meet the evolving demands of the modern battlefield environment. A recommended structure of a RISAT Brigade based on the HQ of an artillery brigade, along with various components which could be plugged into it from existing resources or cells, is given in Figure 1.

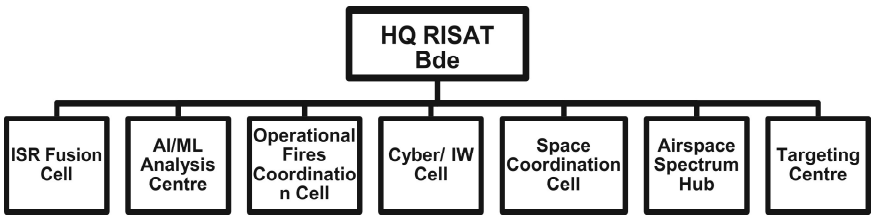


**Figure 1: Components of RISAT Brigade**

**Reforms Required.**

- **Integrated Battlespace Workshops**. The evolving operational environment and recent technological advancements have made it imperative to expand and upgrade training urgently. Several new and sophisticated pieces of equipment have been inducted into service, including drones, loitering munitions, the Integrated Long Range Observation System, the Situation Awareness Module for the Army and the Battle Surveillance System, among others. These platforms represent a significant leap in capability, offering enhanced situational awareness, data integration, and precision in surveillance operations across multiple domains.

- **Multi-domain Training**. There is a need to train officers from all arms to develop a comprehensive understanding of the complexities involved in RISAT in multi-domain operations. They need to gain a thorough understanding of the proficiencies of different arms, including civilian agencies, and be able to integrate this information to provide a multi-dimensional battlespace picture with options for targeting. Battlespace management needs to be extended beyond the current 'Land Bias' to include air, sea, and electronic space.

- **Doctrine**. Operational Fires doctrine for multi-domain operations needs to be developed and promulgated at the earliest.

- **Research and Development (R&D)**. Investments in R&D for AI for automated target recognition, battle damage assessment, predictive analytics, edge computing and tactical clouds, high-altitude pseudo-satellites, quantum-secure communications, and military internet of things networks need to be expedited.

- **RISAT Exercises**. Annual RISAT exercises aimed at improving operational fires need to be undertaken to refine systems and processes, identify measures to further compress the OODA cycle, and enhance integration.

## Conclusion

In conclusion, it can be stated that RISAT and the prosecution of operational fires need to be integrated. The future battlefield will be fast-paced, and the side with the ability to 'Squeeze' the OODA loop will emerge victorious. The induction of kinetic and non-kinetic platforms into the armed forces continues at a dizzying pace, and thus, the need to integrate RISAT and operational fires becomes increasingly essential. Automation and intelligentisation of data and information are of critical importance; however, any machine model deployed to assist the Indian Army would need human inputs and experience to generate suitable outputs—and that is currently lacking, as an appropriate structure to absorb, integrate, act upon, and store data is not currently available. As a first step towards ensuring a cohesive response on a future battlefield, an operational-level HQ should be nominated for the task. Concurrently, training towards this end must commence on a war footing. While the details of nominated HQs can be worked upon, training of personnel of all arms, specifically, infantry, armoured, mechanised infantry, artillery, signals, and intelligence, along with the Air Force and Navy, must commence at the earliest lest the Indian Armed Forces are found wanting.

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# China's Global Initiatives Quartet: Weaponising Development, Security, Civilisation, and Governance

**Colonel Dinesh Mayal, PhD (Retd)[@]**

**Abstract**

*This article examines China's recently launched Four Global Initiatives (4GIs)—the Global Development Initiative (GDI), the Global Security Initiative (GSI), the Global Civilisation Initiative (GCI), and the Global Governance Initiative (GGI)—introduced between 2021 and 2025. These initiatives signal the gradual strategic shift from the debt-laden Belt and Road Initiative towards a more comprehensive and self-reinforcing framework that subtly advances Beijing's global influence by systematically challenging the Western liberal order through institutional and normative reshaping rather than direct disruption. Framed as President Xi Jinping's vision of a 'Community with a shared future for mankind', this architecture sequentially promotes economic dependencies through the GDI, security interoperability through the GSI, narrative alignment through the GCI, and institutional influence through the GGI, while simultaneously operationalising elements of a parallel techno-authoritarian order. Deployed through multilateral platforms such as the Shanghai Cooperation Organisation, Brazil, Russia, India, China, and South Africa grouping, and the United Nations, the 4GIs promote state-centric data*

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*control, sovereignty-first security frameworks, and relativist governance norms, thereby, cultivating greater reliance among countries of the Global South. This article analyses the integrated ecosystem of these initiatives and assesses their implications, including the potential emergence of competing global orders and the strategic challenges they pose for India.*

## Introduction

China's Global Initiatives quartet i.e., the Global Development Initiative (GDI), Global Security Initiative (GSI), Global Civilisation Initiative (GCI), and Global Governance Initiative (GGI), launched between 2021 and 2025, represent a deliberate evolution of the Belt and Road Initiative (BRI) inaugurated in 2013. China's four Global Initiatives (4GIs), collectively represent the BRI's transformation from mega infrastructure projects into a comprehensive framework aimed at re-engineering the international order. Post COVID, Beijing has shifted emphasis from large, debt-heavy connectivity projects to a denser web of norms, rules, and technology-enabled mechanisms, designed to subtly expand its influence while reducing vulnerability to Western pressure. Framed as remedies for global deficits in peace, development, security, governance, and trust, the 4GIs explicitly blame Western liberal systems for current crises and present Chinese solutions as more representative, inclusive, and equitable for the Global South.

Christopher Krebs, the first director of the United States (US) Cybersecurity and Infrastructure Security Agency, has encapsulated his analysis of the differing strategic goals of Russia and China in their cyber operations and foreign influence campaigns against the US as, "When we think about Russia, they are trying to disrupt the system, and China is trying to manipulate the system".[1] China's recently launched 4GIs, launched in quick succession, marks the comprehensive evolution of Beijing's global power projection beyond the BRI infrastructure-focused project toward a self-reinforcing ecosystem systematically challenging Western liberal order. This article analyses 4GIs-integrated architecture, where GDI's economic dependencies enable GSI security partnerships, GCI's civilisational narratives legitimise the Communist Party of China's (CPC) governance values, and GGI institutionalises these

shifts as multilateral norms through system manipulation rather than disruption. Through 4GIs sequential domain dominance, Beijing normalises state-centric development models, sovereignty-first security doctrines, civilisational pluralism privileging the CPC's narratives, and governance architectures that reject universal values. Deployed via Shanghai Cooperation Organisation (SCO), Brazil, Russia, India, China, and South Africa (BRICS)grouping, and the United Nations (UN) platforms, the 4GIs cultivate the Global South reliance while offering Chinese solutions that embed non-liberal norms, state-controlled data, sovereignty-centric security, and relativist rights, gradually constructing a scalable techno-authoritarian alternative to the Western-led institutions. A mixed-methods approach was employed to systematically identify, analyse, and validate the strategic interplay between China's 4GIs as components of Beijing's comprehensive global dominance strategy for establishing the integrated architecture, enabling system manipulation over disruption.

## Strategic Shift: Belt and Road Initiative Yields to Global Initiatives Quartet

After phenomenal initial success, the BRI faced geopolitical backlash due to several drawbacks, which include debt traps, project delays and cancellations, environmental damage, corruption scandals, and human rights violations.[2] With a sharper, more flexible, and an all-inclusive plan for global competition, the 4GIs form a 'Post-COVID BRI 2.0' plan to fix the old BRI's weak spots and boosts Chinese global influence. Strategically, the 4GIs extend the earlier BRI into a comprehensive ideological arc—infrastructure cum development norms, security concepts, civilisational discourse, and governance redesign. The cumulative effect is the gradual construction of a parallel, more authoritarian leaning global order under the banner of multilateralism and Chinese 'Community with a shared future for mankind'.[3,4]

The 4GIs operate in sync to systematically undermine liberal democratic norms while transferring influence from the Western frameworks to Beijing's state-centric model. GDI builds economic ties, GSI offers security and technology cooperation, GCI shapes narratives and legitimacy, and GGI converts these into institutional and rule-making leverage. Taken together, they create a virtuous cycle where material dependence, security linkages and shared

discourse feed China's political influence.[5] Chinese President Xi Jinping's rhetoric through 4GIs highlights fairness, multilateralism, and a 'Community with a shared future for mankind' and projects China as the leader for the Global South nations against the Western hegemony.

GDI speeds up the UN 2030 Agenda with USD 4 bn in funding; GSI pushes 'Common Security' based on non-interference; GCI builds 'Civilisational Dialogue', and GGI calls for reforms in the UN and World Trade Organization.[6] Under the cloak of the 4GIs talks, China spreads techno-authoritarian ideas through economic power.

GDI pays for digital projects like Beidou satellites and Artificial Intelligence (AI) rules, which create dependencies. GSI sells surveillance tools as peacekeeping aid. GCI defends censorship as cultural sovereignty and GGI seeks to transform existing bodies like the UN and, simultaneously, propose parallel new institutions such as International Organisation for Mediation (IOMed), a Hong Kong based mediation group launched on 20 Oct 2025 with focus on resolving international disputes through mediation.[7]

The new groups like IOMed and the Global AI Cooperation Organisation under the cloak of GGI generally skip the UN veto limits and direct Global South dealings through China-led setups.[8] Organisations such as China's Maritime Courts have emerged as a global hub for dispute resolution, while handling 6,823 foreign-related cases (2022-2024) involving parties from 143 countries. The prominent recent dispute handled by China's Maritime Courts includes Ningbo Maritime Court mediating a Malacca Strait collision under Chinese law and a Marshall Islands ship case settled for USD 1.25 mn, which reflects Beijing's maritime judicial strategy.[9] GCI has changed human rights into development rights to justify China's actions in Xinjiang and Hong Kong, while, simultaneously, attacking the Western long-arm jurisdiction.[10] Together, GDI and GSI tie Huawei tech and Beidou satellites into the BRI across 149 countries to spread China's Great Firewall model via the Digital Silk Road (DSR) and build deep digital ties.[11]

Chinese official narratives describe the 4GIs as an organic whole in which GDI provides the material foundation, GSI safeguards a peaceful environment, GCI builds value consensus, and GGI supplies institutional guarantees. This systemic framing

portrays China as offering a full-spectrum governance package and not an isolated project.[12] Within a short span of time, China's 4GIs have rapidly constructed a parallel global architecture to challenge the Western-dominated institutions across critical domains.[13] Launched between 2021 and 2025, these initiatives have secured over 100 endorsements for the GDI fund (USD 4 bn), engaged security partners like Russia, Iran, and Pakistan through GSI dialogues, integrated AI governance bodies and IOMed with SCO and BRICS frameworks, and have signed 43 Global South memoranda of understanding for Cross-Border Interbank Payment System or Renminbi Settlement.[14,15,16]

Within four years, the swift institutional proliferation of China has demonstrated their unprecedented strategic ambition of converting economic assistance into normative dominance and redirecting global flows toward Beijing's state-centric vision. By emphasising on under-representation and historical injustice, the 4GIs frame China as the voice and defender of developing states. Preferential finance and easy transfer of cheap Chinese technology coupled with diplomatic support translate China's narrative into voting coalitions and agenda control within the UN agencies and other multilaterals.[17]

## Global Development Initiative

GDI, launched by Xi Jinping in Sep 2021 at the United Nations General Assembly (UNGA), accelerates the UN's 2030 Agenda for Sustainable Development through six core principles: prioritising development, people-centred approaches, universal benefits, innovation-driven growth, human-nature harmony, and results-oriented actions. Targeting eight priority areas, i.e., poverty alleviation, food security, pandemic response, development financing, climate change, industrialisation, digital economy, and connectivity, GDI positions China as the Global South's champion against the Western historical inequities. The implementation of GDI includes the high-level dialogue on Global Development, two sessions of the high-level conference of the Forum on Global Action for Shared Development, setting up the Global Development and South-South Cooperation Fund with a total of USD 4 bn, launch of the China-Food and Agricultural Organization's (FAO) Third South-South Cooperation Trust Fund with USD 50 mn, and setting up of the Global Development Promotion Center. GDI rapidly

secured endorsements from over 100 countries and international organisations, with over 80 nations joining the Group of Friends of GDI.[18]

In Sep 2025, at the UNGA 80th session, China announced the China-UN Global South-South Development Facility (2025-2030) with the UN Office for South-South Cooperation, targeting digital transformation and green development in the most vulnerable countries, including least developed countries, land-locked developing countries, and small island developing states through Huawei and Beidou infrastructure and AI capacity-building.[19] Under the cloak of developmental rhetoric, GDI architects a parallel techno-authoritarian order which focuses on smaller, greener, digitally-oriented projects that embed the Chinese standards. Huawei 5G networks, Beidou satellite systems, and surveillance architectures across 149 countries create digital dependencies that normalise state-centric data control, bypassing the Western privacy and data protection norms.[20]

**Global Security Initiative**

GSI was launched by Xi Jinping at the Boao Forum for Asia on 21 Apr 2022 and is articulated through six core commitments: indivisible security, sovereignty respect, UN Charter adherence, legitimate security concerns, dialogue-based dispute resolution, and comprehensive traditional or non-traditional security. GSI rejects Cold War alliances and zero-sum games in favour of win-win partnerships. Unlike Western collective defence models, GSI prioritises state-centric stability, cyber sovereignty, biosecurity, and AI governance while positioning China as a mediator for the Global South security dilemmas. GSI is operationalised via a Feb 2023 concept paper and sponsors platforms like the Global Public Security Cooperation Forum to showcase Chinese surveillance technologies.[21,22]

Over 90 bilateral and multilateral documents now incorporate GSI language while systematically converting GDI economic dependencies into enduring security partnerships that discreetly embed the Chinese standards.[23] Pacific Island nations have already received integrated disaster relief and police training packages featuring Hikvision surveillance systems and Zhongxing Telecommunication Equipment Corporation cyber security solutions framed as non-traditional security cooperation. In Central Asia,

joint counterterrorism drills conducted through SCO frameworks are gradually enhancing People's Liberation Army interoperability with regional militaries.[24] GSI's recent signature achievement remains China's Mar 2023 mediation normalising Saudi–Iran relations, restoring diplomatic ties after seven years and securing both nations' commitments to GSI principles. This breakthrough is hailed by more than 100 countries and has demonstrated China's neutral broker credentials while expanding Chinese Middle East footprint and embedding GSI concepts into bilateral agreements across BRICS, SCO, and African Union frameworks.[25,26]

## Global Civilisation Initiative

GCI was presented by Xi Jinping in Mar 2023 during a high-level dialogue with World Political Parties High-level Meeting, seeking to foster respect for civilisational diversity; uphold humanity's common values such as peace, development, equity, justice, democracy, and freedom through a state-centric lens; preserve and innovate civilisations; and strengthen people-to-people exchanges globally.[27] GCI rejects 'Clash of Civilisations' rhetoric, promoting mutual learning over the Western universalism.[28,29] In addition to the cultural diplomacy, GCI strategically architects a parallel techno-authoritarian order by exporting China's party-state model of governance, which fuses Confucian harmony with digital authoritarianism. This order challenges the US-led liberal international framework by normalising cyber sovereignty, algorithmic control, and elite capture through platforms like the World Internet Conference and Confucius Institutes (rebranded as Chinese International Education Foundation in mid-2020).[30,31] By prioritising civilisational dialogue over universal human rights, China positions itself as an alternative pole, fostering interoperability among authoritarian regimes via DSR infrastructure to include Huawei 5G networks, AI-surveillance, and data localisation standards that protect participants from Western sanctions and norms.[32]

A recent success exemplifies Chinese GCI parallel order's traction. GCI's success manifested in the Ministerial Meeting of Global Civilizations Dialogue, held in Beijing on 10-11 Jul 2025, where more than 600 delegates from 140 countries endorsed its principles under Safeguarding Diversity of Human Civilisations, amplifying exchanges with Eastern Europe.[33] In Jun 2024, the 78th

session of the UNGA unanimously adopted a resolution proposed by China to designate 10 Jun as the International Day for Dialogue among Civilisations. This resolution emphasises respecting civilisational diversity and promoting equal dialogue and mutual respect among different cultures, reflecting the core principles of GCI. The unanimous support highlights GCI's alignment with global trends and its relevance in an interconnected world. It addresses critical questions about the coexistence of civilisations and the future of humanity, offering Chinese perspectives and solutions to foster mutual learning and advance human progress. In 2024, GCI has been incorporated into bilateral agreements with over a dozen countries, including Pakistan, United Arab Emirates, Bahrain, Tunisia, Egypt, Equatorial Guinea, Serbia, and Hungary, earning growing international recognition and support. Even before the launch of GCI, China continued to deepen cooperation with UN Educational, Scientific, and Cultural Organization (UNESCO) and the UN World Tourism Organisation. The unanimous support highlights GCI's alignment with global trends and its relevance in an interconnected world. As of Dec 2022, China has included its 43 items on the UNESCO Intangible Cultural Heritage List.[34]

**Global Governance Initiative**

GGI is a fourth major global initiative of this decade and the newest layer in a broader long-term project to reshape the international order in a way that favour Chinese power, norms, and interests. GGI was introduced by Jinping during SCO Plus meeting at Tianjin on 01 Sep 2025[35], representing a cornerstone of China's overarching strategy to reshape the global order. GGI completes the quartet alongside GDI, GSI, and GCI to construct a 'Community with a Shared Future for Mankind'.[36] The initiative systematically addresses the fundamental questions of global governance, 'By whom, how, and for whom it is conducted', while responding to the concerns of the international community, presenting itself as the correct choice for tackling global challenges and the essential path to resolving the governance deficit.[37] GGI advocates five core concepts: First, sovereign equality to ensure participation in global affairs by all countries; second, international rule of law for a just and orderly global governance system; third, multilateralism for greater solidarity and cooperation among all countries; fourth, a people-centred approach for universally beneficial and inclusive outcomes of global governance; and fifth,

real results for a pragmatic and efficient global governance process.[38]

China exploits multilateralism to reshape international organisations into 'China Fit' entities, suppressing dissent while amplifying the CPC's narratives.[39] A former UN employee, Emma Reilly, exposed how Beijing silences sensitive topics, manipulates reports, and downplays human rights and democracy within the UN bodies.[40] As the US leadership retreats under President Donald Trump's retrenchment, Beijing exploits the vacuum not only by infiltrating existing international organisations, but also by creating new ones to shape nascent domains like AI, space, and deep-sea mining. Framed as South–South solidarity, GGI strategies cultivates the Global South dependencies, implant pervasive intelligence networks, and normalises the Chinese norms, while gradually displacing the Western paradigms and challenging institutional transparency. China is actively shaping the UN and positioning itself to challenge the Western-led norms. UN Secretary-General António Guterres, marking China's 50th UN Security Council permanent seat anniversary in Oct 2021, praised Beijing as "An increasingly important contributor… and a major pillar of international cooperation".[41] A House Committee report, dated 24 Oct 2024, reveals China co-opting the UN and World Health Organization, neglecting their commitments while shaping global standards through Huawei and ZTE support.[42]

China leverages financial power and strategic personnel placement to reshape the UN agendas, holding key roles in FAO, International Telecommunication Union, and UN Department of Economic and Social Affairs (holding Under-Secretary-General post since 2007). This enables blocking unfavourable resolutions, prioritising sovereignty and development over liberal norms, and building anti-Western coalitions through development programs.[43]

## Global Initiatives Quartet: Self-Reinforcing Architecture for Global Surge Amid Volatility

Post Xi Jinping's ascension to the top leadership position, China is no longer content with being a 'Rule-taker', China now seeks to become a 'Rule-shaper'.[44] China's 4GIs marks a strategic pivot from the BRI's infrastructure focus to a holistic framework, re-engineering global norms post-COVID. The 4GIs translate Jinping's vision into reality.[45] The 'Community of shared future for mankind'

concept is deliberately crafted to reshape international discourse, reûecting China's eûort to reframe global governance around inclusivity and mutual respect.[46] The 4GIs, launched sequentially within five years, form a comprehensive framework that projects Beijing's strategic influence across development, security, culture, and governance amid global volatility. Collectively, these initiatives aim to reshape global governance structures while amplifying China's political, economic, and security footprint worldwide. The 4GIs operate as a coordinated ecosystem: GDI creates material dependencies via financing and infrastructure; GSI establishes security interoperability through policing and surveillance exports; GCI drives civilisational consensus via mutual learning; and GGI achieves existing institutional capture and creating parallel structures like IOMeD organisations and AI governance forums.[47,48] Analysis of recent events and their success within short period confirms this interplay, validating Beijing's shift toward a techno-authoritarian order that privileges relativist rights over universal values, gradually eroding the Western institutions.

With the 4GI's, Jinping has established the ideological arc which shows how he seeks to be the architect of a future global order underneath the rhetoric of fairness. The Chinese leader aims to leverage China's economic power to embed techno-authoritarian principles that actively undermines the Western-led institutions and democratic ideals. With launch of the 4GIs in quick succession, the world is witnessing not just an expansion of Chinese influence, but a premeditated construction of a parallel global system designed to entrench Beijing's vision of an alternative, state-centric order.[49]

Beijing's 4GIs alongside other global strategies present a more cohesive vision for the world than the US currently offers. While the White House's Jul 2025 AI Action Plan is a crucial step towards asserting their *technological* leadership, it alone does not compete with China's *all-encompassing* ideological framework, demonstrating the CPC's ambitions to cement the supremacy of China's values in the global economy, security apparatus, and digital governance.[50]

In future, China's quartet will weaponise its global influence trajectory by securing global endorsements from underdeveloped or developing nations and mobilising billions via the UN resolutions

and SCO integrations to institutionalise their vision that embeds Beijing's state-centric norms. Exploiting the US economic retrenchment, gross domestic product slowdowns, and Trump-era US–Europe rifts over tariffs and de-risking, China will normalise non-liberal governance through aggressive tech exports and BRICS expansions to capture majority of the Global South digital infrastructure. The US distractions from Ukraine and Iran conflicts since early 2026 will divert Western resources, enabling Beijing to tilt neutral states toward a state-centric East via GDI's economic dependencies, GSI's security pacts, GCI's relativist narratives, and GGI's multilateral codification, while countering the liberal West despite decoupling risks and Indo-Pacific alliances.

China's weaponisation of the quartet will greatly undermine India's strategic position in the Indo-Pacific and accelerate its encirclement through GDI-driven economic dependencies that glue India's neighbours Bangladesh, Myanmar, Nepal, and Sri Lanka into the BRI corridor, thereby, slashing New Delhi's regional leverage. GSI frameworks embedded in the SCO summits will prioritise common security over territorial disputes, thereby, diluting India's sovereignty claims amid persistent Ladakh standoffs and China's military realignments with Pakistan, fostering hybrid vulnerabilities from debt traps to data sovereignty loss. GCI's civilisational rhetoric will undermine India's pluralistic democracy by normalising the CPC's relativism on rights and governance, while GGI will elevates Beijing's position as BRICS or UN financier and norm-setter, contesting India's rules-based advocacy and further amplifying USD 100 bn trade deficits. These actions may result in the marginalisation of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), heightened border problems, and India's isolation in South Asia.

## Conclusion

China's global initiatives quartet marks the paradigm shift from debt-heavy BRI as a mere infrastructure precursor to a self-reinforcing ecosystem, wherein, GDI generates dependencies, GSI forges security ties, GCI aligns narratives, and GGI codifies norms. Together, these initiatives subtly advance Beijing's dominance plan by systematically challenging the Western liberal order through system manipulation rather than outright disruption. Under Jinping, this comprehensive architecture operationalises his vision,

delivering Chinese public goods via the SCO, BRICS, and UN platforms to normalise state-centric data control, sovereignty-first security, and relativist governance, fostering the Global South reliance while eroding universal values. Globally, 4GIs entrenches dual orders with Beijing's techno-authoritarian model, capturing digital spheres amid Western fragmentation. For India, the successes of 4GIs will escalates encirclement: GDI's debt traps will erode 'Neighbourhood First' influence; GSI's SCO pacts will dilute border sovereignty amid Ladakh tensions; GCI's narratives will undermine democratic pluralism; and GGI's BRICS or UN norms will contest rules-based advocacy, risking sub continental leverage loss, BIMSTEC isolation, and hybrid threats.

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# Artificial Intelligence Beyond Large Language Models

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**Dr Gopal Bhushan[#]**

**Abstract**

*This article examines the long-standing quest to make machines intelligent and emulate human behaviour. However, the explosive popularity of Large Language Models (LLMs) like ChatGPT, Llama, and Gemini, etc., since their launch in 2022 has not only accelerated the proliferation of Artificial Intelligence (AI) but has also created a misconception that AI is predominantly about these transformer-based LLMs. This myopic view ignores the multifaceted AI landscape, comprising of numerous models, which complement and outperform LLMs in specialised domains. This article looks at the journey of AI till date and explores its universe beyond LLMs, with an attempt to holistically understand the technologies and foster their innovation and exploitation in various fields. A clear understanding of the diverse requirements of these models—particularly in terms of computing and their applications—will enable practitioners and policymakers to responsibly leverage their full potential in addressing real-world challenges.*

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## Introduction

Artificial Intelligence (AI) is arguably the most transformative technology, which has started to have a profound impact on all possible fields of the world today. It encompasses "The study of agents that receive percept from the environment and perform actions", as defined by Russell and Norvig[1], and aims to replicate human intelligence in multiple domains. There has been a paradigm shift wherein machines, which have been performing their tasks based on deterministic logic till date, are operating on probabilistic models developed by AI. Though developments in all sub-fields and branches of AI have been significant and note-worthy, it is due to the human connect with AI systems through the Natural Language Processing (NLP) interfaces that Large Language Models (LLMs) have gained disproportionate popularity. The enhanced accuracy and exponential proliferation of deep neural networks based LLMs have created a general perception of AI being synonymous to LLMs. Tools like ChatGPT, Claude, and Gemini have not only excelled in understanding the context of conversations and queries but have become increasingly proficient in generating human-like texts, software codes, and even scientific research, thanks to the investments exceeding USD 100 bn in 2024 alone towards research and development in the field.[2] The versatility of LLMs make many believe them to be a one-point solution to all the AI problems, overlooking their limitations in domains beyond sequential data. LLMs only excel in NLP and falter in domains like causal reasoning, explainable rule-based decision making, novel designs, and long-term planning, especially in resource-constrained environments. The article traces back the historical development of AI and its basic components, with an aim to understand the genesis, mechanics, common applications, use-cases, and hardware requirements for various 'Types' of AI.

## Journey Thus Far

The concept of intelligent machines was first conceived by Alan Turing[3], who proposed the 'Turing Test' to measure machine intelligence, but it formally got traction in the Dartmouth Conference[4], when John McCarthy and his colleagues worked on the idea. The 'Good Old-fashioned' AI mainly relied on symbolic logic and could prove mathematical theorems.[5] The first NLP system, called Eliza in 1966, was nothing but a set of pre-fed

answers to probable questions. A breakthrough came in the form of 'Recurrent Neural Networks' in 1972, which were designed to process sequential data like text, speech, and time series by using internal memory to retain information from previous inputs, saved in the form of 'State' of the system. However, the 1970s and 80s saw 'AI Winters' due to hype mismatch, predominantly due to a lack of corresponding development in the field of hardware, which made processing extremely slow and cumbersome. These systems had a potential of getting trained via 'Backpropagation Through Time'.[6] The supervised learning of AI models by human beings led to an evolution of numerous systems, for example, Apple's Siri in 2011 was trained to understand highly specific statements and commands, requiring human intervention. This evolved since the breakthrough development of artificial neural networks in 2012, which allowed machines to engage in reinforcement learning and simulate how the human brain processes information.[7] The processing time for these complex and heavy algorithms got significantly compressed by the 'Transformers' architecture, proposed by the Google and DeepMind team[8], which led OpenAI to develop GPT-1 in 2018. The evolution was powered by the development of Graphical Processing Units (GPUs), which allowed parallel processing, thereby, significantly increasing the processing speed. Unidirectional (only words preceding the word) understanding of text was considerably enhanced by bi-directional (both preceding and succeeding) encoder representations from transformers, released by Google in 2018, which allowed understanding of the context better. Beyond this point, LLM technology saw limited architectural breakthroughs, but scale increased dramatically. With the release of GPT-3 in 2020—featuring 175 billion parameters—performance improved significantly, and the world began to recognise the true potential of LLMs. However, parallel advancements in other paradigms like 'Reinforcement Learning', 'Convolutional Neural Networks' and 'Generative Adversarial Networks', have been equally significant and have resulted in the development of numerous effective AI systems. However, despite considerable investments in AI technology, over 70 per cent of all industrial AI deployments still use non-deep methods like rule-based systems.[9] In the next section, the article explores the world of AI by understanding the classification and details of different models, including and beyond LLMs, their comparison, and applications.

## Classification of Artificial Intelligence: Based on Capabilities

Based on its capabilities or the range of tasks that can be performed, AI can be categorised into three basic categories, as shown in Figure 1. Out of these three, 'Narrow AI' (or Weak AI) has been realised, with extensive research being underway in the fields of 'Strong AI' and 'Artificial Super-Intelligence'.

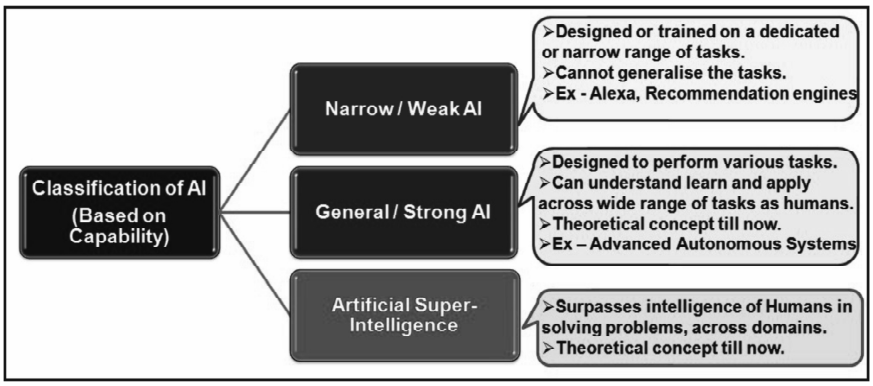


**Figure 1: Classification of Artificial Intelligence based on Capability**

## Traditional Branches of Artificial Intelligence

**Machine Learning (ML)**. It teaches computers to learn from data and become smarter over time. Supervised ML trains the system on data that has known answers or examples, like showing pictures of mountains to identify the same. Unsupervised ML, on the other hand, learns from data without knowing the answers ahead of time, by finding patterns or grouping them on their own. Reinforcement learning rewards for making good decisions and penalises for making a wrong one to improve accuracy. LLMs rely heavily on self-supervised pre-training. ML has been central to AI systems being used for demand forecasting, product recommendations, pattern detection, and predictive maintenance.

**Speech Recognition**. It helps in converting text to speech and speech to text and is useful in voice sample processing applications like interception of voice signals.

**NLP**. It deals with teaching computers to understand languages and interact in a way like humans do. It allows machines to read, write, speak, and respond sensibly. Applications include text analysis, translation and summarisation, grammar checking, and virtual assistants.

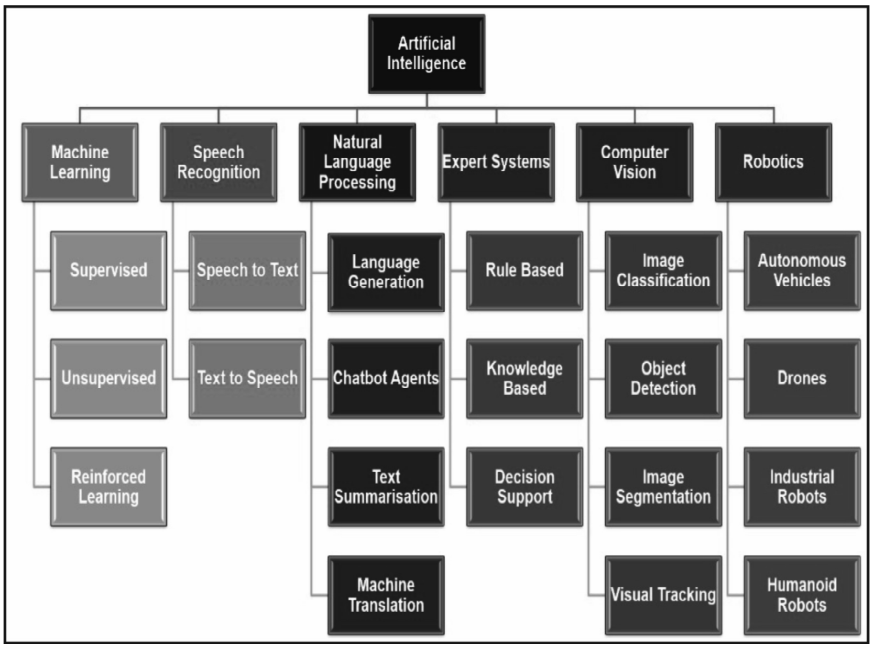


**Figure 2: Traditional Important Branches of Artificial Intelligence**

**Expert Systems**. They mimic human decision-making with use of rules and facts to solve specific problems like medical diagnostics, financial services, and transparent functioning in a regulated environment. 'Fuzzy Logic' deals with reasoning, helping systems to make decisions when the situation or information is uncertain or imprecise like control systems of appliances and embedded systems.

**Computer Vision**. It helps computers to understand and interpret visual information, including images and videos. Its application includes fields like image recognition, detection, multimodal vision, and image and video analysis for satellite, sensor, security cameras, and medical imaging.

**Robotics**. It deals with designing and programming robots to perform tasks, with or without human help. This rapidly growing field has many applications like factory automation, assistive robots for disabled and unmanned systems, including drones, etc. Multiple branches like computer vision, ML, and decision-making functions are combined to evolve 'Collaborative Robots' (Cobots) to work alongside humans.

**Interplay between Branches**. Human cognition is a complex function of all sensory inputs. Similarly, advanced AI systems are a combination of multiple branches, which support and complement each other, exploiting multiple technologies or concepts for improved efficiency, blurring the erstwhile distinction. For example, a system may combine vision and speech recognition for inputs, ML for prediction, NLP for user interface, and an expert system for rules and compliance. In practice, hybrid systems are so advanced that single-branch systems are seldom deployed. Blurred distinction between the branches has led to evolution of a more application-oriented model, based on the following two core technologies:

- Neural networks mimic functioning of human brain with interconnected nodes that process information and maintain states and memory. Deep neural networks-based learning uses multiple layers of neural networks to learn from large amounts of data and is used for applications like speech, text, and image recognition and processing.

- Generative AI can establish and learn patterns between inputs to create new content like text, images, music, or videos. These systems unlock exciting possibilities for creativity and innovation but are also laden with risks of deepfakes.

**Functional Components of Artificial Intelligence**. These fundamental components combine to give the desired functionality and accuracy to the AI systems. They offer modular capability to the complex AI systems and rely on the following underlying technologies.

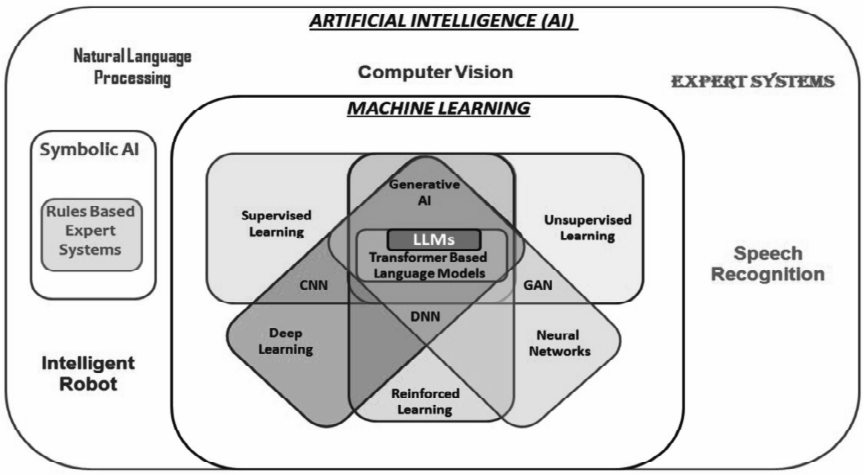


**Figure 3: Interplay of Functionalities**

- **Symbolic AI: Sticks to Rules**. Symbolic AI uses simple, explicit, human-readable rules and logic to infer, reason, and solve problems deterministically. It, therefore, offers a high degree of interpretability. However, since not all problems can be addressed using rigid logic such as if-then-else rules, this approach lacks flexibility. In contrast, LLMs are probabilistic, neural network-based systems that discover patterns from vast datasets to generate text, offering high flexibility but poor interpretability. Core techniques of symbolic AI include knowledge representation, automated theorem proving, and planning algorithms like Stanford Research Institute Problem Solver.[10] They require lesser training data than LLMs, which hallucinate.[11] Symbolic AI is, therefore, often used in a hybrid mode as it performs well in verifiable domains like rule-based problem solving, law, or aviation, for e.g., autonomous systems, checking legal contracts, and playing rule-based games.

- **Reinforcement Learning (RL): Learning from Interaction**. RL trains models from millions of interactions and tries to replicate mastering through penalties and rewards. This is like a child trying to learn cycling, where balance is a reward while falling can be considered as a penalty. The aim of the algorithm is to maximise the long-term wins.[12] RL in 'DeepMind's AlphaGo' beat World Chess players[13] by learning the game through replaying it multiple times.[14] Other

examples of RL in dynamic situations include self-driving cars, algorithms learning stock trading, or power grids learning to balance voltage fluctuations and solar spikes. This RL is different from text predictions by LLMs, which tries to match RL through human feedback[15] for fine tuning.

- **LLMs: Churn Text Based on Context**. LLMs are general-purpose foundational neural network models trained using deep learning on huge amount of text from books, websites, articles, academic papers, conversations, and code repositories. The text is broken down into 'Tokens', which are plotted on a multi-dimensional plane to understand their usage based on 'Statistical Pattern' of the language. Transformer neural networks enable parallel processing and contextual awareness to understand relationships between words and resolve ambiguity. This helps systems to predict, understand, generate, and reason in human language and perform multiple tasks like chatbots, summarisation, translation, analysis, and coding. The lack of additional hardware requirements, combined with a user-friendly interface, has helped democratise AI. As it learns the subject through a series of word-usage, it can invent facts, fabricate citations, and sound confident even when wrong, or 'Hallucinate' and, at times, lack grounded reality and have bias based on the training data.

- **Evolutionary Algorithms (EA): Evolves Like Nature**. EAs, also called 'Genetic Algorithms', mimic Darwinian evolution based on mutation, crossover, and selection of the fittest to optimise solutions. It uses trial and error method to handle non-differentiable, multimodal problems. The system selects a random solution to check its correctness and accuracy. If not found satisfactory, it keeps improving it by adaptation and amendments till the desired level of the perfection is reached. These algorithms are, therefore, fundamental in deriving new concepts and designs, for e.g., shape and design of National Aeronautics and Space Administration's Mars ST5 antenna was evolved to outperform human engineers, reducing weight by 44 per cent while boosting gain.[16] Other applications include route optimisation by airlines and taxis to save fuel games, where AI opponents evolve their tactics and adapt mid-match. An associated, more

advanced, and specialised subset of EAs is neuro-evolution, which applies evolutionary principles to artificial neural networks, optimising their weights and topology to create intelligent and functional neural networks. A few examples of neuro-evolution include OpenAI's early agents and complex climate modelling systems.

- **Probabilistic Models: Uncertainty and Causality**. Probabilistic Graphical Models (PGMs) capture dependencies and causal relationships, using Bayesian probability principles to infer outcomes.[17] They quantify uncertainty and update beliefs with evidence or causes. A graph of influences or dependent factors is drawn and a 'What If?' question is asked to arrive at a reasonable answer.[18] PGMs use causality to find answers or reasons, which are critical for scientific applications including prediction of ailments from symptoms. They are also used in spam filters and user-specific recommendations for advertisements for Microsoft[19], which increased their returns by 20 per cent and over-the-top platforms. These models differ from LLMs, which predict succeeding words probabilistically, but do not consider the cause or rationale for the same.

- **Neuro-Symbolic Models: Brains with Logic**. Neuro-symbolic AI models use a hybrid approach by doing pattern-matching using neural networks and logic reasoning, thereby, achieving the best of both worlds. Examples include 'Alpha Geometry', where LLM guesses the steps and logic of symbolic models and verify them to solve geometric problems.[20] AI systems like neural theorem provers logically prove the conjectures with 60 per cent accuracy.[21] Various limitations of LLMs like biases and hallucinations can be mitigated using symbolic verification by neuro-symbolic models, thereby, enhancing their accuracy.

## The Future—Mixing Models for Smarter Artificial Intelligence

The future of AI will not be defined by single models, but coordinated operations by multiple specialist models, each performing their specific tasks optimally and mitigating each other's shortcomings. For example, robots like Google's RT-1 grabs objects using RL with vision.[22] Though instrumental in deep proliferation of AI, LLMs suffer from numerous limitations, which can be

overcome by other models, as shown in Table 1, to develop much more complex and efficient systems.

| LLM: Limitations | Models which Mitigate | Strength of Models | Applications |
|---|---|---|---|
| Hallucinations | Symbolic AI | Explainable rules | Legal contracts |
| No true invention | Evolutionary AI | Novel designs | Antenna design |
| No real agency | RL | Sequential decisions | Game AI, Robots |
| Ignores causality | Probabilistic Models | Handles uncertainty | Medical diagnosis |
| Poor logic | Neuro-Symbolic AI | Reasoning and patterns | Math Proofs |

**Table 1: Limitations of Large Language Models and Complementing Models**

## Model-Specific Requirements

Each of the above-mentioned models process the data differently and, therefore, require different types of hardware to perform optimally. Processors and memory required for running these complex models efficiently vary and so does their cost and deployment model. The way models process data dictates the requirement of parallel processing and memory, which is met by GPUs and onboard memory. For example, LLMs with billions or trillions of parameters require GPUs for large-scale parallel processing and specialised, high-speed memory to store graphics data like frame buffers and 3D models called Video Random Access Memory (VRAM). On the contrary, symbolic AI and EAs thrive on low-end Central Processing Units (CPUs) or Field Programmable Gate Arrays (FPGAs). Similarly, symbolic or probabilistic models are light on computation, allowing functioning on edge devices. RL and LLMs have higher compute requirements, which necessitate working through GPUs and storage hosted in data centres. Typical model-specific requirements of hardware to include compute and memory are summarised in Table 2, a thorough understanding of which will facilitate decision and policy makers in selecting the correct model, architecture, and cater for the infrastructure requirements for fielding of AI systems.

| Paradigm or Model | Typical Hardware | VRAM Requirement | Compute Requirement | Typical Cost or Power |
|---|---|---|---|---|
| LLMs (e.g., GPT-4 or Llama) | High-end GPUs (A100/H100), 24 to 48 GB+ VRAM per model | Extreme (32B+ models: 48GB+) | GPUs or Tensor Processing Unit (TPUs) for training or inference | User Data Device (UDD) 10,000; high power |
| Symbolic AI (PROLOG) | Standard CPU, embedded chips (1980s: custom AI boards ~600 KLIPS) | Low (MBs) | CPUs, FPGAs for speed | Laptop (UDD 500), very low power |
| Evolutionary Algos (GAs) | CPUs, FPGAs for parallel evals; ScienceDirect+1 | Low-medium (GBs for populations) | Parallel CPUs or FPGAs | Mid-range FPGA (UDD 1,000), efficient |
| RL (AlphaGo or MuZero) | TPUs or GPUs (MuZero: 16-1000 TPUs) | High (tens GBs) | GPU or TPU clusters | Cloud clusters (UDD 100,000 equivalent), high power |
| Probabilistic (Bayesian Nets) | Central Processing Units (CPUs), brain-inspired hardware for efficiency | Low (for inference) | CPUs or custom Application-Specific Integrated Circuits | Standard server (UDD 2000), low power |
| Neuro-Symbolic (AlphaGeometry) | GPUs but memory-bound, less than pure deep learning | Medium-high (varies by logic operations) | GPUs with optimisations | Mid-high GPU (UDD 5000), Moderate power |
| Multimodal (Contrastive Language–Image Pretraining or Neural Radiance Fields) | Multi-GPU (A100/RTX), high-core CPUs | High (256GB+ Random Access Memory for embeddings) | GPUs + fast storage or Network Interface Cards | Hybrid rig (UDD 20,000), high power |

**Table 2: Hardware Requirements of Different Models**

## Technology Prognosis

The direction of research and evolution of AI suggests that hybrid and multimodal AI systems will define the future. They will utilise neural networks for learning and analysing data sets, symbolic AI for rule- or facts-based logical reasoning, and probabilistic models to take decisions in uncertain scenarios. These multiple models, employed in various combinations, will not only mitigate the shortcomings of each other but would also enhance accuracy and alignment of the system output, making them more explainable. Agentic AI, which uses interactions between different models, is a natural progression in this direction, and collaborative agents are predicted to be the next big thing in the realm of AI. Multiple AI agents working together on multifarious subjects could collaborate in real time to give cross-domain intelligence, contextual understanding, and give rise to strong AI or artificial general intelligence.

## Conclusion

An understanding of various AI models and their underlying technology is imperative for decision making and policy formulation towards deployment of AI systems. It is recommended that suitable combination of AI models be identified as the first step towards planning and fielding of these systems to accomplish the requisite functions or applications. This will dictate the exact requirement of different types of hardware and their hosting architecture. A thorough understanding of functioning and limitations of these models will not only streamline the process of fielding of AI systems but will also make their exploitation more effective. For example, a sizable share of common applications could run on small language models utilising commonly available and cheap CPUs instead of costly GPUs. Thus, fielding of AI systems could be optimised and expedited in a cost-effective manner. This would immensely help countries like India, which does not yet have the requisite fabrication facility and is entirely dependent on imports for advanced information technology hardware.

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# Cyber Security Vulnerabilities of Artificial Intelligence-Enabled Counter Drone Systems: Risk and Resilience Strategies in South Asian Environment

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**Professor (Dr) Anurag Jaiswal**[#]

**Abstract**

*This article examines the integration of Artificial Intelligence (AI) in counter-unmanned aerial vehicle systems and its impact on modern military operations. AI-enabled counter drone technologies have significantly enhanced the speed, precision, and effectiveness of detecting and neutralising aerial threats, leading to their increasing deployment for the protection of national borders, critical infrastructure, and airspace. However, the article highlights that the growing dependence on AI also introduces significant cybersecurity vulnerabilities. These include risks such as data poisoning, evasion attacks, and adversarial manipulation of machine-learning models, which can undermine the reliability of AI-driven systems. It also identifies vulnerabilities in communication networks supporting these systems. The article argues that while AI strengthens defence capabilities, it simultaneously expands the*

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*cyber threat surface. To address these risks, it emphasises the need for a multilayered cybersecurity architecture incorporating encrypted communications, tamper-resistant hardware, robust verification mechanisms, and human oversight, alongside greater indigenisation of critical technologies and a comprehensive national policy framework.*

## Introduction

The rise and widespread use of Unmanned Aerial Vehicles (UAVs) in recent times have changed the combat zone. Furthermore, the development of Counter-UAV (C-UAV) system has become a necessity for protecting borders and critical infrastructure of any nation state. It has led to a shift in the way military missions are being strategised and executed.

Keeping in view the peculiarities of the South Asian geopolitical environment, where this threat has become a reality, all states are, thus, rapidly investing in capacity building related to aerial defence capabilities. India has also taken quick strides to remain ahead in this race.

The next step towards threat mitigation and security is the reliance on Artificial Intelligence (AI)-based counter drone systems. These systems provide numerous advantages to include autonomous decision-making in a complicated milieu, ensuring both speed and precision while neutralising threats. Thus, it becomes a key differentiator between success and failure. However, these developments have also presented serious challenges of cyber threats. As the integration level for efficient decision making has increased in these systems, it has also expanded the range of cyberattacks and vulnerabilities.

These threats range from targeting decision making core, hardware, and software to the algorithms itself. To prevent such threats, there is an urgent need to develop a cyber security strategy which is not only multifaceted but also responsive and resilient to cater for future warfare needs.[1]

This article discusses cyber security vulnerabilities in counter drone systems which are complex, combining the dangers of cyber and physical sphere. It then proposes an all-inclusive framework

which is appropriate for India, recommending measures for enhancing robustness in progressively more contested cyber–air domain.

## Evolving Landscape: A Scan

Recently conducted Operation Sindoor by India has highlighted the importance of C-UAV systems for ensuring security along the borders. Even earlier, there had been frequent incidents of misuse of aerial platforms by adversaries and non-state actors. Both the historical and recent environmental realities have brought to fore the need for prioritising defensive capabilities against such threats. In consonance with the Indian government's initiatives of 'Make in India' and *Atmanirbharta* (Self-reliance), the investment towards developing these capabilities, especially indigenous development, has got a shot in the arm. Today, indigenisation has become a permanent national security compulsion. It will reduce reliance on foreign original equipment manufacturers along with giving tactical superiority and ensuring technological autonomy.

As regards next generation C-UAV system, the primacy is on integrating multiple sensors through AI algorithms. These models fuse together inputs received from radars, Radio Frequency (RF) analysers, electro-optical and infrared cameras, and acoustic sensors. These integrated inputs are then used by the model to develop a comprehensive intelligence picture, accurately classify the threat, predict trajectory of the aerial system, and present a neutralisation response which is layered in nature by using jamming, spoofing, and kinetic measures.

Though these smart systems are efficient, but they are double edged. With each added sensor and layer of fusion, these are also potential targets for attack. Since these systems function on interdependencies of sensors, any failure of one component may lead to complete failure of the system of system.

## Multifaceted Threats: Cyber Vulnerabilities

It is well known that AI-based systems have vulnerabilities which exist across the spectrum, from hardware to datasets used for training AI models:

- **Deceiving Digital Mind**. The machine learning models, which are the heart of C-UAV systems, are primarily used for recognising patterns. Any attacks on these models make it

susceptible to digital deception. Since these systems lack reasoning capability like humans, they continue to remain vulnerable to manipulation.

- **Data Poisoning**. This is undertaken through prolonged efforts deliberately trying to disrupt or undermine the system by creating a secret backdoor. Datasets dealing with visual recognition and signal identification are targeted by inserting corruption into the foundation itself.[2] During the training phase of a model, a hidden trigger may be inserted systematically or even manipulation of data samples may be carried out. This mislabelling of data can lead to misclassification of specific drones as birds. This hidden trigger is activated when required to make the system fail, especially during the critical phase. Normally, the system would work flawlessly during testing, thereby, preventing the user to know about the flaw. However, when the adversary intends to exploit the vulnerability, the trigger is activated. Even once the vulnerability is known, it will require cleaning entire dataset and resource-intensive retraining of the systems which is costly.

- **Evasion Attacks**. This is a real-time trick by fooling the state-of-art system. Unlike data poisoning, this attack occurs after deployment of the system. An adversary creates subtle, small changes from normal and negligible changes causing miscalculation.[3] For instance, a hostile drone may carry special design or patterns or use a projection system to change the appearance, thereby, fooling the AI-based system to recognise it as a bird, though it remains visible as a drone to human eye.

**Exploitation and Command-and-Control Interference: Cyber Physical System and Command Chain**

The effectiveness of AI-based C-UAV system is dependent on timely and accurate detection along with decision making which is based on secure exchange of data and command. The exploitation of the vulnerabilities in communication links between sensors, processors, and effectors (jammers or Interceptors) will lead to command-and-control interference. An adversary may use spoofing or jamming to insert false data or block commands, thereby, leading

to denial-of-service attack. It is also feasible that false alarms are introduced in the system which will exhaust operators to reset the systems. This may lead to crippling of system during an actual attack and waste resources. It is feasible that the system may be able to identify the threat, but since it would not be receiving any command for neutralisation, it would fail to accomplish the aim.

### Supply Chain Compromise: A Pertinent Threat

In the global world, nation states are interdependent, especially when it comes to supply chain. The dependency for technology, advance components, chips, sensors, and processes lends it to a realistic vulnerability. This vulnerability of exploitation of hardware by an adversary poses grave risk. A non-state actor or a state may compel a manufacturer to embed hidden backdoor into the firmware. This malicious component may remain dormant for years before being activated at an opportune time. As elucidated earlier, this backdoor can be used to corrupt calculation by algorithms or used to exfiltrate data or even disable a system at critical juncture. These threats will require costly audit of hardware, since normally these may be nearly impossible to detect through software scans.[4]

### Artificial Intelligence: Use as an Offensive Means

The last of the vulnerabilities is related to the use of AI as an offensive tool wherein 'Generative AI' is used for crafting convincing phishing emails to target key persons related in manufacturing, defence contracting business, or research institutions. AI may even be used to write unique malware, which can easily circumvent detection systems. Another option is to use AI for automatic scanning thousands of codes to detect new vulnerabilities, which are then used for exploitation.[5] This usage lends itself to scaling operations at a large scale and effectively targeting intended person. Overall, AI can be used for cyber campaigns with a greater ease.

### Building Multi-Layered Resilience Strategy

Keeping in view the numerous risks and vulnerabilities, no single solutions exist to ensure the security of AI-dependent counter drone system. It would require a holistic approach to formulate a coherent and robust strategy, which addresses strategic, operational, and technical aspects.[6] To overcome the vulnerabilities,

numerous measures can be adopted. To arrive at a holistic way forward, one can carry out the strengths, weaknesses, opportunities, and threats analysis. The biggest strength of AI-driven systems is their capability to detect and identify threats with speed and accuracy. However, as elucidated earlier, AI dependence also brings forth vulnerabilities due to integration of multiple layers, which becomes its weakness once exploited by an adversary. As regards threats is concerned, South Asian states need to understand that if the AI-based system misidentifies a target, it may adversely impact security of the region, especially with the increased risk of miscalculation and consequent escalation due to the existing mistrust. Nevertheless, it also provides an excellent opportunity to collaborate and formulate a strategy which caters for all aspects.

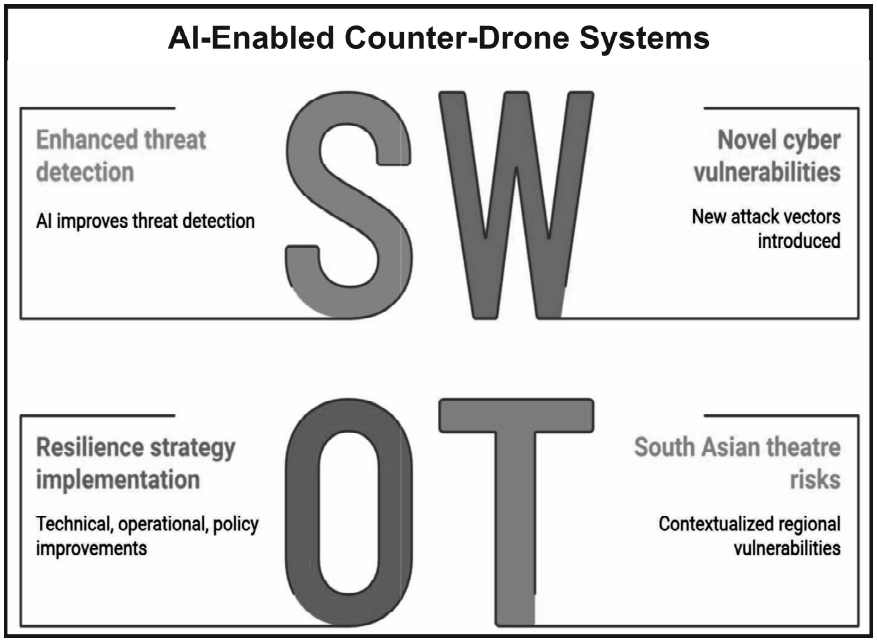


**Figure 1: SWOT Analysis of AI-Enabled Counter Drone Systems**

***Source*: Curated by Author**

These can be at technical, organisation, and national level. The resilience can be built through technical countermeasures as under:

- **Robustness against Adversarial Attacks**. The best defence against adversarial attack is to develop a robust AI system. This can be conducted by planning at the initial stage of development itself. The models being developed should be trained to identify such malicious attempts by providing datasets with adversarial examples. This will enable the system to develop a capability to detect and resist suspicious inputs. This inherent anomaly detection capability will enable the AI system to flag deceptive inputs and tackle them by masking before it causes harm.[7]

- **Multi-layered Verification**. To build resilience against the cyber vulnerabilities, cross verification and redundancy would be required. The basic philosophy must be based on 'Zero Trust' and no reliance on single sensor or single data stream be adhered to. For instance, if radar signature and RF profile confirm conclusively that an aerial object is a drone, though visual sensor is reporting it as a bird, then the AI system must be able to override the deceiving input. With this capability, the attackers will require multiple spoofers to mislead which will be very difficult and challenging.[8]

- **Secure Communication**. Lastly, end-to-end encryption is a necessity in current times to secure communication between sensors and AI-based system. There is a need to have hardened components with robust standards capable of resisting jamming. Use of Frequency Happing Spread Spectrum (FHSS) along with directional antennas is the way forward. Very importantly, the security of physical access points needs to be ensured apart from having a secure process of booting these systems by developing tamper-proof hardware.[9]

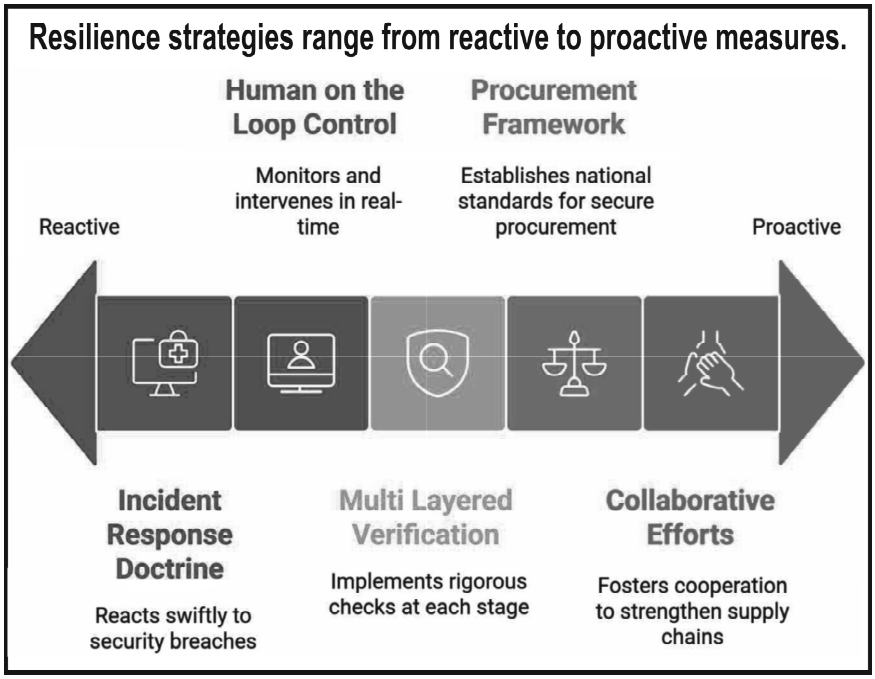


**Figure 2: Framework for Cyber Resilience in AI-Enabled Counter Drone Systems**

***Source*: Curated by Author**

## People and Process: Organisational Measures

The people and process responsible to manage and manage AI-based Counter-Unmanned Aerial Systems (C-UAS) are as critical as the technology itself. Certain measures, which can be adopted to counter cyber risks and vulnerabilities at organisational level, are as under:

- **Human-on-the-Loop Control**. It is imperative that AI systems are treated as potent assistant rather than to give it freedom as autonomous decision maker of life and death. Hence, the need for human-on-the-loop is a necessity, especially to safeguard against errors which can be due to malicious intent or even a natural error of the system. The human operator who is trained over the period retains the final authority for lethal engagement.

- **Wargaming: Red Team Concept**. At organisational level, skilled ethical hackers should be employed to act like an adversary to try and find weaknesses in the system.

Conduct of regular exercises to attempts and break into the system by this red team will ensure that any vulnerability in the system is identified and plugged before being exploited.[10]

- **Doctrine for Incident Report**. For an effective response system, clear protocols laying down mission continuation while being under cyberattack should be prepared. These protocols must address method to isolate any compromised subsystems and alternate safe system to fall back to during such an eventuality. Thus, clear doctrines and policies for response to any incidents will increase safeguard against cyberattacks.

## Security Plan and Nationwide Frameworks: Alleviate Supply Chain Vulnerabilities

Bearing in mind the South Asian environmental realities, it is practical for India to have a national security plan or policy, which takes a long-term view of incorporating international partnership efforts in supplementing resilience through progressive policy. Following aspects need special attention:

- **Procurement Framework: National Standard**. To mitigate supply chain vulnerabilities, it is a necessity to establish national standards which lay down security performance for AI system. These standards should define robustness levels in defence-related system, and these should be mandatorily incorporated in procurement contacts.[11] Moreover, to encourage manufactures, they should be incentivised for incorporating security parameters.

- **Supply Chain Sovereignty and Audits**. The way ahead for ensuring self-sufficiency in technology is to have a concerted drive for indigenisation. This only shall become a strategic solution to reduce dependence on imported components, especially microchips, critical parts, and AI software. Moreover, laying down vetting standards is a necessity.[12] It will involve rigorous checks with multi-layered certification along with mandatory records of ownership and protocols to verify integrity of the components.

- **Collaborative Efforts: Foster Cooperation**. Collaboration and cooperation should be planned both at regional and national level. Dividends will be accrued when

a structured public–private partnership is encouraged between industry and academia, resulting in the development of a cutting-edge technology through research. At regional level, India can collaborate by sharing threat intelligence and the best practices so that any cyberattack is utilised as an opportunity to strengthen defensive system of neighbours and Computer Emergency Response Team can play a crucial role in this regard.

## Conclusion

The advancement of technology has enabled improvement in defensive capabilities against aerial threats. However, development of C-UAS and their deployment brings to fore certain concerns. To address these, it leads to a continuous cycle of taking measures or counter measures by innovating and adaptation. South Asian nation states stand at crossroads of both development and vulnerabilities related to AI bases systems. These vulnerabilities, related to supply chain dependence and AI models, are real and would require a holistic resilience strategy. This strategy would require technical inventiveness, operational alertness, and visionary outlook, leading to development of strong, dependable, and intelligent system. Future of India will, thus, be dependent on how dynamic, righteous, and virtuous AI-based counter drone systems are developed, which can defend the nation and its common people.

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# Indian Perspectives on Eurasia

**Professor Nirmala Joshi**[@]

**Abstract**

*This article examines the renewed strategic significance of Eurasia, particularly Central Asia, in the evolving global order. It revisits Halford Mackinder's classical geopolitical thesis that the Eurasian 'Heartland' constitutes the pivot of global power and argues that contemporary geopolitical competition has revived the relevance of this perspective. The study analyses the geostrategic and geoeconomic importance of the Central Asian States (CAS)—Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan—rich in energy resources and critical minerals, and increasingly contested by major powers. It further explores India's historical connections with Central Asia through trade, cultural exchanges, and the Silk Route, and assesses how these ties are being revived in the post-Soviet era. Attention is given to India's policies, including the Connect Central Asia Policy, defence cooperation, connectivity initiatives such as the International North–South Transport Corridor and Chabahar Port, and engagement through multilateral forums like Shanghai Cooperation Organisation and the grouping of Brazil, Russia, India, China, and South Africa. The article evaluates opportunities, constraints, and the strategic implications for India's Eurasian engagement. It argues that while India enjoys considerable historical goodwill and growing diplomatic convergence with the CAS, its Eurasian*

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*outreach continues to face structural constraints of geography, limited trade access, and competition from entrenched external powers, especially China and Russia.*

## Introduction

In the evolving dynamics of the global order, international politics has witnessed a gradual shift of strategic and economic attention from the Euro-Atlantic region towards Asia, particularly the wider Eurasian landmass. The shift in the 21st Century was from Europe to Asia, especially to the huge landmass of Eurasia. Many experts and analysts opine that the shift can be characterised as a reinvention of British geographer Halford Mackinder's theory of geopolitics propounded in early 20th Century. In the contemporary global order, Mackinder's theory has regained relevance. According to Mackinder, Central Asia is the 'Pivot of History' and the vast swathe of landmass is the 'Heartlands of Eurasia'. In Mackinder's view, "Who controls the heartlands of Eurasia controls the world".[1] The Central Asian region is strategically located at the centre of Eurasia and forms the core of the Eurasian landmass. It serves as a vital transit hub, providing land connectivity and access to the north, south, east, and west. The region comprises five independent states: Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan.

Eurasia is a vast storehouse of natural resources and rare minerals. The Central Asian States (CAS) are particularly well endowed with energy resources and critical minerals, including uranium, gold, and silver. In the past, there was an intense competition among the great powers of the day, and, even today, the CAS remain highly sought after by both developed and developing countries. The competition is motivated both by geostrategic and geoeconomic factors. A prominent feature of the evolving Eurasian landscape is the strategic partnership between the Russian Federation and the People's Republic of China, both of which were former rivals.

India's interaction with Central Asia dates to centuries. The essence of this interaction was trade and land routes, in which India was a significant player. It was with the breakup of the Soviet Union that Central Asia, along with the broader Eurasian region, regained its independence. Today, Eurasia attracts world

attention, and a competition among major powers has already set in. The renewed importance of Eurasia is not merely geographical; it is also strategic, economic, and political. The region has emerged as a theatre where energy routes, connectivity corridors, security competition, and competing regional institutions intersect. For India, therefore, Eurasia is not only a zone of historical memory but also a contemporary arena of strategic opportunity and constraint.

**Historical Ties and Cultural Legacy**

India's engagement with the CAS dates back over a millennium, when flourishing trade and land routes contributed to the prosperity of the region. With the emergence of the Silk Route, a trans-continental corridor (06th-07th Century), trading activities received a powerful stimulus. With trade, came goods, people, and contact, as the adage goes, 'Culture Follows Trade'. It enriched contacts and strengthening historical ties in the process. In the words of renowned Tajik academician Babajon Gafurov, "It was not a mechanical transmission of cultural values from one people to another. It was a creative process in which cultural achievements were further read refined before they were passed on".[2]

One of the ancient trade route that connected the Indian subcontinent and Central Asia was from Takshashila and Purushepura (Peshawar), located on the other side of the Sindhu River, which connected trade routes with the Central Asian routes.[3] The items exported from the Indian subcontinent were sugar, clothes, shawls, namda woolen carpets, and dyes, while major items imported were horses, sheep, gold, silver, and precious stones. In 1832, Alexander Burnes observed that there were about 300 Hindus living in Bukhara. These Hindus were chiefly from Shikhapur, Sind (now in Pakistan), and that this number was increasing. Besides, Indians were also engaged in money lending and exchange.

With the beginning of the 17th Century, sea commerce began to gain greater prominence. A massive bulk of goods could be transported at a time. The caravan trade, camel transport, and the Silk Road could not compete with transportation by sea. The beginning of trade by sea route also provided an equally powerful stimulus to formation of empires, leading to the beginning of colonialism, which led to the frantic search for markets.

After the consolidation of their hold on the Indian subcontinent, the British begin to re-orient trade towards the sea and gave importance to building of ports. Importantly, they also begin to focus on flourishing trade that had existed earlier with the Eurasian landmass. In fact, the genesis of the Anglo-Russian rivalry lies in trade and the ambition to capture the prosperous markets of Central Asia, particularly those of the Uzbek Khanates. However, geopolitical concerns became more dominant in the British policy after the incorporation of Central Asia into the Tsarist Empire in the second half of the 19th Century. The World War I (1914-1918), the Russian Revolution (1917), and the formation of the Soviet Union (1922) were the developments that adversely affected the trade links between South Asia and Central Asia. After the formation of the Soviet Union, all trading activities came to a complete halt. Even the Indian merchants in Central Asia were asked to leave.

**Cultural Interaction**

Central Asia's favourable location at the crossroads of Indian, Persian, Chinese, and other civilisational spheres, along with its centrality to trans-continental trade routes such as the Silk Road, kept the region closely connected with its neighbouring areas.

One of the most important phases of this interaction was the spread of Buddhism from the Indian subcontinent through Afghanistan into Central Asia and onward to China. Buddhism spread to China around 271 BC. It was the indefatigable efforts of king Kanishka of the Kushan Empire that the message of Buddhism reached everywhere.

Another historic milestone in the cultural interaction was the spread of Sufism, a strand within Islam, from Central Asia to the Indian subcontinent. Sufi ideology stresses benevolence and tolerance. Many Sufi saints, along with their disciples, came to India from Bukhara, Samarkand, and other cities. One of the most significant saints among them was Sayyid Ali Hamdani, who came to Kashmir from the Kulyab region in Tajikistan in the late 14th Century along with his 500 disciples. Even today, the shrines of Hazrat Nizamuddin Auliya in Delhi and Hazrat Khawaja Moinuddin Chishty in Ajmer attract devotees from South Asia.

Another important period in the historical ties began in the medieval era. In 1526, Babur laid the foundation of the Mughal Empire in the Indian subcontinent. Later, it was Bairam Khan from

Turkmenistan who helped Humayun, son of Babur, to regain his lost empire. Bairam Khan is also known as the tutor or mentor of Akbar.

At another level, scholarly exchanges were a notable feature during the Muslim period. Al-Biruni came to India along with Abd al-Razzaq Samarqandi of Khorazm, now in Uzbekistan, in the 15th Century. It was their quest for knowledge that brought the two scholars to India. Al-Biruni stayed in India for 14 years and studied Sanskrit, and importantly translated valuable treatise on mathematics and astronomy into Arabic. The Tajik poet Mirza Abdul-Qâdir Bedil and Turkmen poet Magtymguly Pyragy wrote endearingly about India. Bedil's final resting place is in Delhi.

Akbar's court had two poets from Central Asia, Maulana Qasim Kahi and Khwaja Hasan Nizami. In the field of literature, the Kyrgyz legendary epic *Manas* (a legendary hero of the Kyrgyz national epic) refers to elephants, while the music and musical instruments of the region show striking similarities to those of India.

The Russian incorporation of Central Asia into the Tsarist Empire, the subsequent reorientation of Central Asia towards the north, and the British focus on sea trade adversely impacted adversely the centuries-old connectedness. While the British introduced English, the Tsarist Empire promoted education in Russian. As a perspective observer noted, "More importantly, the fundamental change that they managed to mould into the minds of the people as a whole".[4]

After the formation of the Soviet Union, most historical ties and people-to-people contacts were effectively severed. It was only after India gained independence in 1947 that a modicum of contacts was restored. A small window of opportunity was opened after the normalisation of India–Soviet relationships. It was the collapse of the Soviet Union that led Eurasia regained its earlier openness. By the turn of the 21st Century, India and Eurasia, especially Central Asia, began to pick up the threads of their relationship.

## Indian Perspectives and Policies on Eurasia

At the turn of the 21st Century, Eurasia emerged as a region of renewed strategic and economic significance. A new phenomenon that arose was the rise of non-traditional threats to security and societies. The spread of political Islam added to the complexity of the region. Another issue was the competition among major powers for strategic and geopolitical space. Russia and China, former rivals, had now formed a strategic partnership. Both these powers flanked the CAS and aspired to achieve the global status. For the United States (US) and its allies, Eurasia was important to check the rise of Russia and China. On the other hand, the Russian and Chinese partnership was interested in keeping a check on the activities of the US and its allies in Eurasia.

Central Asia is equally well endowed with natural and mineral resources. For India, this opening created an opportunity to reconnect with what it regards as an 'Extended Strategic Neighbourhood'. The opening of Eurasia opened the prospect for India to reconnect with its historical ties and cultural legacy. At the same time, this development coincided with the broadening of its foreign policy. It aspired to play a significant role beyond South Asia; a role significantly in Central Asia, its extended strategic neighbourhood. Given the emerging geopolitical scenario in Central Asia, where major powers have well established presence, can India increase its engagement in a region that is part of its geopolitical space? The article now examines and analyses Indian perspectives on, and policy towards, Central Asia.

India's outreach in Central Asia has remained constrained by geography and geopolitics. The absence of direct land access due to Pakistan, instability in Afghanistan, limited overland transit options, and the expanding economic footprint of China have all narrowed India's room for manoeuvre. As a result, India's Eurasian policy has had to rely heavily on diplomacy, capacity building, and alternative connectivity initiatives routed through Iran and multilateral platforms.

The most significant factor working in India's favour is the reservoir of goodwill it enjoys among the CAS. India is perceived as a friendly neighbour with no hidden agenda, and that it is not seeking space or leverage in their region. India's prime concern is the security and stability of the Central Asian region. New Delhi

established Joint Working Groups (JWG) on counterterrorism with Uzbekistan (2003), Kazakhstan (2004), and Tajikistan (2012). The aim of each JWG was to review and analyse the regional security scenario, co-ordinate information, and share experience. The JWG also envisaged the training of paramilitary personnel, and regular meetings of the group were held. In addition, military-technical cooperation agreements have been signed with Kazakhstan, Kyrgyzstan, and Tajikistan. In the field of defence cooperation, there have long been reports of Indian involvement in refurbishing the Ayni airbase near Dushanbe. However, India's actual operational status there has remained limited and often contested, suggesting that New Delhi's military footprint in Central Asia is modest rather than transformative. India's former Defence Minister Shri AK Antony declared that the airbase would only provide training to the Tajik pilots.

In 2009, India raised its interaction with the CAS to a higher level. President Nursultan Nazarbayev of Kazakhstan was the 'Guest of Honour' at India's Republic Day parade. During the visit, a Strategic Partnership Agreement (SPA) was signed. A similar SPA has been signed with Afghanistan in 2011 and with Tajikistan in 2012. Afterwards, the issue of land connectivity began to figure prominently in India's policy.

A hallmark development in India's effort to give strategic direction to its regional outreach came in 2012 with the articulation of the Connect Central Asia Policy (CCAP). The CCAP sought to combine India's historical and cultural linkages with Central Asia, with a forward-looking agenda of political engagement, security cooperation, connectivity, trade, education, and people-to-people exchanges. The policy was enunciated by E Ahamed, former Minister of State for External Affairs, at the first India-Central Asia Dialogue in Bishkek in Jun 2012. In his words, "India is now looking intently at the region through the framework of CCAP, which is based on proactive political, economic, and people-to-people engagement with the Central Asian countries, both individually and collectively".[5] The CAS welcomed the enunciation of the CCAP as there was a wide area of commonality of interest on issues of regional security and stability.

Subsequently, Prime Minister (PM) Narendra Modi visited all the five CAS. In Uzbekistan, the first one on his itinerary, he highlighted the geopolitical significance of Central Asia for India.

In his words, "Our relationship with the region has ancient roots and has left strong imprint on both. It now occupies a significant place in India's future".[6] Further, the PM pointedly brought out the significance of his address at the Nazarbayev University in Astana on 07 Jul 2015. He stated, "Central Asia is at the crossroads of Eurasia. It has been caught in the current of history, and it has also shaped it".[7]

Since then, high-level visits to and from the CAS have gathered momentum. For instance, the former Kyrgyz President Almazbek Atambayev visited India in Dec 2016. Similarly, President Emomali Rahmon of Tajikistan paid a visit to India from 14 to 18 Dec 2016. The latest dialogue at the diplomatic level was held in New Delhi on 06 Jun 2025. The strength of India's ties can be gauged from the fact that during the meeting, the Foreign Ministers of the five CAS expressed their solidarity with India on the terrorist attack at Pahalgam. They also expressed backing for India's response under 'Operation Sindoor'. In the joint statement issued at the end of the meeting, it was stated that "The countries condemned the Pahalgam attack and re-affirmed their firm commitment to fight against terrorism in all its form and manifestation".[8] Further, it was stressed that the perpetrators, organisers, financiers, and sponsors of this terrorist act must be held accountable and brought to justice. Importantly, during their visit, the Foreign Ministers expressed interest in the joint exploration of rare earth and critical minerals.

Despite political goodwill, the economic dimension of India–Central Asia relations remain underdeveloped. Trade volumes remain modest, connectivity costs are high, and the lack of seamless transit continues to impede the translation of strategic intent into commercial outcomes.

## Economic Engagement

An essential component of the CCAP is to enhance the economic engagement with the CAS and Afghanistan, connecting Central Asia with South Asia through the latter. Such a connection will give a vigorous push to its CCAP. In this regard, India has accorded a greater emphasis to a multilateral approach, as the region is landlocked.

## Bilateral Interaction

Agriculture is a key area of cooperation and remains a mainstay of the Central Asian economies. In all the CAS, cotton is the chief crop and a major source of revenue. Exports of cotton have suffered primarily because the CAS are landlocked. Moreover, cotton cultivation requires plenty of water, but the two life-giving rivers of Central Asia—the Amu Darya and Syr Darya—are rapidly shrinking due to climate change. It is required to introduce innovative technology such as drip irrigation and water management schemes. Indian experience in these areas could be of immense benefit to conserve water. The CAS have also reached a stage in their economies and human development where they can absorb high technology, which is needed for extraction sector.

India's Micro, Small, and Medium Enterprises (MSMEs) can play a useful role in their economy. For instance, the areas of promise are with increased focus on transportation, rural housing, food, and light industry, especially in the countryside. Another area is the concept of 'Home-based Labour' connected with production that can be extended to women. However, a major hindrance in the promotion of MSMEs is the language. To overcome this hurdle, India has proposed to set up an e-network with its hub in the National Capital Region, Bengaluru, and Mumbai to deliver tele-education and tele-medicine in all the CAS. Besides, India is offering scholarships to Central Asian students to study in India. The Indian Technical and Economic Cooperation Programme of the Government of India imparts skill and knowledge to people who would like to further improve their expertise.

## The Regional Context

From the Indian perspective, the regional dimension is of crucial importance. At present, trade and connectivity issues have moved to the centre stage of international politics. The Eurasian landmass is witnessing a competition among major and regional powers for space and leverage.

The opening of Eurasia provided an opportunity for India to connect with its strategic neighbourhood. Fortunately, the Indian approach coincided with the aspiration and development issues. The CAS would like to diversify their economies away from raw materials exporting countries to trade in finished goods. They are

in search of outlets for markets in the southern direction. At the political level, India is a full member of Shanghai Cooperation Organisation (SCO) and Brazil-Russia-India-China-South Africa (BRICS) grouping. Membership of these regional organisations has given India presence and opportunity to engage with other members. Today, the SCO and BRICS have expanded by inviting other countries. However, the question arises as to what options remain with India to connect with the region, both economically and politically. The following discussion examines the connectivity options available to the CAS.

India's first major connectivity initiative aimed at enhancing energy security was the Turkmenistan–Afghanistan–Pakistan–India gas pipeline, which is intended to transport Turkmen gas to India through Afghanistan and Pakistan. The project is backed by the Asian Development Bank.

Interlinked with the issue of transporting energy in the southern direction is also the problem of surface transport connecting to the region. In the prevailing scenario, there are two best options for India to connect with the Central Asian region through Iran: One, is the International North South Transport Corridor (INSTC) and the second, via the Iranian port of Chabahar.

The INSTC is a multimodal corridor combining sea, rail, and road transport. It connects Mumbai with St Petersburg, which is 7,200 kms long. Though the INSTC is operational, it has not yet functioned at its desired capacity. The difficulties are largely because of poor coordination and bureaucratic delays. Greater institutional coordination is required to harmonise rules, regulations, customs procedures, and logistics systems so that delays can be reduced. The physical infrastructure that would occur in the process could act as a tool for strengthening cooperation in other areas.

The Chabahar Port project received a major thrust forward during PM Modi's visit to Iran in May 2016. During the visit, he said, "It could alter the course of history in the region". President Hassan Rouhani spoke about the Chabahar Port as a 'Defining Partnership' which has the potential of connecting the entire region. The crux of the agreement is the development, upgradation, and operationalisation of the port, which is of immense strategic significance to both the countries. Chabahar also offers India immense advantages in terms of cutting costs and land connectivity

to the Caucasus, Russia, and Europe. In his acceptance speech on India's membership of the SCO (2017), PM Modi stressed, ".....Our involvement with the INSTC and the Chabahar Agreement and our decision to join the Ashkhabad Agreement will bring India closer to the region".[9]

In the early years after independence, the CAS devoted considerable time and resources to establishing direct connections with their respective regions. India's membership of the SCO provided it with a presence in Eurasia, particularly in Central Asia. Through this regional platform, India can engage in initiatives related to regional connectivity, including infrastructure development, the modernisation of existing roads, and the improvement of facilities and services along major transport corridors. The following statement by Nurlan Sulaimanov, Minister for Transport and Communication of Kyrgyzstan, reveals the state of infrastructure in his country. In his words, "The quality of roads has dropped to a critical level". According to the latest survey, out of 2,242 kms, 1,357 kms are poor and extremely poor.

Besides, there is air corridor connectivity between Mumbai and Navoi, an international city located in Western Uzbekistan. The air corridor is mostly transporting cargo from Southeast Asia.

India's membership of the SCO has also given it an opportunity to engage with leaders in an informal manner, meeting on the side lines of the summit meetings. Such interaction provides a better understanding of issues of common concern. Moreover, the regional presence will enable India to observe trends in security, energy, connectivity, etc. Undoubtedly, the membership of the SCO will provide a stimulus to the CCAP. In this sphere of economic development, India has offered to foster socio-economic development of the SCO region as well as share its experience in skill development, capacity building, and human resource development.

However, the SCO has faced limitations in emerging as an effective vehicle for deep regional integration. One of them is the absence of a multilateral decision-making mechanism. Decisions are arrived at by consensus. At the best, the SCO can initiate a positive discourse on regional cooperation in the light of widespread expansion of non-traditional threats.

In 2009, Russian leadership institutionalised the idea of forming a group comprising of four emerging economies: Brazil, Russia, India, and China. Later, South Africa was added, and the grouping came to be known as BRICS. The aim was to promote economic growth and cooperation among its member countries, strengthen political and security cooperation, and reform the global political and financial system to better reflect the interest of emerging economies.

Between 2023 and 2024, the grouping expanded to include Egypt, Ethiopia, United Arab Emirates, and Iran. A new category, 'Partner Countries', was created, allowing such countries to attend only the summit meetings. Among the 16 partner countries are Kazakhstan and Uzbekistan. The meetings are held regularly, and declarations are issued at the end of the summit. However, in the absence of decision-making mechanism and its implementation, decisions are arrived at by consensus. The declaration reflects the perspectives of non-Western countries, highlighting key issues and concerns to articulate their collective viewpoints. Some of the declarations are noteworthy, including calls for reform of the United Nations (UN) and the expansion of the UN Security Council to reflect contemporary realities, reform of international financial institutions, and a reduction in reliance on the US Dollar. In broad terms, the BRICS reflects the desire of major non-Western powers to advocate reforms in global governance; however, its effectiveness remains constrained by internal divergences and the absence of a robust implementation mechanism.

Besides, the grouping suffers tensions among members and consequently, decisions are often diluted. At the recent 17th Summit meeting in Brazil, held on 06-07 Jul 2025, Russian and Chinese Presidents did not attend in-person. Despite its shortcomings, BRICS, through its declarations, brings current issues and concerns to international attention. It has put forward a positive view of global concerns. Summit meetings allow the leaders to meet on the sidelines and understand each other's point of view.

Regional cooperation among the CAS is emerging and can become a powerful instrument in putting forward its security and economic interests. The process of rapprochement began in 2019 by the Uzbek President Shavkat Mirziyoyev when the Heads of State met in Tashkent. A consultative meeting was formed, and

the leaders of the CAS regularly discuss their common issues and interest.

Another grouping in Eurasia is the Organisation of Turkic States, in which Tajikistan is not a member. The focus is primarily on bringing Turkic people under one umbrella.

Although the Central Asian region holds immense significance for India, its engagement is not as vigorous as it was in the past. After the initiation of the CCAP and CAS+5, Indian policy is active and robust. However, external and regional powers have already established a strong presence in the region. India is, therefore, actively strengthening its approach and policy towards Central Asia.

## Challenges to India's Eurasian Engagement

Notwithstanding the growth in political engagement, India's Eurasian outreach faces several structural constraints. First, the absence of direct land access through Pakistan remains a major impediment. Second, instability in Afghanistan has weakened the feasibility of overland connectivity linking South and Central Asia. Third, China's expansive economic presence through infrastructure financing, trade, and connectivity projects has created an asymmetry that India cannot easily match. Fourth, Russia's enduring strategic influence in the region limits the scope for any major realignment. Finally, India's own trade volumes, investment levels, and institutional presence in Central Asia remain relatively modest.

These constraints do not negate India's role, but they do suggest that New Delhi's strategy must be selective, patient, and niche-driven. Rather than competing symmetrically with larger external powers, India may achieve greater success by focusing on sectors where it enjoys comparative credibility, including education, digital governance, pharmaceuticals, skill development, counterterrorism cooperation, and culturally rooted diplomacy.

## Conclusion

In the shifting dynamics of the global order, a new Eurasia is emerging. It has attracted the world's attention. In fact, a subtle competition among the powers was evident. Countries were vying with each other for space and leverage. From the geopolitical perspective, it was the competition for leadership at the global

level and power play among the US, Russia, and China. From the economic perspective, trade and connectivity was the prime motive. For India, its past historical ties and cultural legacy had earned it tremendous goodwill.

The SCO and BRICS have expanded, and that has led to the leaders and people crowding in Eurasia for meetings and discussion. A trend that is visible in Eurasia is 'Multi-alignment'.

A key factor to watch is whether the above-mentioned developments will impact the strong strategic partnership between Russia and China, the two leading powers in Eurasia. The future trajectory of the Russia–China partnership will remain a critical variable in Eurasian geopolitics, though any prediction regarding its weakening would require careful qualification. If Russia's war with Ukraine is resolved, the two countries may not need each other's support. The US and its allies have a presence in Eurasia for geopolitical purposes and to an extent, they control the natural resources and minerals.

Given the evolving situation, what role can India play? The present circumstances remain uncertain, and the future of Eurasia will depend on developments in the coming years.

For India, Eurasia is neither a peripheral theatre nor merely a historical memory; it is an increasingly important strategic space shaped by connectivity, energy, security, and geopolitical competition. India's future role in the region will depend less on rhetorical commitment and more on its ability to operationalise connectivity projects, deepen economic engagement, institutionalise high-level dialogue, and convert civilisational goodwill into sustained strategic presence.

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# Veiled in Shadows: The Role of Women as Spies in European and American Conflicts

**Colonel Vineet Banga**[@]

**Abstract**

*This article examines the blatantly overlooked contributions and roles of women spies in influencing major conflict outcomes throughout history. It aims to highlight how women, leveraging societal perceptions of apathy and underestimation, became unique and priceless assets in the dark, shadowy world of national and international espionage, shaping political and military outcomes from ancient courts to modern wars. Employing a historical narrative approach, the article details examples of women employed as messengers, hostesses, disguised operatives, double agents, and code breakers, using innovative tools like invisible ink, laundry signals, and concealed messages to obtain and trade intelligence at great personal costs and sacrifices to life and limb without the need for any recognition, status, or rewards from their employers. Key examples include Mata Hari and Louise de Bettignies in World War I, Belle Boyd, and Pauline Cushman in the American Civil War, Anna Strong in the Revolutionary War, Charlotte de Sauve in the French Wars of Religion, supported by detailed case studies. Findings reveal that these 'Veiled Warriors' influenced the course of many pivotal events in both combat and non-combat situations despite facing harsh penalties and historical erasure*

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*due to prevalent and contemporary gender biases. The scope spans European and American conflicts, emphasising the power, influence, and reach of informal networks. The article ends with stressing the genderless nature of espionage, the strategic use of women in different social roles, and the urgent need for their recognition to complete and complement historical narratives of many battles and wars, their altered outcomes, and intelligence tradecraft as a whole.*

## Introduction

Espionage has long served as a decisive instrument in shaping political and military outcomes. While popular imagination associates intelligence work with covert male operatives, women have played significant yet frequently overlooked roles within clandestine networks across history.[1] While the image of a spy often brings about in the mind images of trenchcoats, encrypted messages, and cloak and dagger stories, a significantly large number of unknown men and women spies operated for centuries before the modern intelligence age began. Women, especially and uncharacteristically, have played an extraordinary and majorly overlooked role behind the shadows.[2] From ancient courts and unconventional battlefields to modern warfare of today, female spies have used their humour, allure, charm acumen, and valour to collect and communicate critical information that altered the course of kingdoms, wars, and nations. Who can forget the legendary Mata Hari.[3]

Despite yeoman service throughout the annals of history, women's contributions have been pushed to the sidelines or nearly forgotten in historical records. Often dismissed as circumstantial, or conveniently attributed to their male counterparts, societal biases of the times further rendered these women invisible, which paradoxically also became their greatest strategic asset in the world of intelligence and espionage, where lines were seldom clear and well-defined but always all but blurred.

Through carefully cultivated intelligence networks, they gathered and traded secrets, influenced critical treaty negotiations, prevented potential military disasters, and, at times, decisively shifted the balance of power in conflicts that shaped the modern

world. An examination of their activities reveals remarkable personal stories, innovative tradecraft methods, and a lasting impact on the craft of espionage itself, setting professional standards that, in some cases, remain unmatched even today.

The expanding field of intelligence studies has acknowledged, though not exhaustively explored, the contributions of women spies, as reflected in a growing body of scholarship and literature reviews on the subject. Consequently, merely chronicling the lives of well-known spies—an approach already undertaken in several historical accounts—may not necessarily constitute a novel contribution to the existing corpus of literature. Given that this work is intended as a research article, greater analytical value may lie in examining specific contributions, operational innovations, or the strategic significance of lesser-known female spies whose roles have remained underexplored in conventional historiography.

Espionage is the clandestine acquisition of intelligence, and it has always been a decisive factor in war and diplomacy for statesmen, bureaucrats, politicians, world leaders, military planners, strategists, tacticians, and soldiers alike in various measures—from the ordinary to the bizarre.[4] While spy-craft is synonymous with masculine involvement, women have operated in its obscurities for centuries, leveraging their unique roles in society and underrated status to become valuable assets.[5] From imperial courts and battlefield camps to revolutionary gatherings and civil war fortresses, women spies have helped shape geo-political currents at great personal risk.[6]

The role of women in espionage can be analysed through factors such as structural access, social mobility, and gender perceptions. In many historical societies, women's presence in domestic, social, and courtly environments placed them close to political and military decision-makers. These positions created informal intelligence networks that often complemented or substituted formal espionage structures before the emergence of modern intelligence agencies.

Women often operated within social environments such as royal courts, salons, military camps, and elite gatherings where political and military leaders interacted informally. Their roles as hostesses, companions, attendants, or entertainers enabled them to observe conversations, gather intelligence, and build informal information networks without raising suspicion.

## Perception about Women in 'The Business'

Societal norms have often viewed women as passive, submissive, diminutive, and apolitical individuals, unsuited to the brutalities of war or the trickery of a murky and shadowy intelligence world.[7] Ironically, it was this very perception that made women the most ideal and perfect candidates for spy-craft. Being underestimated or ignored, sidelined, and unassuming in all male-dominated political and military circles, women could manoeuvre through spaces unnoticed, using innocence as a suitable cover-story or pretext.

This contradiction, however, was a double-edged sword. While it allowed women to access male circles, it also meant that all their hard work, risk to life and limb, etc., slipped into shadows of history, folklore, or only word of mouth accounts, and their contributions rarely got recorded, credited, or remembered.[8] Many heroic women were only celebrated posthumously or revealed by historians peeling back the layers of official, unofficial, verbal, or experiential narratives.[9]

Traditionally, women were rarely seen as serious participants in political or military discourses, which naturally made them the first choice as excellent spies, given the cultural blindness of the times to their existence. This allowed them to be welcomed into otherwise forbidden private spaces, move freely in privileged and domestic settings with the least amount or account of any suspicion being aroused. Prominent military and political leaders often overlooked their presence, unaware of the keen ears, and intellect of maids, mistresses, family, nurses, dinner companions, or even wives.

However, when discovered, women spies were treated more harshly than men, branded as seductresses, traitors, or even worse.[10] Public trials and executions of women like Mata Hari reflected a serious discomfort, with women challenging strict gender norms through treasonous intelligence tradecraft.

## Motivation

Women engaged in espionage for motivations, largely like those of men, including patriotism, ideology, revenge, financial gain, coercion, personal relationships, or simply survival in hostile environments. Some volunteered for intelligence work, while others

were drawn into it by circumstances or social connections. In certain cases, courtesans and noblewomen deliberately used their romantic or social access to influential individuals to obtain sensitive information. By leveraging charm, wit, and interpersonal relationships, they were able to extract secrets and transmit intelligence that served the objectives of the networks or causes they supported.[11]

## Major Roles in Shaping Geopolitical Events

Women often also disguised themselves as men infiltrating enemy lines; posed as civilians, merchants, or nurses to move through checkpoints without raising suspicion.[12] Women also operated as double agents, feeding misinformation to enemy forces or sabotaging plans from within. They used their charm to manipulate powerful men to access confidential information movements or dispositions. In social circles, women listened, observed, and relayed valuable conversations. As wives, as courtesans, or as entertainers, they had access to high-ranking officials for intelligence gathering in a subtle but powerful manner.

Through the 19th and 20th Centuries, women skilled in linguistics interpreted and intercepted communications or translated foreign intelligence.[13] Linguistically and analytically gifted women broke enemy codes or created their own laying important groundwork for the later crop of female cryptanalysts.[14]

From an intelligence studies perspective, these activities can be categorised into several operational functions, commonly associated with clandestine networks:

- **Human Intelligence Collection**. Women frequently collected information through interpersonal contact with political leaders, military officers, diplomats, or administrative officials. This included overheard conversations, observation of troop movements, and insight into political deliberations.

- **Courier and Communication Roles**. In the absence of secure communication technologies, women served as couriers transporting written or memorised intelligence across contested territories. Their perceived non-combatant status often allowed them to pass through checkpoints or military zones with comparatively less scrutiny.

- **Influence and Social Penetration Operations**. Women operating within elite social circles could shape perceptions, extract confidential information, or influence political relationships. Such operations relied less on covert infiltration and more on social engineering and interpersonal manipulation.

- **Counter-Intelligence and Deception**. Some female operatives acted as double agents or conduits for misinformation, deliberately feeding inaccurate intelligence to opposing forces. These activities demonstrated that women were not merely passive collectors of information but were sometimes engaged in active strategic deception.

Understanding these roles highlights that female espionage activities formed part of a broader informal intelligence ecosystem that supplemented official military intelligence structures.

**Notable Examples**

**Mata Hari (Margaretha Geertruida Zelle, 1876–1917)**. Mata Hari embodied the epitome of the female spy—suave, sharp, polished, and debonair. A Dutch exotic dancer who was executed by the French for espionage during World War I (WWI), she spied for Germany.[15] Continuous French failures at Nivelle, massive strikes, and Great Mutinies in the spring of 1917 took the country perilously close to collapsing from war exhaustion. Having one German spy to blame for everything that went wrong with the war was convenient for the French government, and Mata Hari, thus, became the perfect scapegoat. Her famous last words before her execution by firing squad on 15 Oct 1917 were, "*Je suis prête* (I am ready)".

**Belle Boyd (1844–1900)**. At age of 17, Belle Boyd began spying for the Confederacy by flirting with Union officers and gathering tactical and strategic military information. She famously rode through enemy lines and under fire to deliver intelligence that allegedly helped General Stonewall Jackson win the Battle of Front Royal.[16] In 1862, while in Virginia, she overheard Union plans through a hotel room knothole, ran through active gunfire, without thinking much about her safety, to ensure delivery of vital information to Confederate General Stonewall Jackson. She, thus, helped secure a decisive victory.

**Pauline Cushman (1833–1893)**. A Union spy during the Civil War, she posed as a Confederate sympathiser and gathered critical intelligence, operating behind enemy lines, eventually getting captured, sentenced to death but eventually saved by Union forces.[17] She became a national heroine and was decorated with the title 'Major of Calvary' for her espionage work. She was later famously known as Miss 'Major' Pauline Cushman, also labelled 'Spy of the Cumberland' and 'The greatest heroine of the age'. Ferdinand Sarmiento, a friend of Cushman, wrote *The Life of Pauline Cushman: The Celebrated Union Spy and Scout*, exaggeratingly detailing her time as a spy.

**Anna Strong (1740–1812)**. A member of the Culper Spy Ring during the American Revolutionary War, she innovatively signalled messages using laundry hung in coded patterns. Her work helped General George Washington's army avoid British ambushes.[18] The Spy Ring achieved more than any other intelligence network during the war. They uncovered British plans to ambush the French Army, uncovered information about secret negotiations to surrender the American fort at West Point, in return for money and a command in the British Army, among many other exploits, spanning several crucial years of the American Revolutionary War. Listed and honoured as a patriot, Anna Strong is still remembered as a courageous member of the Spy Ring.

**Charlotte de Sauve (1551–1617)**. She was a French noblewoman and courtier, also a member of Queen Mother Catherine de' Medici's 'Flying Squadron', spying for Catherine de' Medici during the Wars of Religion. The Flying Squadron was a group of beautiful female spies and informants recruited to seduce important men at court and extract information to pass on to the Queen Mother. A noblewoman and mistress to multiple high-ranking men, including the Duke of Alençon and King Henry of Navarre, Charlotte seduced and manipulated many powerful men to gain intelligence for the House of Valois.[19]

**Louise de Bettignies (1880–1918)**. She was a French secret agent who spied on the Germans for the British during WWI, using the pseudonym, Alice Dubois. Her intelligence network covered much of German-occupied France, providing key intelligence before her capture and death in prison.[20] Captured in 1915, she died from maltreatment and was posthumously honoured

by both France and Britain.[21] She was awarded the Cross of the Legion of Honour, the *Croix de Guerre* (Cross of War) (1914-18) with palm, and the British Military Medal, and was made an Officer of the Order of the British Empire.

**Unnamed Operatives in Napoleon's Europe**. Women—especially courtesans and salon hostesses—were commonly used by both Napoleonic and British agents to pass military and political secrets, though many remained anonymous.[22]

**Methods and Tools of Early Espionage**

Women developed innovative ways to transmit and conceal intelligence, their methods reflecting creativity, innovation, and constraints of their time:

- Invisible ink and needlework codes in embroidery.
- Secret messages in food or books.
- Body concealment using corsets, wigs, or hollowed-out shoes.
- Use of lullabies or poetry to pass coded information.
- Laundry hanging in particular or specific patterns and combinations to signal messages to sympathisers of the cause.[23]

These techniques illustrate the adaptive nature of early intelligence tradecraft. Prior to the development of modern cryptographic systems and secure communications, espionage relied heavily on physical concealment, coded symbolism, and improvised signalling systems. Women operating in domestic environments often possessed advantages in this domain, as everyday household objects—clothing, food containers, embroidery, and laundry—could be repurposed as covert communication tools without attracting suspicion. Such practices highlight the ingenuity of intelligence actors working within technological constraints and demonstrate how espionage historically evolved through innovation at the operational level rather than formal institutional design.

## Challenges Faced

Female spies navigated dual dangers—enemy forces and their own societies. When caught, they faced torture, death, or public shaming often getting hyper-sexualised or accused of moral corruption. Even successful operatives were rarely rewarded, many fading into oblivion, their contributions dismissed as inadvertent or circumstantial.[24]

## Impact on Geopolitical Events

While individual acts of espionage rarely determine the outcome of wars in isolation, intelligence activities contribute cumulatively to strategic awareness and operational planning. Information gathered by informal agents can provide early warning of enemy intentions, reveal vulnerabilities in military deployments, or expose diplomatic manoeuvres. In this sense, the activities of women spies should be understood not only as isolated anecdotes but as part of the broader intelligence architecture supporting military decision making. Their contributions frequently enhanced situational awareness improved operational timing, and occasionally disrupted enemy plans, thereby, influencing the strategic environment in which campaigns unfolded.

Without a shadow of doubt, women's intelligence work shifted the course of wars—Anna Strong's signals helped prevent British ambushes while Belle Boyd influenced Confederate battle strategies.[25] Louise de Bettignies' network enabled Allied advances in WWI.[26] There are many examples, but all cannot be quoted. Even when individual acts were not decisive, the cumulative effect of these contributions enhanced strategic planning, disrupted enemy operations, shaped alliances, and decidedly changed outcomes.

## Lessons Drawn

The limited documentation of women spies reflects the biases of historical chroniclers and institutions that frequently overlooked their contributions. Many operatives received little recognition during their lifetimes, and several were acknowledged only decades or centuries later when historians re-examined intelligence archives and informal accounts.

The unstructured networks of women—domestic, social, or romantic—proved equally, and sometimes, more effective as formal spy structures or organisational hierarchy. Historians and institutions need to actively salvage these stories of silent, unrewarded, unrecognised, and veiled warriors to complete the record of warfare and statecraft adorned with the efforts of these known, unknown, and unsung warrior princesses of spy-craft and give them their rightfully earned place in the annals of espionage that changed the course of many endings.[27]

## Implications for Intelligence Studies

The historical role of women in espionage highlights that intelligence effectiveness often depends more on social access, trust networks, and cultural positioning than on advanced technology. It also underscores the importance of informal intelligence networks, which frequently complement or substitute formal state intelligence structures. Furthermore, examining women spies expands understanding of the gender dimensions of intelligence work, demonstrating that diversity in skills, perspectives, and social engagement has long contributed to successful intelligence operations. Recognising these contributions enriches intelligence historiography and improves understanding of how intelligence systems evolve across political and social contexts.

## Conclusion

Across European and American conflicts, women played significant yet frequently unacknowledged roles within intelligence networks. Operating as couriers, informants, double agents, and code specialists, they contributed to strategic awareness and operational success in ways that often remained hidden within official records.

Recognising these contributions expands the historiography of intelligence and highlights the enduring importance of informal networks, social access, and human ingenuity in espionage. The legacy of these veiled warriors continues to influence the evolution of intelligence work in the modern era.

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# Silent Reach, Decisive Strike: The Evolution of Unmanned Warfare

**Colonel Tirath Singh Rawat (Retd)[@]**

**Abstract**

*This article examines the growing integration of Unmanned Systems (UxS) into the modern battlespace and its transformative impact on the character of warfare. Once confined to missions considered 'Dull', 'Dirty', or 'Dangerous', UxS have now evolved into decisive tools enabling both tactical lethality and information dominance. The article traces the progression of these systems from early rudimentary pilotless vehicles to sophisticated multi-domain autonomous platforms. It further analyses their disruptive operational impact in recent conflicts. The article concludes that the large-scale employment of UxS necessitates a doctrinal recalibration, particularly in areas such as command architecture, targeting cycles, and data-link interoperability across the entire kill chain.*

## Introduction

Unmanned Systems (UxS) constitute a transformative continuum in the evolution of modern warfare. Spanning from micro aerial sensors to heavily armed terrestrial and maritime platforms, these systems have swiftly evolved from niche enablers to central force multipliers. Originally conceived for missions deemed excessively risky or monotonous for human operators, their operational spectrum has expanded exponentially through advances in autonomy, control architecture, and cost-efficient manufacturing. This technological diffusion marks the fourth major 'Revolution in Military Affairs', redefining traditional constructs of concealment, mobility, and force projection across domains.

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## The Genesis of Pilotless Vehicles (1849–1945)

The concept of utilising unmanned platforms for conflict dates to Jul 1849, marking the earliest recorded offensive use of air power in naval aviation during the Austrian incendiary balloon attack on Venice[1], involving balloon carriers, which were the precursors to modern aircraft carriers. However, the initial development of modern pilotless aircraft began in Britain and the United States (US) during the World War I (WWI). Britain developed the radio-controlled 'Aerial Target', first tested in Mar 1917, while the American aerial torpedo, known as the 'Kettering Bug', flew in Oct 1918.[2] Despite successful flight tests, neither system achieved operational deployment during WWI.

Development continued between the wars, focusing on target practice and training. In 1935, the British produced radio-controlled target aircraft, one of which, the DH.82B Queen Bee[3], inspired the widely adopted term 'Drone'. During World War II, this technology was leveraged by companies like Denny's Radioplane Company to produce models used both for anti-aircraft gunner training and, occasionally, for attack missions.[4]

## Dedicated Intelligence, Surveillance, and Reconnaissance (ISR) in the Cold War Era (1950–1990)

The post-war era delivered significant maturation of target and tactical UxS, exemplified by platforms such as the Ryan Firebee (first flight in 1951), which codified the core avionics, telemetry, and expendable-recovery technologies that underpin subsequent operational UxS.[5] The Vietnam conflict represented the inaugural large-scale employment of reconnaissance Unmanned Aerial Vehicles (UAVs), demonstrating persistent ISR utility in contested environments and validating remote sensor integration into operational Command and Control (C2) networks.

The 1973 flight of the Israeli Mastiff[6] marked a pivotal shift in the UAV evolution. By integrating secure data-links and real-time video, it transformed remotely piloted platforms into networked intelligence assets. This breakthrough shifted UxS from expendable targets into multi-mission tools for decoy operations, missile delivery, and psychological warfare. These innovations established the doctrinal precedent for integrating UxS as essential components of modern combined arms tactics rather than mere training aids.

## Unmanned Systems Taxonomy by Domain and Operational Systems

Contemporary military UxS are categorised by operational domain and mission role, delineating a capability spectrum that ranges from high-cost, high-performance strategic systems to low-cost, widely proliferated tactical platforms. This bifurcation drives divergent acquisition, sustainment, and force-structure requirements—prioritising long-endurance, survivable assets at the strategic end and scalable, attritable designs for tactical massing.

**Aerial Systems (UAVs/Unmanned Aircraft System [UAS]/ Unmanned Combat Aerial Vehicle [UCAV])**. Air-domain UxS range from small tactical reconnaissance platforms to UCAVs optimised for precision strike. These remotely piloted or autonomous aircraft have fundamentally reshaped modern warfare, ISR, and military logistics. They are broadly classified by altitude and endurance, which determine range and persistence; by function, which defines mission roles and payloads; and by emerging hybrid designs, enabled by advances in propulsion, autonomy, and materials.

- **Operational Stratification by Altitude: Endurance Parameters**. UAS are usually classified by their operating altitude and endurance, ranging from micro-UAVs to high-altitude pseudo satellites. Micro and mini-UAVs—for example, the Black Hornet Nano[7] (the United Kingdom [UK]–Norway) and India's Netra V Series[8]—operate below 400 m for short-duration tactical reconnaissance. Low-altitude, short-endurance systems such as the Elbit Skylark 3[9] (Israel) and India's SWITCH UAV extend endurance up to about four hrs for battalion-level observation. Tactical UAVs, including the RQ-7 Shadow[10] (US) serve brigade-level surveillance roles. Medium-Altitude, Long-Endurance (MALE) platforms—exemplified by the MQ-9 Reaper[11] (US) and India's Heron Mk-II[12]—can operate for more than 24 hrs and can carry munitions. High-Altitude, Long-Endurance (HALE) UAVs such as the RQ-4 Global Hawk[13] and Israel's Heron TP[14] provide strategic ISR coverage exceeding 30 hrs. The emerging high altitude platform systems category, including the Airbus Zephyr S[15] (UK), remains in the near-space domain for months, offering persistent communications and surveillance; India's

Defence Research and Development Organisation (DRDO)-led prototypes are exploring similar solar-electric platforms for monitoring Himalayan borders.

- **Mission-Oriented Functional UAS**. By operational use, UAVs are classified as reconnaissance, target acquisition, combat, logistics, Electronic Warfare (EW), and swarm systems. Reconnaissance and surveillance UAVs—for example, the Israel Aerospace Industries (IAI) Searcher Mk-II[16] and India's TAPAS-BH-201 (Rustom-II)[17]—dominate ISR missions. Combat UAVs or UCAVs, such as the MQ-9 Reaper and Turkey's Bayraktar TB2[18], combine long endurance with strike accuracy. India's forthcoming Ghatak UCAV[19] uses a turbofan engine and stealth features for autonomous precision strikes. Loitering munitions, like the IAI Harop[20], blur the line between missiles and UAVs; India's DRDO Air-Launched Flexible Asset-Swarm[21] (ALFA-S) performs a similar tactical role. EW UAVs, for instance China's CH-7[22] and the US's RQ-170[23] Sentinel, carry electronic intelligence payloads, while logistics UAVs such as India's Cargo Hexacopter by ZUPPA[24] are built for high-altitude supply drops. Swarm-capable micro-drones, like India's ALFA-S, reflect the increasing use of Artificial Intelligence (AI) for coordinated, decentralised attack and reconnaissance missions.

- **Next-Generation Hybrid UAVs**. Emerging hybrid UAV categories combine multi-domain versatility, autonomy, and endurance. Vertical take-off and landing fixed wing hybrids, such as the AeroVironment Jump 20[25] (US), pair vertical take-off with the long-range endurance of a fixed wing aircraft, allowing rapid deployment from unprepared sites. Solar electric and hydrogen fuel UAVs, for example, the Persistent High Altitude Solar Aircraft-35 (UK), offer ultra endurance capabilities useful for communications relay and climate monitoring. Loyal wingman UAVs, typified by the Boeing MQ 28 Ghost Bat[26] (Australia) and India's Combat Air Teaming System (CATS) Warrior by Hindustan Aeronautics Limited, are built to fly alongside manned fighters, share data, and carry out semi autonomous strikes. Underwater and air–surface hybrid drones, like India's experimental maritime UAS, extend unmanned operations across domains. Finally, AI-driven swarm and biomimetic UAVs—modelled on bird or

insect flight—represent the next generation of unmanned warfare, capable of adaptive decision making, stealthy operations, and networked autonomy in contested airspace.

**Ground Systems (Unmanned Ground Vehicle [UGV]/ Unattended Ground Sensor)**. UGVs have evolved into critical force multipliers for modern militaries, delivering autonomous combat, reconnaissance, logistics, and explosive ordnance disposal capabilities while minimising human exposure in high-threat environments. The Russian Uran-9[27], developed by Kalashnikov Concern, exemplifies a tracked, diesel-electric-powered combat UGV armed with a 30 mm 2A72 autocannon, Ataka Anti-Tank Guided Missiles (ATGMs), and a 7.62 mm machine gun for direct fire support and urban warfare. The US Robotic Combat Vehicle (RCV) family[28], under the next-generation combat vehicle programme, includes RCV-Light and RCV-Medium variants employing hybrid diesel-electric propulsion for extended endurance beyond 250 kms, reduced acoustic and thermal signatures, and modular payloads comprising the gun, ATGM launchers, and multi-sensor ISR suites. Israel's Guardium MK III[29] and RoBattle[30], developed by IAI and Elbit Systems, integrate hybrid diesel-electric drives and AI-based autonomous navigation, with endurance of 08-10 hrs, carrying 7.62 mm or 12.7 mm remote weapon stations and modular sensor payloads for persistent surveillance and border security. The Estonian-origin[31] Tracked Hybrid Modular Infantry System, fielded by North Atlantic Treaty Organization and the UK forces, demonstrates a diesel-electric hybrid configuration with 08-10 hrs operational endurance and 1,200 kg payload capacity, adaptable for ISR, cargo transport, or direct fire roles. Similarly, France's compact Nerva LG, designed by Nexter Robotics, is a battery-electric reconnaissance UGV with 02-04 hrs endurance, optimised for Chemical, Biological, Radiological, and Nuclear (CBRN) reconnaissance, tunnel surveillance, and urban operations. Collectively, these systems illustrate the global transition from remotely controlled to semi-autonomous and fully autonomous ground platforms, integrating precision firepower, resilient C2 architectures, and modular payloads to enhance tactical flexibility and survivability across diverse combat theatres.

**India's Indigenous UGV Development**. India's indigenous UGV development has progressed rapidly under the *Atmanirbhar Bharat* (self-reliant India) and Make in India initiatives, reflecting a strategic

drive toward technological sovereignty in autonomous land systems. The DRDO spearheads this effort through the Muntra[32] series—the nation's first operational UGV platform. Developed with Combat Vehicles Research and Development Establishment, the Muntra family fields specialised UGV variants for surveillance (Muntra-S), mine detection (Muntra-M), and operations in nuclear or chemical-contaminated environments (Muntra-N). Mounted on a BMP-II chassis, Muntra provides 360-degree Electro Optical (EO) surveillance, integrated CBRN sensors, and remote operation to five kms line-of-sight. Complementing this capability, the Daksh robot—developed by DRDO's Research and Development Establishment (Engineers)—is a battery-electric explosive ordnance disposal UGV with nearly 90-minute endurance, optimised for detection, handling, and neutralisation of Improvised Explosive Devices (IEDs) and unexploded ordnance. Parallel private-sector efforts, including Torus Robotics' Autonomous Combat Vehicle and DRDO-wheeled UGV concepts, incorporate hybrid-electric propulsion, AI-assisted navigation, and modular payloads for tactical support, casualty evacuation, and autonomous perimeter defence—advancing India toward operational self-reliance in robotic warfare across high-risk combat zones.

**Maritime Systems (Unmanned Surface Vehicle [USV]/ Unmanned Underwater Vehicle [UUV])**. Maritime UxS encompass autonomous or remotely-controlled platforms operating on or under the sea: USVs travel on the water's surface, and UUVs operate submerged. These systems are used for missions such as surveillance, Mine Counter-Measures (MCM), reconnaissance, anti-surface and anti-sub-surface strike, logistics, and force protection.

**Unmanned Maritime Warfare**. Unmanned maritime systems now conduct ISR, MCM, and precision strike missions across surface and subsurface domains. Israel's Silver Marlin USV[33] provides armed maritime surveillance, while the BlueWhale UUV enables persistent undersea ISR and MCM through integrated sonar, electronic intelligence, and satellite communications. The US Sea Hunter USV exemplifies near-autonomous, long-endurance Anti-Submarine Warfare (ASW) and maritime surveillance. The Ukraine conflict has operationally validated these platforms. Ukraine's Sea Baby and Magura V5 USVs have executed long-range, global positioning system-guided maritime strikes against Russian naval assets, including Olenegorsky Gornyak, Sergey Kotov, and the

Crimean Bridge, forcing Black Sea Fleet redeployment. In Dec 2024, the Magura V7, armed with R-73 missiles, successfully engaged Russian helicopters and Su-30 aircraft.[34] These operations confirm maritime drones as low-cost, asymmetric deterrence multipliers.

**India's Indigenous Maritime UxS**. India's indigenous maritime UxS programme is progressing steadily across surface and subsurface domains under *Atmanirbhar Bharat*. The Matangi USV (Sagar Defence) achieved a key milestone in Oct 2024 with autonomous Mumbai–Thoothukudi transit[35], validating navigation, endurance, and Maritime Domain Awareness (MDA) roles, albeit with limited payload. DRDO's Naval Science and Technological Laboratory's high endurance autonomous underwater vehicle, a six tonne, nearly 09.75 m UUV with up to 15 days submerged endurance, 300 m depth, and ASW, MCM, and ISR roles, marks a major technological leap. Complementing this, Larsen and Toubro's Adamya autonomous underwater vehicle offers submarine-launch capability, nearly eight-hour endurance, and 500 m dive depth. Collectively, these platforms reflect growing indigenous competence in mission-specific maritime autonomy tailored to Indian Ocean operational demands.

**Impact of UxS in 21st Century Conflicts (Post-2000)**. Persistent aerial ISR has negated traditional concealment, driving a doctrinal shift toward sensor-dominated warfare. Forces are restructuring infantry and combined arms units to integrate UxS at platoon and company levels for continuous sensing, precision engagement, and autonomous support. Acquisition has shifted from legacy timelines to rapid, modular fielding. Failure to adapt force structures and command architectures to networked unmanned warfare will result in decisive operational disadvantage in high-intensity, sensor-saturated battlespaces.

**The US War on Terror and Targeted Strike Doctrine**. The US has employed armed UAS—principally the MQ-1 Predator and MQ-9 Reaper—as core ISR–strike platforms in counter-terror and counter-insurgency campaigns across Afghanistan, Iraq, Pakistan, Yemen, and Syria. These operations prioritised leadership decapitation through precision kinetic targeting of high-value individuals within transnational jihadist networks. Confirmed neutralisations include Ayman al-Zawahiri, Qasem Soleimani,

Anwar al-Awlaki, Mohammed Emwazi, Hassan Ghul, Abu Yahya al-Libi, and Maulana Fazlullah.

**Nagorno–Karabakh Conflict (2020)**. The 2020 Nagorno-Karabakh conflict between Armenia and Azerbaijan provided a seminal case study in the decisive combat utility of armed UAVs and loitering munitions. Azerbaijan's systematic integration of Turkish Bayraktar TB2 UAVs and Israeli-made loitering munitions such as the Harop, Orbiter-1K, and SkyStriker fundamentally reshaped the tempo and outcome of the conflict. These platforms enabled near-continuous ISR coverage, precision targeting, and real-time battle damage assessment, resulting in the widespread destruction of Armenian air defences, armoured formations, and logistics nodes. Verified combat footage and satellite imagery confirm the destruction or capture of over 255 Armenian tanks, of which 146 were destroyed, six damaged, and 103 captured[36], alongside multiple 2S1 and 2S3 self-propelled howitzers and short-range Surface-to-Air Missiles (SAM) including Osa and Strela-10, decisively shifting operational tempo and outcomes.

**The Israel–Hamas Conflict (2023–Present)**. The Hamas-led offensive against Israel on 07 Oct 2023 represented a defining case study in the operational employment of UxS by a non-state actor within an asymmetric warfare framework. Hamas integrated compact, commercially adaptable drones[37] as key enablers in a coordinated combined-arms assault—leveraging single-use Kamikaze platforms to strike high-value defensive nodes, disable surveillance towers, and degrade communications infrastructure.

**Precision UAS Targeted Killings**. Targeted elimination of militant leadership via precision UAS strikes remains central to Israel's counter-militancy doctrine across Gaza, Lebanon, and Syria. Confirmed high-value neutralisations include Ahmed Jaabari during Operation Pillar of Defence, Raed al-Atar in Rafah during Operation Protective Edge, and Baha Abu al-Ata in Gaza. Subsequent drone-assisted strikes eliminated Yahya Sinwar in Rafah, Ibrahim Muhammad Raslan in southern Lebanon, Muhammad Abu Shreiea in Gaza City, and Alkaman Abd as-Salam Khalil Anbar in Gaza. This list is representative rather than exhaustive, reflecting a sustained campaign of precision attrition targeting senior and mid-tier command elements of Hamas, Palestinian Islamic Jihad, and Hezbollah. Israeli UAS have concurrently executed interdiction

missions against Hezbollah operatives involved in weapons transfer and cross-border attack planning across multiple theatres.

**The Russia–Ukraine War (2022–Present)**. The Ukraine conflict exemplifies the decisive impact of UxS in modern warfare. Persistent drone employment for ISR, artillery cueing, and precision strike has reshaped tactics, prioritising real-time situational awareness, decentralised targeting, and distributed lethality, while compressing sensor-to-shooter timelines across the battlefield. The operational consequences are quantifiable. Since the commencement of the conflict, Russian forces have lost approximately 13,742 tanks and armoured vehicles, 353 aircraft, and 22 naval vessels. Ukrainian forces, in comparison, have suffered losses of approximately 5,423 tanks and armoured vehicles, 192 aircraft, and 35 naval vessels.[38] Open-source assessments suggest that approximately 70 per cent of war casualties[39] are attributable to drone-enabled reconnaissance and fire correction.

**Drone Warfare in the Ukraine Conflict**. Russia has employed Shahed-136 loitering munitions to systematically target Ukraine's energy and civilian infrastructure, aiming to erode power generation, fuel supply, and societal resilience through sustained winter-time disruption. Ukraine's maritime and aerial drone capabilities have extended this campaign to the Black Sea theatre, where domestically produced surface drones have damaged or sunk multiple Russian naval assets, including the landing ship Olenegorsky Gornyak and the Buyan-class corvette Serpukhov. In coordinated long-range operations, Ukrainian drones have struck major Russian airbases—including Olenya, Belaya, Dyagilevo, and Ukrainka—resulting in confirmed destruction and damage to several strategic bombers (Tu-95MS, Tu-22M3) and fighter aircraft (Su-30, Su-34).[40] These actions underscore Ukraine's growing capacity to project precision effects deep into adversary territory through indigenous, low-cost UxS platforms, redefining strategic reach and deterrence in contemporary conflict.

## India's Unmanned Systems Strategy, Progress, and Doctrine

India is positioning itself in the UxS domain through indigenous development and strategic procurement, underpinned by a clear imperative to secure its borders against multifaceted threats.

- **Indigenous Progress and Counter-UxS Infrastructure**. India has demonstrated mature UxS–air defence integration with Operation Sindoor, marking a milestone in indigenous capability. On the night of 07-08 May 2025, the Integrated Counter-UAS Grid, supported by a layered air defence architecture, ensured 100 per cent neutralisation of Pakistani drone and missile attacks against Northern and Western airbases. The AKASH SAM, leveraging mobility and robust electronic counter-countermeasures, showed high operational effectiveness, underscoring India's growing self-reliance and networked air defence resilience.

- **Strategic Deployment Doctrine against Pakistan (Line of Control [LoC]/Western Front)**. India's UxS doctrine along the LoC focuses on countering asymmetric threats while preserving conventional deterrence through persistent ISR, precision engagement, and force protection. MALE and HALE platforms deliver continuous EO, synthetic aperture radar, and signal intelligence for time-sensitive targeting with reduced political risk. Layered Counter-UAS grids integrate detect–classify–soft or hard kill measures, denying adversary drone use. Concurrently, UGVs enable route clearance, mine detection, forward reconnaissance, casualty evacuation, and autonomous logistics, sustaining tempo and combat power.

- **Strategic Deployment Doctrine against China (Line of Actual Control [LAC]/Northern Front)**. India's UxS posture along the LAC is designed to offset conventional asymmetry and sustain operations in extreme altitude. High-endurance ISR and logistics drones such as Airawat enable persistent surveillance and rapid resupply. Loyal-Wingman UCAVs, notably CATS Warrior, provide expendable penetration and stand-off strike using loitering munitions and smart anti-airfield weapon, enabling airbase denial from outside dense anti-access/area denial envelopes. Integrated HALE or MALE ISR, attritable UCAVs, and precision glide weapons together constitute a calibrated deterrent below the nuclear threshold, complicating People's Liberation Army escalation calculus.

- **Strategic Deployment Doctrine against Bangladesh (Maritime Boundary)**. India's strategy against threats from the Bangladesh border prioritises strengthened MDA and

denial of illegal infiltration along the International Maritime Boundary Line. Lessons from Ukraine highlight surface warships' vulnerability to drones, underscoring the need to rapidly integrate USVs and UUVs. These systems enhance surveillance, reconnaissance, and area denial while reducing risk to manned platforms. UUVs offer transformational underwater capability through stealthy ISR, seabed mapping, mine countermeasures, and deep-sea intelligence collection. Integrated with dornier, coastal radar chains, and patrol vessels, UxS will deliver persistent situational awareness and credible deterrence across India's eastern maritime frontier.

- **Supplementation: Manned-Unmanned Teaming (MUM-T) Integration**. MUM-T integrates manned platforms with UxS to deliver distributed lethality, expanded situational awareness, and reduced risk. Human operators retain command while supervising autonomous assets for ISR, EW, and precision strike. Acting as force multipliers, UxS extend sensors and absorb attrition. Effective MUM-T requires secure data links, integrated C2, cross-platform interoperability, and reliable algorithms in contested electromagnetic environments.

- **Air Force Integration: The Loyal-Wingman Concept**. The air domain leads MUM-T adoption, with India's CATS Warrior as the flagship response. This autonomous loyal-wingman UCAV is designed to operate with light combat aircraft Tejas and future advanced medium combat aircraft, executing ISR, target-cueing, and strike in contested airspace. As a lower-cost, attritable forward sensor and strike node, it enhances attrition tolerance, enables massed employment, and accelerates sensor-to-shooter cycles through real-time manned–unmanned data fusion.

- **Army Integration: Mechanised and Ground Operations**. The Indian Army manned–unmanned teaming integrates UGVs within mechanised and infantry formations to enhance survivability, tempo, and lethality. Indigenous UGV trials have validated concepts in which tanks, infantry combat vehicles, and dismounted troops operate with UGVs equipped for remote fires, logistics, casualty evacuation, and high-risk tasks. Effective MUM-T demands a resilient, plug-and-play digital architecture enabling manned platforms to orchestrate

multiple UGVs and UAVs simultaneously. Combat engineers employ UGVs for route clearance, mine, and IED neutralisation, breaching, bridging support, CBRN reconnaissance, and demolition tasks. Integrated tactical UAVs further compress sensor-to-shooter timelines and amplify indirect fire effectiveness.

- **Naval Integration: Sub-Surface and Surface Superiority**. Indian Navy integration of UxS is central to securing maritime interests and achieving dominance across surface, subsurface, and aerial domains. UUVs provide stealth-enabled reconnaissance, hydrographic survey, and intelligence collection, extending reach and persistence well beyond littorals. UUVs and USVs act as force multipliers by reducing risk to manned patrols and enabling continuous surveillance of critical sea lanes and chokepoints. Effective man–machine interoperability requires advanced combat management system capable of fusing data from manned and unmanned platforms into a unified maritime picture. The end-state is a balanced fleet where UxS absorb attrition and extend reach, while manned assets deliver command and decisive effects.

## The Future of Unmanned Warfare: 2025–35

**Human Command in AI Warfare**. The next decade will witness rapid maturation of autonomy and collaborative UxS, compressing warfare toward machine-speed execution. However, UxS effectiveness remains decisively contingent on human ingenuity, adaptability, and command judgement. AI accelerates sensing, targeting cycles, and task execution, but remains bounded by programmed logic, training data, and predefined constraints. Decisive advantage, therefore, rests with the commander's ability to interpret ambiguity, anticipate adversary action, and employ unmanned assets with tactical imagination and precision. AI multiplies combat power; human intelligence delivers victory.

**Lethal Autonomy and Swarming Tactics**. Advancing autonomy and AI and machine learning integration are driving the emergence of lethal autonomous weapon systems, enabling sensor-to-shooter automation and large-scale, low-cost UxS swarms capable of saturating layered defences and compressing adversary decision cycles beyond human response thresholds.

**Resilient Networks for Autonomous Warfare**. Future autonomous and swarming UxS effectiveness depends on resilient, jam-resistant networks capable of sustaining operations in contested EW environments, enabling seamless integration of unmanned platforms across land, surface, and sub-surface domains in support of multi-domain joint force operations.

## Conclusion

UxS have irreversibly transformed contemporary warfare, shifting tactical advantage toward persistent ISR, distributed precision strike, and saturation effects over reliance on limited numbers of high-value platforms. Ongoing global conflicts confirm that adaptation to this UxS-centric battlespace is no longer discretionary but essential for force survivability. As unmanned platforms increasingly undertake high-risk ISR, strike, and penetration missions in contested environments, human exposure in these roles will correspondingly decline.

India's operational experience—demonstrated by the performance of the integrated counter-UAS grid during Operation Sindoor and sustained investment in the indigenous loyal-wingman concept—reflects early recognition of this shift. However, technology alone is insufficient. Enduring military advantage requires organisational and doctrinal transformation: establishment of a unified Joint-Service UxS Command; accelerated autonomy and swarming research and agile, low-cost acquisition and iteration cycles; and prioritisation of resilient, jam-resistant command, control, communications, computers, ISR, and combat management systems enabling manned–unmanned teaming. Mastery of UxS is central to sustaining conventional deterrence against China and Pakistan, enhancing multi-domain awareness, and preserving future operational relevance through decisive institutional adaptation.

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# Facets of Cross-Border Drug Trafficking in Manipur–Myanmar Borderland

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**Abstract**

*This article examines the arrests and seizures along the land route leading to the Moreh border in Manipur, as well as along outbound routes, which indicate the presence of trafficking activities in the state. It argues that the complexity of trafficking extends beyond its diversity and rapidly evolving trends, as the scale of illegal trade likely far exceeds what is known from open or even restricted sources. This article highlights the increasing sophistication in drug processing and transportation, operational security, product marketing, and the use of technology to evade detection at checkpoints. It further situates these developments within the broader context of Northeast India's porous border with Myanmar, which has long facilitated drug trafficking, organised crime, arms smuggling, illegal immigration, and insurgency. By using the narco-economy as a primary lens, this article provides a comprehensive overview of the manifestations of drug trafficking, small arms proliferation, and the enabling environments in which such criminal networks operate.*

## Introduction

Manipur has become a transit hub as well as a destination for heroin and chemical drugs produced in the Golden Triangle (Death Triangle). Various psychotropic and pharmaceutical preparations and precursor chemicals produced are also trafficked through mainland India. The two-way illegal flow of these drugs

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and chemicals not only violates India's borders but also poses a significant threat to national security. The nexus between drug traffickers, organised criminal networks, and narco-terrorists has created a force powerful enough to cause instability in the country. Money generated through the drug trade has been used to fund various insurgent movements in Manipur. Drug trafficking facilitates other organised criminal enterprises, such as gun running, which use the same networks and routes to smuggle weapons and contraband into the porous border. Even today, insurgency groups use undocumented hilly routes to source weapons and explosives across porous borders.

Narcotics remain a menace that calls for a joint operation between India and Myanmar. It is well known that drug trafficking, insurgent activity, and arms proliferation have a symbiotic relationship. The Indo-Myanmar border region has become an illegal arms market.

**Interviews with Convicted Prisoners**

The author conducted a series of face-to-face interviews with the convicted male and female prisoners in the Narcotic Drugs and Psychotropic Substances Act (NDPS Act), serving their sentences in Manipur Central Jail, Sajiwa and Imphal, to unearth the dynamics of the drug trafficking business network in and out of Manipur. A special permission was obtained from the Home Department, Government of Manipur, through the Inspector General of Police (Prisons), to meet the prisoners from the two jails.[1]

The first prisoner, a male aged 52, from Bungmual village, Churachandpur, was convicted under the NDPS Act of Rigorous Imprisonment (RI) for 16 years. During the personal interview, he narrated being caught with 500 gms of pure heroin in 2001. Currently serving his sentence at Manipur Central Jail, Sajiwa, he further stated that the drug was obtained from a female friend and was due to be transferred to Imphal from Churachandpur with a commission of INR 10,000-20,000. He acted as a carrier and was caught by the National Accreditation Body, Manipur Police, while transporting the drug in a passenger bus.[2] The narration proved likely linkages of the drug business from Burma through Behiang, Churachandpur. Being a carrier, the prisoner claimed that he had little idea of the business.

Though in small quantities, drugs are prevalent in Churachandpur. For large quantities, it is not easy to ascertain. He added that in 2001, the cost of heroin per kg was INR 03 lakhs. Additionally, WY (Ya ba) tablets, a mixture of methamphetamine and caffeine, are mainly supplied through Moreh, reaching Imphal, and then trafficked to other states. Those involved in the business break the consignment into pieces and distribute it to peddlers for transportation.[3]


**Figure 1: 'Visitor In' Stamp for Jail**

***Source*: Personal Collection, 09 Nov 2024**

Another 65-year-old male prisoner, who belonged to Molnom village, Ukhrul, stated in a personal interview that he had worked as a passenger driver on the Molnom–Sanakeithel–Imphal route.[4] He was caught with approximately 03 kgs of heroin in his Tata Xenon vehicle at Saparmeina, Kanglatongbi, on 20 Oct 2022 and was convicted under the NDPS Act to 10 years of RI. He received

the drug from his friend in Ukhrul and was smuggling it to Imphal. For the task, the prisoner was promised INR 01 lakh, which he supposedly planned to spend on his family. Currently, he is serving his sentence at Manipur Central Jail, Sajiwa.[5]

The third male prisoner was also convicted under the NDPS Act for 10 years of RI. This 64-year-old person from P Kamdou Veng, Churachandpur, has been serving his sentence at Manipur Central Jail, Sajiwa, since 2015. In a personal interview, he recounted being caught red-handed at a friend's place in Moirang on 31 Oct 2015. Both friends were planning to sell 03 kgs of opium for INR 60,000[6] to get a commission worth INR 10,000. The opium was scored from Tuibong Kamdou Veng, Churachandpur; the person who supplied the opium later disappeared. The prisoner added that poppy cultivation is easily visible along the Churachandpur–Chandel hill routes.[7]

The author also interviewed two non-Manipuri male prisoners from the same jail, aged 52 and 48, natives of Imphal West and from Cachar. Both were convicted under the NDPS Act for 10 years of RI. The duo were painters and were caught by Customs in May 2016. They were charged for possessing 5,000 WY Tablets worth INR 50 lakhs.[8] Both the prisoners established a connection with a Muslim individual from Cachar, staying in Imphal, at the time.[9]

The next interviewee was a male individual at Manipur Central Jail, Sajiwa, who was convicted under the NDPS Act for 10 years' RI. The 37-year-old was a native of Kwakta, and was staying at Keirang on rent when he was caught with 3,500 quantities of Spasmo-Proxyvon (SP) and three boxes of Nitrazepam 10 mg (N-10) tablets. During his interview, he revealed that one box of SP tablets costs INR 600, while a box of N-10 is priced at INR 700. The prisoner was also an addict and used to earn his livelihood by selling second-hand materials at Churachandpur. He was caught in 2015 at Nagamapal, Imphal.[10]

During his one-to-one interactions, the author met another male prisoner, who was convicted under the NDPS Act and is serving sentenced to RI for 15 years at Manipur Central Jail, Sajiwa.[11] The 59-year-old individual from Nambol was a driver by profession and used to drive Tata Sumo from Moreh to Nambol. He was caught with 01 kg of heroin and a small testing sample.

The police apprehended him in the last week of Sep 2004. During his interaction, he confirmed a contribution worth INR 50 thousand to his team for purchasing the drug from a Muslim couple living at Moreh Forest Gate.[12] His team purchases drugs from Moreh and transfers them to Imphal.

The author also interviewed a female convict. The 39-year-old woman, convicted under the NDPS Act, is serving a 20-year sentence.[13] She was caught in Jun 2013 at a Cambodian Airport while trafficking 3.5 kgs of Methamphetamines from India. She obtained the drug from a friend and was on her way to transfer it to the Cambodian counterparts. After being caught, she spent three years and six months in a Cambodian jail, and was later deported to Manipur Central Jail, Imphal, in 2017. She was promised INR 5 lakhs to do the job, which she undertook owing to financial problems.[14]

Despite variations in the narratives of the convicted prisoners, two facts remain clear: First, they acted as carriers or transporters, and second, they undertook the trafficking primarily for substantial monetary gain or financial reward. Money appears to be the principal motivator in such illegal trade, while the higher-level organisers or bosses largely remain beyond the reach of law enforcement.

## Small Arms Proliferations

Violence is also an outgrowth of the illicit drug issue that affects both sides of the border. Organised crime groups have relied on violence as an essential tool of their trade. Small arms proliferation is a by-product of drug trafficking. Drug cartels launder the proceeds of crime in legitimate businesses, favouring transportation that can be used to facilitate drug and arms smuggling activities. The Kachin Independence Army (KIA) has been involved in gun running and proliferation of small arms. Initially, it received support from Chinese communists. However, small arms were purchased from the Thai black markets along the Burma–Thailand border over time. Burmese ethnic rebels have established strong connections with the Thai black market for small arms proliferation. Subsequently, a new phase of gun running emerged, with the local production of M-series assault rifles in areas of Burma, controlled by ethnic rebels and facilitated by the acquisition of Chinese machines and metallurgy.

In the Thai black market, an AK-47 costs roughly INR 02 to 03 lakhs, depending on its quality. The arms were purchased in Thailand via Mae Sot and then transported to Burma. The Tahan market in Kalemyo serves as the ground zero for weapons trade and distribution. This is where even the Burmese military intelligence fails to counter the enterprises. From Kalemyo, the arms are diverted towards Chin state and Tamu. From the Tahan market, there are precisely 24 check posts to Tamu, out of which only one is under the Myanmar military (Tatmadaw) while others are all divided under the various ethnic arms groups. Transporting the arms to Kalemyo requires a network of gun runners and incurred high transport costs. Small quantities, typically four pieces, are transported from Tamu by local Burmese ethnic porters on foot, travelling through dense forest at night to avoid detection and reach the Manipur border. It takes one night of trekking to get to the Manipur border. Each porter is paid roughly INR 04 lakhs in Burmese Kyat.[15] This method of gun running is used for small consignments, but it facilitates the proliferation of small arms across the border for use in Manipur and other areas. Sea routes are used to reach Chittagong (Bangladesh) via Burmese maritime routes from Thailand's weapon markets for larger consignments. Then, the shipment travels by road from Chittagong to various parts of northeast India for various insurgent groups. However, due to its size, it attracts the attention of law enforcement agencies, and the risk of being captured is very high.[16]

In the Chin state of Myanmar, the Chin-Kuki tribes are further classified into subsidiary groups, with Tedim, Falam, and Haka as the main ones. Tedim is the Paite clan in Manipur. It is the most prominent group in gun running and small arms proliferation at the border.[17]

Gun running in Myanmar is carried out to sell the weapons outside the country to neighbouring troubled regions. This acts as a source of income for the ethnic groups. The proliferation is carried out under the control and responsibility of the Myanmar military officers in the area. Many advanced small arms and explosives are caught on the Indian side, mainly in the Manipur and Mizoram areas bordering Myanmar.

The drug trade took root in Manipur around 1985. By the 1990s, the Kuki National Organisation and Kuki National Army (KNA) armed movement began in Manipur. In 1992, *Ganja* (cannabis) was cultivated on a large scale, while poppy cultivation was initially done in the southern hill range of Manipur, including areas controlled by the Naga and Kuki. This also marks the period of the Naga-Kuki ethnic conflict. Then, in 1998, during the Kuki-Paite conflict, the Paite taught a lesson to the Kuki to build up their arms and start training for defence. 2005 saw the withdrawal of valley-based insurgent groups from Sajik Tampak, informal ceasefires between Kuki groups and the central government, and the Tripartite talks (2008) or the Suspension of Operations (SoO), with both the Central and State governments for the Kuki armed groups. The period from 2005 to 2008 was the transitional period for the Kuki armed groups, which actively indulged in black marketing. This is when the illegal business could only be conducted with the Kuki involvement in Moreh. Molcham to New Somtal was free of unlawful business during this period, with no checking being done. From 2008 to 2022, there has been a substantial rise of the Kuki groups in the southern part of Manipur.[18] With the withdrawal of Valley-Based Insurgent Groups (VBIGs), mainly from Sajik Tampak in 2005, the Chin-Kuki started indulging in unlawful activities extensively, getting a freehand along the southern hill ranges and part of Manipur. Earlier, VBIGs had a prolific presence in these areas.

As a result of the Myanmar military coup on 01 Feb 2021, KIA started to provide training and most small arms and ammunitions, including M-series assault rifles, Heckler and Koch rifles, Lathode guns, and Snipers used by the People's Defence Force (PDF). These account for 50 to 55 per cent of arms share, while the Karen National Union provides 15 to 20 per cent of the weapon share for the PDF.[19] The area- and ethnic-wise PDFs in Myanmar fight against the Myanmar military junta, while, across the border, these PDFs morph into Chin-Kuki in Manipur with cross-border intrusions of personnel or weapons, which substantially fuel cross-border criminal acts.

A significant drug trafficking route connects Tonzang (Chin State), Myanmar (Burma), to Sajik Tampak in Chandel (Manipur). Tonzang is controlled by the Chin Defence Force (CDF). The CDF- Tonzang (T) is allied with the Chin National Army (CNA).

They avoid Tedim Road to commute; however, local roads and jungle tracks are accessible to reach Moreh (controlled by KNA), Chandel, and Tengnoupal. These routes converge at Singheu, at the Churachandpur-Chandel border. This serves as the main route connecting Churachandpur and Chandel across the Imphal River. Previously, it was Sugnu.

Singheu has become the alternative route due to the Manipur conflict. The drugs are routed to Churachandpur, which then heads to Kangpokpi through newly constructed illegal German and Tiger roads. The roads are controlled by the Kuki National Front-Military Council, led by Hemlal Haokip (Commander-in-Chief), also known as 'German', and the Kuki National Front-President, led by Thangboi Kipgen (Commander-in-Chief), also known as 'Tiger'. The drugs then head to Silchar (through Kangpokpi-Tamenglong-Noney Road) and Dimapur, and the rest of the country for further distribution. In Singheu, a bridge (Singheu Bridge) across the Manipur River connects Chandel to Churachandpur.

Currently, Sajik Tampak (Manipur) serves as the operational base of United Kuki Liberation Front (UKLF) Chief SS Haokip (also known as Soson Haokip), whose involvement in the drug trade is notorious and well known. The UKLF is a SoO group connected with KNA–Burma (KNA-B) and the Thadou Defense Army of Myanmar.

The trade involves bringing in drugs from Myanmar. The area encompassing the international border at Sajik Tampak is controlled by the Thadou Defense Army and Kuki KNA-B. Both have connections with the CDF-T, which is also an ally of the CNA. When the CNA, along with the CDF–Hualngo, clashed with the Chin National Defense Force, the KNA-B came to its aid. The CNA is involved in trafficking the majority of the drugs seized in Mizoram, and their involvement is rapidly increasing.

| District | No. of cases | Person Arrested | Heroin powder | Brown sugar | Opium | WY | SP | Cough syrup | N-10 | Ganja | Ice crystal | Pseudo-Ephedrine |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Imphal West** | 231 | 347 | 19.96 kgs | 27.09 kgs | 324.35 kgs | 64.28 kgs | 19.07 kgs | 25,008 bottles | 16,000 tabs | 143.537 kgs | 5 kgs | NA |
| **Imphal East** | 395 | 493 | 24.68 kgs | 595.096 kgs | 56.88 kgs | 58.31 kgs | 25.74 kgs | 27,543 bottles | 21,857 tabs | 2153.42 kgs | NA | NA |
| **Thoubal** | 324 | 528 | 12.1 kgs | 2,160.58 kgs | 51.27 kgs | 458.53 kgs | 20.97 kgs | 22,752 bottles | 5,635 tabs | 4.20 kgs | NA | 33.65 kgs |
| **Bishnupur** | 159 | 230 | 21.88 kgs | 83.17 kgs | 240.81 kgs | 9.84 kgs | 7.96 kgs | 443 bottles | 2,199 tabs | NA | NA | NA |
| **Kakching** | 158 | 261 | 46.36 kgs | 2.98 kgs | 124.18 kgs | 114.10 kgs | 1.35 kgs | 214 bottles | NA | NA | 15.18 kgs | NA |
| **Jiribam** | 55 | 81 | 0.74 kgs | 8.77 kgs | NA | 36.62 kgs | 17.07 kg | 9,752 bottles | 11,000 tabs | 1,455.89 kgs | NA | NA |
| **Chura-chandpur** | 170 | 182 | 17.11 kgs | 26.47 kgs | 297.73 kgs | 17.22 kgs | 0.237 kgs | 230 bottles | 68 tabs | 81 kgs | NA | NA |
| **Pherzawl** | 02 | 05 | NA | NA | NA | NA | NA | NA | NA | 107 kgs | NA | NA |
| **Noney** | 13 | 20 | 5.73 kgs | NA | 01 kg | 1.29 kgs | 6.21 kgs | NA | 26,660 tabs | 193 kgs | NA | NA |
| **Tamenglong** | 08 | 06 | NA | 0.901 kg | NA | 4.540 kg | 0.210 kgs | NA | NA | NA | NA | NA |
| **Kangpokpi** | 97 | 72 | 30.38 kgs | 9.12 kgs | 60.36 kgs | 11.27 kgs | NA | NA | NA | 1,289.44 kgs | NA | NA |
| **Senapati** | 69 | 88 | 7.00 kgs | 5.96 kgs | 9.04 kgs | 13.89 kgs | NA | NA | NA | 373.25 kgs | 15 kgs | NA |
| **Ukhrul** | 78 | 31 | 0.008 kgs | 0.528 kgs | 113.29 kgs | NA | NA | NA | NA | 2,349 kgs | NA | NA |
| **Kamjong** | 19 | 14 | NA | 88.06 kgs | NA | 0.034 kgs | NA | NA | NA | 1,200 kgs | NA | NA |
| **Tengnoupal** | 308 | 259 | 12.56 kgs | 225.80 kgs | 32.25 kgs | 705.32 kgs | NA | 194 bottles | NA | 0.49 kgs | 34.39 kgs | 118 kgs |
| **Chandel** | 74 | 46 | 23.58 kgs | 19.44 kgs | 70.06 kgs | 75.00 kgs | NA | NA | NA | NA | NA | NA |
| **NAB** | 343 | 449 | 82.79 kgs | 523.34 kgs | 425.42 kgs | 421.64 kgs | 13.206 kgs | 13,240 bottles | 10 tablets | 422.55 kgs | 25.50 kgs | 64.72 kgs |
| **Total:** | **2,503** | **3,112** | **304.92 kgs** | **3777.34 kgs** | **1,806.69 kgs** | **1,991.94 kgs** | **111.99 kgs** | **99,369 bottles** | **83,429 tabs** | **9,773.56 kgs** | **95.08 kgs** | **216.37 kgs** |

**Table 1: Seizure and Arrest under NDPS Act from 2017 to 2024 (till 10/12/2024)**

*Source*: Manipur Government[20]

Government data provides a comprehensive overview of seizures and arrests under the NDPS Act from 2017 to 2024 across the districts of Manipur, including the hills and valley regions. In addition to the number of cases and individuals apprehended, the report includes detailed information about the quantities of various narcotics, spanning from heroin to pharmaceutical drugs, seized in the different districts.

## Conclusion

Manipur is turning from bad to worse, with increasing trafficking activity despite capture and continuous security checks in and out of the state. Drug trafficking is increasingly associated with cross-border small arms smuggling. It is apprehensive that the amount and quantity are increasing as more traffickers are being arrested and new techniques are being adopted to transport the contraband. It would not be far enough to count Manipur as a part of the infamous 'Golden Triangle' (Death Triangle). The carnage it carries across the borderland towards Northeast India will be very dangerous and can create a liability. What is more apprehensive is that in addition to the trafficking activity, even micro-manufacturing units are starting to spring up in both hills and valley districts. Poppy cultivation is rampant in the hill districts, dominated by the Kuki community, equally signifying the state as not only a route for trafficking but also a production centre. If not checked, this organised crime with small arms proliferation will hamper India's ambitious Act East Policy towards Southeast Asia, which passes through Manipur-Moreh to Myanmar.

Most drug traffickers are employed in the transportation industry. Transporters are among the most frequently arrested convicts in Manipur. It is a significant threat to state security, and an attempt should be made to address drug trafficking issues through the coordination and development of a Manipur–Myanmar counternarcotics strategy. The state has faced security issues due to internal geopolitical conditions in neighbouring Myanmar. The more security issues in the country, the more fallout in neighbouring Manipur and Mizoram. The state is receiving thousands of illegal Burmese refugees due to the 2021 military coup and subsequent military actions. There is an apprehension that the Kuki-Chin militant groups in Manipur generate the narco-money to rehabilitate themselves inside the state and to oversee

the integration of illegal immigrants into the indigenous population, specifically in the Kuki majority areas. The cause for concern is that the increasing statistics of drug trafficking and poppy cultivation using the funds generated from the illegal activities further promote the illicit collective integration of the immigrants from Myanmar post-2021 military coup towards Manipur.

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[6] Male Prisoner 3, personal interview, Manipur Central Jail, Sajiwa, 09 Nov 2024.

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[12] Male Prisoner 7, personal interview, Manipur Central Jail, Sajiwa, 09 Nov 2024.

[13] Female Prisoner 1, personal interview, Manipur Central Jail, Imphal, 09 Nov 2024.

[14] Ibid.

[15] Anonymous Respondent 1, personal communication, 06 Oct 2024.

[16] Ibid.

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# 76 years of Indo-Philippines Ties and India's Act East Policy

**Dr Martand Jha**[@]

**Abstract**

*This article examines the significance of the visit of the President of the Philippines, Ferdinand Marcos Jr, to India earlier in 2025, which marked the establishment of a strategic partnership between the two nations. The state visit, held from 04-08 Aug 2025 was President Marcos Jr's first visit to India since assuming office. It also carried particular importance because the previous state visit by a Philippine President to India had taken place in 2007. During the visit, the two countries signed a total of 13 Memoranda of Understanding and agreements covering areas such as culture, defence cooperation, digital technologies, science, space cooperation, and tourism, reflecting the broadening scope of bilateral engagement.*

## Introduction

India–Philippines relations today must be understood within the larger structural transformation of the Indo-Pacific region. The Indo-Pacific is no longer merely a geographic construct; it has evolved into a strategic theatre where questions of sovereignty, freedom of navigation, supply-chain resilience, and regional balance of power intersect. For India, the Philippines occupies a uniquely important position in this evolving strategic geography. Located at the crossroads of the Pacific Ocean and the South China Sea, the Philippines acts as a natural maritime gateway linking East Asia

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with the Indian ocean region. India's engagement with Manila, therefore, serves both symbolic and material strategic purposes.

From a strategic standpoint, India's growing presence in the Philippines reflects its gradual shift from a continental security mindset to a maritime-oriented outlook. Historically, India's security concerns were dominated by land-based threats along its western and northern borders. However, the changing nature of global trade, energy flows, and naval power projection has compelled India to recalibrate its strategic priorities. Over 90 per cent of India's trade by volume moves through sea lanes, many of which pass close to the South China Sea. Any disruption in this region would have direct consequences for India's economic security. Strengthening ties with the Philippines, thus, aligns with India's objective of safeguarding sea lines of communication and ensuring a rules-based maritime order.

The Philippines, on its part, views India as a reliable and non-intrusive partner. Unlike traditional great powers, India does not carry a history of colonial domination in Southeast Asia, nor does it seek exclusive security arrangements that compromise regional autonomy. This perception enhances India's acceptability within the Association of Southeast Asian Nations (ASEAN) and among Southeast Asian states that remain cautious about overt alignment with any single power bloc. Manila's decision to elevate ties with New Delhi reflects a strategic hedging approach—diversifying partnerships while maintaining strategic autonomy.

It has been almost 76 years since India and Philippines established their diplomatic ties in 1949. However, the meaningful bilateral ties between them got recalibrated after India's Act Policy came into picture in 2014. Since its independence in 1947, India did not pay much focus towards its east and rather gave an overwhelming attention towards its west. This led to an attention deficit in India's foreign policy circles towards the Indo-Pacific region, which has been rectified in the last decade. After Prime Minister (PM) Narendra Modi assumed power in 2014, India rebranded its 'Look East Policy' and termed it 'Act East Policy'.[1]

Interestingly, in 2011, Hillary Clinton (who was the then-United States [US] Secretary of State), during her visit to New Delhi, appealed to India to 'Act East' instead of just 'Looking East'. She pointed out the need for India to play a proactive role in the Asia-

Pacific region. The policy makers in the Ministry of External Affairs paid attention to her appeal and when the Bharatiya Janata Party ascended to power under Narendra Modi in 2014, India's External Affairs Minister Sushma Swaraj declared that India was now ready to 'Act East'.[2]

India's Look East Policy came in 1992 under the leadership of India's then-PM PV Narasimha Rao, who was a far-sighted statesman.[3] He knew how the Southeast Asian region was titled towards the Western bloc under the influence of the US. The Southeast Asian Treaty Organization (SEATO) was established in 1954, and the Philippines was one of its member states.[4] India faced a structural constraint in that Pakistan was also a member of the same grouping; consequently, the presence of Pakistan limited the possibility of developing strong bilateral ties between India and other member states of SEATO. India, though non-aligned, was seen by the West as being tiled towards the Soviet Union. This Cold War geopolitics hampered India's prospects to build its presence in the Southeast Asia and the larger Indo-Pacific region.

As per an official speech at India's Central University of Mizoram by one of the India's retired ambassadors, Dilip Sinha, on this topic, he says, "After independence from European colonial rule, which came first to India and then in phases to Southeast Asia, there was a brief period of euphoria and high expectations. The Asian Relations Conference organised by Jawaharlal Nehru in 1947, even before India's independence, and the Bandung Conference in Indonesia in 1955 gave rise to hopes of Asian solidarity and revival. These hopes faded very soon as the world became embroiled in the vicious Cold War between the communist forces led by the Soviet Union and China on the one side and the capitalist forces led by the United States on the other".[5]

After the collapse of the Soviet Union and the end of the Cold War in 1991, the regional geopolitical dynamics of Southeast Asian nations came out of the influence of the Cold War era.[6] However, as history shows us, it took decades for countries like India to reach out to other countries in the region, like the Philippines, to channelise and solidify its bilateral ties. India also looks at this region's importance through a civilisational framework. Much scholarship has focused on India's extended neighbourhood

to the west, encompassing the Central Asian region. However, India's extended neighbourhood to the east has historically and civilisationally been the Southeast Asian region, which, as a geographical entity, forms a contiguous landmass connected to India's northeastern states. Therefore, when India talks about its Act East Policy, it also includes the country domestically looking towards its own northeastern states, which require attention from the central government.

**Indo-Philippines Ties**

The increase in the intensity of bilateral cooperation between the two nations is an indicator of India's larger ambitions in the Indo-Pacific. India wants to shed its status of 'Emerging Power' in the international system and aspires to become a 'Rising Power'. For this to happen, India has decided to not look at the Indo-Pacific and Oceania regions as 'Peripheral' concern but as its immediate issues. For long, India looked at this whole region as a periphery due to the Cold War geopolitics as well as great geographical distances between India's main geographical landmass and this region. Today, India cannot afford to look away from the region and, therefore, it has come up with policies like Security and Growth for All in the Region (SAGAR), which has been upgraded to Mutual and Holistic Advancement for Security and Growth Across Regions (MAHASAGAR). The Hindi word SAGAR means Sea, while MAHASAGAR means Ocean. These acronyms signify India's increasing maritime interests in the region.

These interests came into being when during President Marcos' visit to India, the Philippines and the Indian Navies conducted their first ever joint exercises in the South China Sea. These exercises were conducted in the Philippines Exclusive Economic Zone, where India fielded its three warships, which included INS Delhi, INS Kiltan, and INS Shakti. On the other hand, the Philippines deployed two warships, which included BRP Jose Rizal and BRP Miguel Malvar. These exercises were a portrayal of mutual effort to counter China's assertive behaviour in the South China Sea.

The Indo-Philippines bilateral ties are no longer ceremonial in their nature and character. India's attempts to do joint naval patrols, supplying BrahMos missiles, strengthening joint working groups on counterterrorism, etc., are measures that give a positive

indication towards a sustainable and stable strategic vision between these two countries.

President Marcos' visit was significant on multiple fronts as both the countries agreed to cooperate and work together on regional, multilateral, as well as international forums. For instance, India and the Philippines engage closely with each other at a regional level India's Comprehensive Strategic Partnership with the ASEAN. The Presidential delegation included a high-level business delegation, which signified the deep economic ties, especially the business-to-business ties between the two countries. President Marcos' visit to India's information technology capital Bengaluru further indicated the country's willingness to establish strong business ties with India. The two countries have adopted a plan of action for the next four years (2025-29) which will guide their strategic interests.

India's interests towards the Philippines and possibly in the future towards other Southeast Asian nations are guided by its vision to counter China in the region. Any effort that India does in the Indo-Pacific today cannot be bereft of China's lingering presence in the background. India needs to intensify its presence in the region because a new international order has started to shape up during the current United States (US) presidency under Donald Trump. India needs strong allies and all-time friends in the Indo-Pacific to balance China and, in turn, increase its own power. India is looking at attaining a strategic depth, especially in the maritime domain, in the Indo-Pacific region.

India recognises that a deeper level of friendship can be achieved only when people-to-people ties are strengthened. Millions of Indians travel to this region for vacations to destinations such as Manila, Bali, Singapore, and Kuala Lumpur. For this reason, India has placed increasing emphasis on expanding tourism with the Philippines.

As per Rahul Mishra, Associate Professor in Indo-Pacific Studies at the Jawaharlal Nehru University, "This strategic realignment extends into non-military domains too. For instance, India and the Philippines announced visa-free entry for Indian tourists and free e-visas for Filipino nationals, alongside plans for direct Delhi–Manila flights, expected to expand bilateral tourism

and people-to-people exchanges. It has not gone unnoticed in Manila that Thailand and Malaysia offered visa-free entry to Indian tourists and, as a result, saw great benefits in tourism. These recent moves promise to further strengthen people-to-people linkages between the two countries".[7]

New Delhi's partnership with Manila should not just be seen a measure to tackle and counter China. Rather, it should be a robust and proactive relationship that lasts for long. For the Philippines, acquiring the Brahmos missile system from India not only boosts its defence capabilities in the maritime domain, but today it has gained a greater strategic importance due to Manila's 'Comprehensive Archipelagic Defence Concept'.[8] India's BrahMos missiles will aid the Philippines in defending its entire archipelago. The budding maritime capability of the Philippines must be supported by its land-based anti-access/area denial capability. President Marcos' visit to India was not just symbolic but carried substance in the sense that India has become one of the five major strategic partners to the Philippines. The other four strategic partners are Japan, South Korea, Vietnam, and Australia.

India looks at the Philippines not only as a strategic partner but also as an important ASEAN member. New Delhi has backed Manila's position against China's 'Nine Dash' line claims. India has backed the 2016 United Nations Convention on the Laws of the Sea tribunal arbitration award to the Philippines and has called China to respect the multilateral order in the Indo-Pacific. This has a significant impact on the sub-regional as well as regional geopolitical dynamics. For enhancing the bilateral maritime cooperation, India has invited the Philippines to join its Information Fusion Centre–Indian Ocean Region (IFC-IOR). Hosted by the Indian Navy, the IFC-IOR is a maritime security centre which has been enhancing maritime domain awareness.

## Deepening Cooperation

India–Philippines diplomatic relations, established on 26 Nov 1949, have now reached a significant turning point. The establishment of diplomatic ties between the two nations coincided with a historic moment, as it occurred on the same day that India formally adopted its Constitution. Today, in hindsight, the start of the bilateral diplomatic ties almost feels symbolic of the deep ties and friendships that these two countries can cultivate together. India

and the Philippines have elevated their ties to strategic partnership, but this can evolve into much deeper cooperation. The rise of China and the reluctance of the US to play its role in the international system is creating a seismic shift in the international order. The old strategic alliances are gradually shifting and creating space for new relations, ties, and cooperation to germinate. India should look at this as an opportunity for her to raise its stature regionally.

India and the Philippines have shared a history of strong defence tie-ups, which has been a pillar of strong bilateral cooperation between the two countries. This was showcased aptly on 19 Apr 2024, when India successfully delivered its first batch of the BrahMos missiles system to the Philippines.

The bilateral relationship between New Delhi and Manila could possibly shape up to become a new regional alliance, with other allied partners in the region joining such a framework. India has a high population with a huge consumer base. If economic ties can be boosted between India and the Philippines, it could naturally reflect in other strong converging issue areas. Yes, defence cooperation and strategic talks are considered high priority areas in the realist framework of international relations but, in the end, it is the people who matter the most. The people-to-people ties can only grow with an upward swing in the bilateral trade.

## Conclusion

To sum it up, President Marcos' visit to India has started new conversations in the strategic circles within both the countries. This may open new doors for both the nations to grow from being strategic partners to become allies and possibly friends. Looking ahead, the challenge for India–Philippines relations lies in translating strategic intent into sustained outcomes. Strategic partnerships risks remain rhetorical if not supported by institutional depth, economic substance, and societal engagement. Regular high-level visits, implementation of the 2025–29 Plan of Action, and follow-through on signed agreements will be crucial in maintaining the momentum.

For India, success in the Philippines will serve as a template for broader engagement with Southeast Asia. It will demonstrate India's capacity to act as a credible Indo-Pacific power that

balances strategic ambition with diplomatic sensitivity. For the Philippines, partnership with India offers diversification, resilience, and access to an emerging power that shares its commitment to strategic autonomy. In this sense, Indo-Philippines relations are not merely bilateral in nature; they are reflective of a broader reordering of Asia's strategic landscape. As traditional power hierarchies evolve and new actors assert themselves, partnerships rooted in mutual respect, shared interests, and long-term vision will define the future of the Indo-Pacific.

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# Celerity Warfare

**Major HS Mankoo**[@]

**Abstract**

*This article examines the concept of 'Celerity Warfare' as a transformative shift in the character of modern conflict, where victory is increasingly determined by speed, synchronisation, and decision dominance rather than sheer mass or firepower. Rooted in the compression of the observe–orient–decide–act loop, it seeks to outpace and out-think the adversary across the land, sea, air, cyber, and space domains. By integrating artificial intelligence, automation, and network-centric systems, celerity warfare treats time as a strategic weapon, enabling rapid perception, decentralised execution, and seamless multi-domain coordination. Recent conflicts, from Ukraine to Gaza, illustrate how accelerated decision–action cycles and cognitive disruption can shape battlefield outcomes. For the Indian Armed Forces, the principles of celerity warfare resonate with the ongoing theatrisation initiative, offering a pathway to enhance jointness, agility, and operational tempo. The article, therefore, explores the conceptual foundations, operational applications, and strategic relevance of celerity warfare, while highlighting its implications, challenges, and the way ahead for integrating speed, technology, and cognition as key pillars of India's future warfighting philosophy.*

## Introduction

On 20 Nov 2024, while addressing an audience at an event in New Delhi, Chief of Defence Staff General Anil Chauhan identified three major technological trends that are set to reshape

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the character of future warfare: robotics and automation, celerity (speed and automation), and the intelligentisation of warfare.[1]

The concept of 'Celerity' has emerged as a relatively less-examined yet significant element within contemporary military thought. Although infrequently referenced in traditional doctrinal discussions, it embodies a critical dimension of modern military transformation—the decisive advantage of speed in perception, decision, and action. Celerity warfare highlights the growing importance of achieving superior operational tempo and decision-making agility as key determinants of success in modern conflict.

This article is an attempt to distil the essence of celerity warfare, tracing its conceptual foundations and relevance in contemporary conflicts, and its specific implications for the Indian Armed Forces.

**Core Tenets of Celerity Warfare**

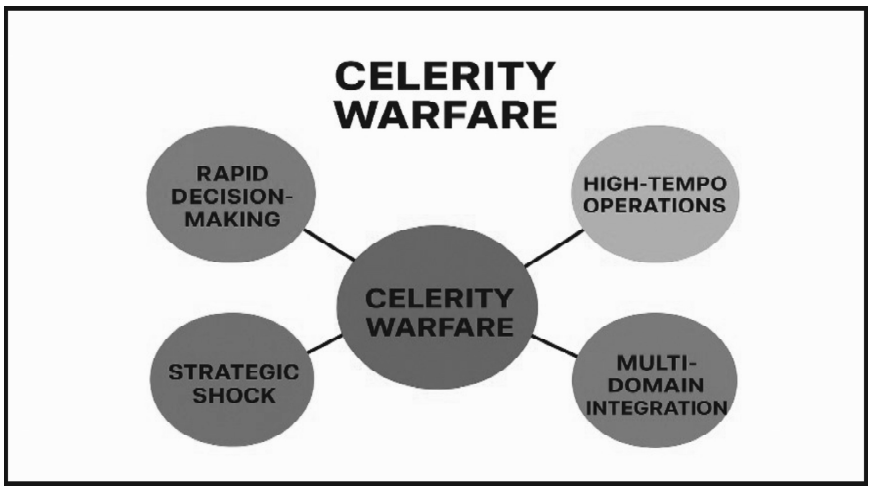


**Figure 1: Basic Tenets of Celerity Warfare**

*Source:* Curated by Author

Celerity warfare situates speed and operational tempo as the decisive determinants of success in a contemporary conflict. It departs from the traditional emphasis on mass and attrition, instead, seeking to outpace and out-cycle the adversary across all dimensions of warfare. By compressing the temporal space between observation, decision, and action, it aims to render the

opponent cognitively and operationally incapable of responding in time. The key characteristics of this evolving paradigm include:

- **Rapid Decision-Making**. The exploitation of Artificial Intelligence (AI), big data analytics, and advanced sensor networks enables a radical compression of the Observe-Orient-Decide-Act (OODA) loop. Decision cycles approach near real time, allowing commanders to anticipate rather than merely react. This agility empowers distributed decision making and enhances the capacity to exploit fleeting tactical windows.

- **High-Tempo Operations**. Celerity warfare thrives on maintaining a relentless operational rhythm that overwhelms adversary planning processes. Tempo here extends beyond the mere speed of movement; it encompasses the frequency and synchronisation of actions that force continuous adaptation and cumulative dislocation of the opponent's strategy.

- **Multi-Domain Integration**. The essence of celerity lies in simultaneous orchestration across land, sea, air, space, cyber, and information domains. By fusing sensors, decision-nodes, and shooters into an integrated network, the approach ensures that an adversary's reaction in one domain is pre-empted or countered through actions in another, creating a seamless web of offensive and defensive interdependence.

- **Strategic Shock**. Sustained high-tempo operations generate psychological and cognitive paralysis, inducing a perception of perpetual disadvantage within the enemy's decision hierarchy. This 'Strategic Shock' undermines morale, disrupts command cohesion, and erodes the adversary's will to sustain coherent resistance.

In aggregate, these features signify that celerity warfare is not merely a tactical construct but a holistic operational philosophy; one that redefines advantage in warfare from the magnitude of firepower to the mastery of time, information, and synchrony.

## Underlying Principles of Celerity Warfare

The conceptual foundation of celerity warfare lies in reimagining time, cognition, and technology as decisive instruments of combat power. It departs from traditional attrition-based warfare by privileging tempo, disruption, and adaptability as the core determinants of success. The following principles illustrate this paradigm:

- **Time as a Weapon**. In the celerity construct, time itself becomes a strategic asset. The force capable of maintaining a faster decision–action rhythm effectively dictates the pace and structure of the conflict. By continually operating within the adversary's decision loop, such a force renders enemy responses obsolete even before they are executed, transforming temporal advantage into operational dominance.

- **Disruption over Destruction**. The focus of combat shifts from the physical annihilation of enemy assets to the disruption of the adversary's cognitive and command architecture. By degrading situational awareness, fragmenting information flows, and inducing decision paralysis, celerity operations achieve disproportionate strategic outcomes with limited kinetic engagement, emphasising paralysis over punishment.

- **Technology-Enabled Acceleration**. The integration of AI, autonomous systems, and Network-Centric Warfare (NCW) underpins the acceleration inherent in celerity warfare. AI-enabled command systems compress information processing timelines, while autonomous and unmanned platforms reduce the sensor-to-shooter cycle, creating an operational ecosystem where decision-making approaches near-real-time efficiency.

- **Asymmetric Advantage Through Tempo**. Celerity empowers smaller, agile, and technologically adept forces to offset numerical inferiority through superior tempo and unpredictability. By exploiting transient opportunities and imposing cognitive overload on the opponent, such forces generate asymmetric effects that disrupt larger formations and erode their capacity for coordinated response.

Collectively, these principles represent a paradigm shift from mass to momentum, and from destruction to disruption. In the age of accelerated warfare, victory belongs not necessarily to the

strongest, but to the swiftest—to those who can observe, decide, and act faster than their adversary can comprehend.

**Comparison with Other Doctrines**

While the notion of celerity warfare draws upon existing military thought, it represents a distinct evolution in the understanding of tempo and multidomain synergy. A comparative analysis with other established doctrines helps clarify its conceptual uniqueness.

- **Conventional Warfare**. Conventional warfare has historically relied on mass, attrition, and firepower to achieve victory through the gradual erosion of enemy strength. Celerity warfare diverges fundamentally from this approach by prioritising speed, decision dominance, and temporal control over mere material superiority. It seeks to win not by destruction, but by dislocation—collapsing the enemy's capacity to respond within relevant timeframes.

- ***Blitzkrieg* (Lightning War)**. Although *Blitzkrieg* similarly emphasised rapid manoeuvre and concentrated force to achieve operational breakthrough, its application was largely confined to the land and air domains. Celerity extends this logic into the cyber, space, and information environments, integrating digital and kinetic effects into a unified high-speed operational continuum. It, thus, represents a digital-age evolution of the *Blitzkrieg* principle, adapted to multidomain realities.

- **Hybrid and Grey-Zone Warfare**. Hybrid and grey-zone approaches leverage ambiguity, subversion, and deniability to achieve strategic aims below the threshold of open conflict. Celerity, by contrast, is defined by velocity and simultaneity of action. Hybrid warfare manipulates the space between peace and war, whereas, celerity manipulates time within war, seeking dominance through acceleration rather than deception.

- **Multi-Domain Operations (MDO)**. Both MDO and celerity warfare advocate cross-domain integration and joint synchronisation. However, the defining distinction lies in celerity's temporal orientation. While MDO emphasises the spatial coordination of effects across domains, celerity is

centred on achieving time-centric superiority, compressing operational cycles to a degree that disrupts the adversary's ability to perceive, decide, and act.

In essence, celerity warfare represents the next conceptual inflection point in the military thought—an evolution from mass to speed, from domain integration to time compression, and from firepower supremacy to decision supremacy.

## Applications of Celerity Warfare

Celerity's emphasis on time and tempo finds concrete application across multiple operational domains. The following vignettes illustrate how accelerated decision–action cycles translate into distinct mission sets and effects.

- **Cyber and Information Warfare**. Rapid, cascading cyber operations can act as force multipliers by disrupting adversary command, control, and situational awareness before effective countermeasures are mounted. When coupled with targeted information operations, such campaigns can induce confusion, sever decision links, and create temporal windows for follow-on kinetic effects.

- **Air and Space Operation**. The introduction of high-velocity delivery systems, ranging from long-endurance strike drones to hypersonic weapons and persistent space-based Intelligence, Surveillance, And Reconnaissance (ISR) compresses adversary's reaction times. By presenting convergent threats from multiple vectors nearly simultaneously, air–space campaigns erode defensive decision cycles and force hurried, error-prone responses.

- **Special Operations and Robotic Systems**. Small, agile formations augmented by autonomous platforms and robotic swarms enable rapid raids, sabotage, and exploitation deep in enemy territory. These operations leverage speed, stealth, and automation to seize fleeting opportunities, disrupt rear-area cohesion, and shape the battlespace before conventional forces can be mobilised.

- **Psychological and Cognitive Effects**. Accelerated tempo in the information domain through rapid dissemination of narratives, disinformation, and real-time media manoeuvring

can overwhelm an adversary's verification processes and induce cognitive paralysis. The resultant strategic shock degrades morale and decision quality, often producing effects disproportionate to the physical force applied.

Collectively, these applications demonstrate that celerity is not confined to a single weapon system or service arm; rather it is an operational ethic that integrates cyber, space, kinetic, robotic, and cognitive means to seize temporal advantage and impose decision dominance on the adversary.

## Celerity Warfare in Recent Conflicts

The contemporary security environment offers multiple illustrations of how celerity—the fusion of speed, automation, and decision dominance—has begun to shape the conduct of warfare across different theatres. Recent conflicts highlight how the compression of time and acceleration of operational cycles have become as decisive as firepower or mass.

**Russia–Ukraine War**. The ongoing Russia–Ukraine conflict represents the most extensive laboratory for celerity-based operations in the recent history. Both sides have harnessed digital tools, drones, and networked command systems to accelerate observation, targeting, and strike execution.[2]

- **Drone Swarms and Loitering Munitions**. The pervasive use of drones for real-time reconnaissance and strike missions has shortened the sensor-to-shooter cycle to mere minutes, transforming the battlefield into a dynamic, data-driven environment.

- **Cyber Operations**. Russia initiated pre-emptive cyber offensives against Ukrainian banks, energy networks, and government infrastructure prior to kinetic attacks, aiming to paralyse national decision-making systems.

- **Information Warfare**. Ukraine's agile use of social media, rapid dissemination of combat footage, and international outreach reversed the narrative advantage, securing diplomatic and material support faster than Russia could counter.

- **Tempo in Logistics**. Western precision systems such as high-mobility artillery rocket system, national advanced surface-to-air missile system, and Storm Shadow missiles were swiftly integrated into Ukrainian operational frameworks, demonstrating unprecedented adaptability and training acceleration under combat conditions.

**Israel Hamas Conflict (2023)**. The 07 Oct 2023 Hamas assault on Israel epitomised the principle of celerity in achieving surprise through simultaneity and speed.[3]

- **Surprise and Shock**. Coordinated attacks across multiple vectors airborne incursions via paragliders, ground breaches, and cyber disruptions overwhelmed Israeli early warning systems and defensive grids.

- **Rapid Retaliation**. Israel's subsequent counter-offensive embodied celerity driven response—high-tempo precision strikes powered by AI-assisted target generation enabled thousands of coordinated attacks within days.

- **Information Front**. Both sides engaged in real-time information warfare, where seconds of lead time in releasing narratives or visuals translated into measurable shifts in global perception and legitimacy.

**Chinese Military Exercises in the Indo-Pacific**. China's recurring military exercises and posturing around Taiwan provide insight into celerity as a tool of deterrence and psychological dominance.[4]

- **Integrated Joint Drills**. Large-scale, multi-domain exercises combining air, naval, and missile forces are conducted within compressed timeframes to signal readiness to overwhelm Taiwan before external intervention can materialise.

- **Grey Zone and Celerity Overlap**. Rapid mobilisation and swarming of fishing vessels, coast guard ships, and Unmanned Aerial Vehicles (UAVs) in contested maritime zones blur the lines between competition and conflict, forcing adversaries into perpetual reaction.

- **AI and Decision Superiority**. Massive investment in AI-enabled command and control systems seeks to compress China's OODA loop, enabling pre-emptive action and high-speed coordination across the MDO spectrum.

**Operation Sindoor (India)**. Operation Sindoor reflects India's evolving adaptation of celerity principles within its strategic and operational doctrines.[5]

- **NCW**. The integration of satellites, unmanned platforms, and real-time battlefield management systems enhanced the precision, responsiveness, and situational awareness of Indian formations.
- **Celerity in Mountain Warfare**. Rapid troop mobilisation and persistent surveillance along the Line of Control provided a decisive deterrent against surprise incursions in high-altitude environments.
- **Information and Cognitive Edge**. Swift dissemination of verified narratives during border stand-offs neutralised adversary propaganda, demonstrating the cognitive dimension of celerity in strategic communication.

In summary, above conflicts underscore that celerity warfare is no longer a theoretical construct but an observable operational reality. Across diverse contexts from Eastern Europe to the Indo-Pacific, the side capable of compressing time, synchronising domains, and sustaining tempo gains not only tactical success but also strategic and cognitive dominance.

## Synthesis: Emerging Patterns of Celerity Warfare

Across above conflicts, there emerge five recurring operational patterns of celerity warfare, as shown in Table 1.

| Pattern | Purpose | Example |
|---|---|---|
| **Pre-Emptive Cyber or Information Strikes** | Paralyse command, create confusion | Russian cyberattacks on Ukraine, Hamas ISR disruption |
| **Drone and Missile Swarms** | Compress strike cycles, saturate defences | Ukraine's drone ISR; Hamas's initial salvo |
| **AI-Enabled Command Systems** | Shrink decision time from hours to minutes | Israel's AI-assisted target generation |
| **Information Acceleration** | Dominate the narrative in real time | Ukraine's global digital outreach |
| **Psychological Shock** | Keep adversary leadership off-balance | People's Liberation Army drills around Taiwan; Hamas's multi-vector assault |

**Table 1: Emerging Operational Patterns in High-Tempo Modern Warfare**

## Significance of Celerity Warfare in Facilitating Theatrisation

- **Alignment with the Decade of Transformation**. The concept of celerity warfare aligns with the Indian Armed Forces' Decade of Transformation, which seeks to build an agile, networked, and joint warfighting structure. The principle of celerity—speed in perception, decision, and action—complements the overarching aim of theatrisation, where rapid coordination and synchronised response across multiple domains are critical to operational success.

- **Enabling Faster Decision Cycles within Theatre Commands**. Celerity warfare emphasises compression of the decision loop (OODA loop) through the use of AI, data analytics, and real-time situational awareness. Within a theatre command structure, such compression enables swift inter-service decision making, reducing bureaucratic delays and ensuring that commanders can exploit fleeting opportunities in a dynamic battlespace.

- **Enhancing Multi-Domain Synergy**. Theatrisation aims to achieve jointness across land, air, sea, cyber, and space domains. Celerity warfare strengthens this by advocating simultaneity and tempo of operations. Speed of coordination among the army, air force, and navy ensures that actions in one domain are supported or pre-empted by others, creating seamless operational integration and denying the adversary time to adapt.

- **Operational Agility and Distributed Command**. In a theatre-based structure, distributed operations and mission command become essential. Celerity warfare supports this through decentralised decision making, aided by digital networks and common operational pictures. This enables field commanders to act faster, maintaining tempo even in disrupted communication environments.

- **Countering Hybrid and Grey-Zone Threats**. Modern conflicts increasingly unfold below the threshold of declared war. Celerity warfare provides the conceptual and technological basis to outpace hybrid and grey-zone threats through rapid intelligence exploitation, swift mobilisation, and near-real-time response. Within theatre commands, this enhances deterrence and crisis management capacity.

- **Technological Catalysts for Theatrisation**. Celerity warfare promotes the infusion of network-centric warfare systems, AI-assisted decision tools, autonomous platforms, and real-time ISR grids. These technologies form the backbone of effective theatre commands, ensuring that information flows instantly and decisions translate into coordinated actions across services.

- **Psychological and Strategic Advantage**. Sustained high-tempo, well-coordinated theatre operations impose cognitive overload on adversary decision hierarchies, leading to dislocation and strategic paralysis. Celerity, thus, contributes not just to tactical success but to the psychological dominance that underpins theatre-level deterrence and coercive capability.

- **Foundation for Future Joint Doctrines**. Celerity warfare provides a conceptual bridge between speed, technology, and jointness, reinforcing the Indian Armed Forces' move toward MDO and information-centric operations. Its integration into theatre doctrines can shape a new warfighting culture based on tempo, adaptability, and real-time responsiveness.

**Challenges and Risks in High-Velocity Contemporary Warfare**

| Challenge | Risk and Impact |
|---|---|
| **C2 Overload** | Decision paralysis, uncoordinated actions |
| **AI and Automation Errors** | Civilian harm, trust breakdown, accountability gaps |
| **Cyber and Information Weaknesses** | System disruption, data corruption, misdirection |
| **Escalation Risks** | Miscalculation, pre-emption, loss of strategic control |
| **Legal and Ethical Ambiguity** | Human Rights violations, blurred lines of war and peace |
| **Doctrinal Inertia** | Poor adoption, misalignment with high-speed requirements |
| **Logistics and Sustainment Limits** | Unsustainable tempo, operational pauses |
| **Narrative Missteps** | Loss of legitimacy, political backlash |

**Table 2: Challenges and Risks in Celerity Warfare**

## Way Ahead—Indian Context

**Doctrinal Integration**. The adoption of celerity warfare must begin with its inclusion in the 'Joint Warfighting Doctrine' of the Indian Armed Forces. The concept should be institutionalised as a guiding operational philosophy that emphasises speed in perception, decision, and action as the core of future conflicts. This would involve revising existing doctrines to integrate tempo-based operations, distributed command structures, and cognitive dominance as the key determinants of victory. Joint doctrines should also articulate clear frameworks for how speed can be achieved through decision-loop compression, automation, and simultaneous operations across domains.

**AI-Enabled Decision Ecosystem**. To realise the essence of celerity warfare, the Indian Armed Forces must build an AI-driven command, control, communications, computers, ISR ecosystem capable of real-time information acquisition, fusion, and dissemination.[6] AI, big data analytics, and quantum computing can drastically reduce the decision-making timeline, empowering commanders at all levels with predictive insights and faster response options. Integrating such systems with Defence Cyber Agency, Defence Space Agency, and Defence Intelligence Agency networks will ensure a seamless flow of information across services, enabling speed and precision in operational execution.

**Multi-Domain and Theatre Synergy**. Celerity warfare naturally aligns with India's ongoing theatrisation initiative, which seeks unified command structures for land, air, maritime, cyber, and space operations. Achieving speed in modern warfare demands synchronised actions across the these domains. The Indian Armed Forces should establish Joint MDO Cells within theatre commands to ensure simultaneous and mutually reinforcing effects. Rapid coordination between army aviation, air force strike assets, naval platforms, and space-based ISR systems will enable theatre commanders to exploit fleeting tactical and strategic opportunities.

**Organisational and Training Reforms**. The traditional hierarchical decision-making structure must evolve to support decentralised command and mission-type tactics. Commanders at tactical and operational levels should be empowered to take rapid, independent decisions within the broad framework of higher intent. Training institutions such as the Indian National Defence University, Army

War College, and Defence Services Staff College should incorporate modules on decision agility, AI-enabled operations, and tempo-based warfare. Simulation-based learning, wargaming, and real-time networked exercises should be used to condition leadership to operate under compressed timelines and high information load environments.

**Technological Modernisation**. Modernisation must focus on acquiring and integrating technologies that enable speed and simultaneity. This includes autonomous aerial and ground systems, loitering munitions, hypersonic platforms, electronic warfare systems, and AI-assisted targeting networks. The creation of manned–unmanned teaming capabilities within army aviation and air force assets would allow for rapid sensor-to-shooter linkages.[7] Investments in indigenous networked sensor grids, real-time battlefield management systems, and secure tactical communication networks are essential to sustain operational tempo across dispersed battle spaces.

**Cognitive and Information Dominance**. Celerity warfare is not limited to physical speed; it extends to the cognitive dimension of warfare. Achieving and maintaining information superiority ensures that the adversary's decision loop is disrupted or rendered irrelevant. The armed forces must strengthen capabilities in cyber operations, information warfare, psychological operations, and electronic deception. Establishing 'Information Warfare Cells' and 'Cognitive Operations Cells' under each theatre command would ensure rapid dissemination of information, perception management, and disruption of adversary narratives, thereby, contributing to strategic paralysis.

**Integration with *Atmanirbhar Bharat* (Self-reliant India) Initiatives**. A sustained celerity-driven transformation requires indigenous innovation and technological autonomy. The armed forces should deepen collaboration with Defence Research and Development Organisation, private defence start-ups, and academia under the *Atmanirbhar Bharat* framework to develop tailored AI, robotics, and communication systems. Indigenous production of rotary UAVs, battlefield management software, and autonomous ISR platforms would ensure resilience, rapid upgrade cycles, and reduced dependence on foreign systems—all vital for maintaining operational speed and adaptability.

**Joint Experimentation and Wargaming**. Concept validation and refinement are crucial for embedding Celerity warfare into operational culture. Establishing Tri-Service Wargaming and Simulation Centres under Headquarters Integrated Defence Staff and theatre Commands would facilitate experimentation in high-speed, multi-domain battle scenarios. These platforms should focus on testing joint decision-support tools, command autonomy models, and AI-assisted operations. Insights from such wargames can guide doctrinal development, training, and procurement, ensuring that celerity remains a practical and sustainable warfighting approach.

## Conclusion

Celerity warfare encapsulates the emerging essence of a 21st Century conflict—where superiority is no longer determined by mass or firepower, but by speed, adaptability, and cognitive dominance. It represents a decisive shift from reactive to anticipatory warfare, where the ability to perceive, decide, and act faster than the adversary defines success. For the Indian Armed Forces, embracing this paradigm is integral to achieving the objectives of the Decade of Transformation and the ongoing process of theatrisation. By integrating advanced technologies, AI-driven decision ecosystems, and multi-domain synergy, the armed forces can create a warfighting architecture that is agile, autonomous, and information-centric. Celerity warfare, thus, offers not just an operational edge, but a strategic framework for future readiness—enabling India to maintain initiative, impose decision paralysis on adversaries, and secure dominance across the full spectrum of conflict in the evolving battlespace of tomorrow.

## Endnotes

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## From the Archives

# THE CANNON AND THE CANNONEERS OF BYGONE INDIA.

By

C. GREY.

Incredible as it may seem, the evolution of the cannon from a mere metal hollow cylinder, closed at one end, and having a range to be counted in hundreds of yards, to the present day highly scientific instruments of destruction, throwing a projectile heavier than many of the ancient guns themselves to a range counted in tens of miles, has taken place within the lifetime of many who have not yet reached the allotted span.

The ordnance of Elizabethan days were identical in all but name with the cannon used in the Crimea, the Indian Mutiny, and the opening stages of the American Civil War, and the cannoneers of Drake, Sir John Hawkins, and the fighting Veres of the Dutch War of Independence in Armada days, would have found no difficulty in stepping straight into the places of a gun crew of the 'sixties. Nor would those of Captain Best, who gave the Portuguese their first lesson at Swally in 1612, of Captain Andrew Shilling who beat them again at Jask, and of the doughty merchant captain John Weddell, who took Ormuz in 1622, and shattered the Portuguese fleets in the Persian Gulf in 1625, have been any more backward in handling guns used as late as the 'seventies, when muzzle-loading ordnance were still in vogue in the British artillery. So far as regards rapidity of fire, the old gunners were quite good, judging by John Weddell's report that "our ordnance plied so fast as small shotte, until the enemie fledde before us like unto smoake before the winde." As the Dutch and English and the opposing Portuguese fleet were said to have fired no less than 16,000 shot in one day, his boast of rapid fire is justified. Certainly he says nothing of accuracy; perhaps a wise omission.

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The sonorous and romantic titles of Cannon Royal, Culverin, Demi-Culverin, Basilisk, Minion, Falconet, Murtherer, Patereroe, which entrance us in the pages of Purchas's "The World Encompassed," and that fascinating romance of the Armada, wherein figure Salvation Yeo and Amyas Leigh, were bestowed on ordnance practically identical with the Victorian cannon of 64-pounders downwards. The ranges given by Sir William Monson in his "Naval Tracts" of 1615, which give from 2,000 to 800 yards at random (extreme elevation) to 800 yards down to 150 point blank were little exceeded by Victorian cannon. It is on record that so late as the year 1838, the Maharajah of Lahore was enchanted with the skill of a British artillery officer, who, on the plain at Mian Mir, demolished an open umbrella with a nine-pound shot at 300 yards, a feat considered by all a marvel of skill and accuracy.

To confine ourselves to Indian cannon, and the cannoneers who worked them. Though artillery was introduced by the Portuguese in the 17th century, and widely used in Indian Wars, until considerably later the guns were cumbrous and badly worked. Noise and size were considered far more important than range and accuracy. To this obsession were due such monsters as the Malik-i-Maidan of Bijapur, the Great Gun of Agra, weighing some twenty tons, which lies buried in the sands of the Jumna, and a number of others, all just as unwieldy and useless, which lie corroding away in the ancient forts or near the decayed cities of southern India and Bengal. Many of them could not be mounted, and the majority were seldom, some even never, fired, for, being incapable of elevating or traversing, the target was the universe, and the shot went as far as the powder could carry it, and in whatever direction the muzzle happened to point. Of this description were the guns used by the Persians in many of their sieges in Khorasan. These guns were cast on the spot, within range of the city, the elevation and direction being guessed at. As the target was some miles in extent, they must have hit something or other, but most probably the effect was more moral than material. Such guns were broken up, and in that condition were removed to the next siege, where the process was repeated.

With few exceptions, mostly imported from Europe, the guns, great and small, used by the Moguls and others, were of brass. Even the field guns of the East India Company were made of this metal until the end of their reign. Until the mid-nineteenth century, their iron siege guns were imported from England. The reason for the use of brass was not preference, but necessity, for iron was scarce, and local skill and facilities rendered it practically impossible for any but the smallest to be made of this material. On the other hand, the supply of brass was inexhaustible, for every village and town possessed innumerable brass or copper utensils, which in time of need were requisitioned. For instance, the Zam Zamma of Lahore, and its sister gun, were cast in the year 1759, from this sort of material provided by the requisition of the household utensils of every Hindoo in Lahore. Another curious material used was that of the bells of the old Jesuit Church established in Agra in 1624. When the Jesuits fell from favour, Jehangir demolished their church and gave the peal of bells to a Jat chief. They were found in the possession of his descendants by the French adventurer, Madec, in 1764, and though he endeavoured to save them, the need for guns was so great that the bells were melted down into an 18-pounder gun. It was by means of such material that Thomas, Sombre, De Boigne, Madec and others provided themselves with guns, or replaced those which they had lost. Nothing was easier than to replace guns, provided the beaten force was not too badly routed or closely followed up, for they would halt in safety, requisition the material, cut down a few shisham trees for carriages, and in a few weeks stand forth fully equipped with complete batteries. As showing how late brass guns were used, that lately used as a time-gun at Lahore was cast by A. Wilson at Cossipore in 1842, and was used in the Punjab War of 1849. This class of gun lasted until much later.

But even more interesting than the ancient ordnance of India, used by the native princes, were the men who worked these guns, for from the time of Jehangir, right down to that of Tippoo Sahib, Scindia and Holkar, Europeans were the leading artillerists in Indian Armies. The history of these men has yet to be written;

indeed it can be, for except for scanty mentions of them in the pages of Tavernier, Bernier, Manucci, Irvine, and a few others, together with the records of the East India Company, but little is available.

The first mention we find is in the Diary of John Jourdain who records that as early as 1610, William Hawkins, the merchant ambassador of the East India Company to Jehangir, led sixty Europeans in Jehangir's service to a church parade at Agra. As they marched under the Red Cross, we may conclude that they were English, or their fellow Protestants, Dutchmen, who at all times were almost as numerous as the English in the native armies. We do not take count of the Portuguese, who were much of the same mixed race as those now called Goans.

William Finch, who was in Lahore in 1613, mentions that he was accompanied by Captain Boys, three Frenchmen, and a Dutch engineer, who were leaving the service of Jehangir, and with him all died at Baghdad on the way home overland. The importance of the European artillerymen, and the length the Moghul emperors were prepared to go to obtain them and retain their services, is amusingly described by Nicolo Manucci, who himself was at one time chief gunner to Dara Shekoh, brother of Aurangzeb. But here it is necessary to explain that Manucci, who wrote his memoirs fifty years later, seems to have confused Akbar and Jehangir, for Akbar died in 1605, whereas the English did not arrive at Surat until 1608.

The anecdote runs:—

"Finding that his gunners were of no use, and knowing Europeans to be the most expert, the king asked the Indian governor of the Fort of Surat to send him a good gunner. There was at this time a very skilful Englishman at Surat, who was sent to the king, and engaged at a salary of Rs. 500 per month. However, being very fond of strong waters, which could not be procured at Agra, owing to the Mohamedan Law, the gunner in spite of all those rupees was most unhappy. One day the king directed the Englishman to fire at a sheet which had been stretched on two poles on the other side of the river. The gunner intentionally fired the shots in the air, and the king was much put out, thinking he had no skill. He asked the gunner

why he had missed the target, when he was reputed to be so skilful. The Englishman answered that he could not see until he had drunk wine; whereupon the king commanded that they should bring him spirits, of which there was no lack, for they were given to the elephants to increase their courage. When he saw the spirits, the Englishman seized the bottle and put it to his mouth with the same eagerness that a stag rushes to a crystal spring. One draught he finished the lot, and then licking his moustache turned towards the target, and rubbing his eyes, which he said were now clear, directed them to take away and replace it with a pot on a stick, which he demolished with the first shot. The king was so amazed at seeing such a good shot that he gave instant orders to permit the Europeans to distil and drink whatever spirits they chose, saying that without spirits they were like fish out of water and could not see straight. To this day the Feringhis alone in the Moghul empire have the privilege of distilling spirits."

The gunner must have been as doughty a drinker as he was a gunner, for the spirits distilled for elephants were the crudest and strongest of arrack. But at all times, until recently, gunners were always doughty drinkers. In 1642 we find Peter Miller and Daniel Chester, and an unknown Dutchman, gunners to the Persians at the siege of Kandahar, without whose aid the place would not have been taken. Most scurvily were they treated by the Persians, who after the siege dismissed them to find their way back to India as best they could. Two of them died on the journey.

In 1653, Nicolo Manucci mentions that Thomas Roach and Reuben Smith were chief gunners of two hundred Europeans in the service of Shah Jehan; John White and John Campbell being his gun founders, a position the latter utilised to cast the Royal Arms of England on the Moghul ordnance. A year or so later Manucci himself was chief gunner to Dara Shekoh, commanding about eighty more English, Dutch, and Portuguese gunners whose pay was Rs. 80 to Rs. 200 per month each, great money for runaway seamen, whose pay under the company was limited to 25 s. per month.

The spearhead of the army of Aurungzebe was composed of 100 cannon, each having a European gunlayer who did nothing else but superintend the loading and lay the gun, the remainder being done by Indian matrosses (gunners). The oldest European tomb recorded north of Hindustan was that of Joseph Hicks, gunner to Mahabat Khan, Governor of Kabul. Hicks died there in October 1666, and the tomb was seen by Masson, the traveller, in 1832, and by numerous officers and travellers who were in Kabul between that date and 1842. However, it had disappeared when sought in 1880, probably having been destroyed on account of the interest shown in it.

About the same time John Barnes was with Asalat Khan in Balkh, a very far cry from Surat, but no further, or indeed not so far, as other Englishmen travelled in search of employment before and after. Dropping down the ages we find many mentions of desertions from the Company's and merchant services, to the armies of the native princes, where they were always in demand as gunners and received high pay. Amongst such was Thomas Platt, who was with Mahomed Amin Khan at Dacca in 1670. Like a number of others, Platt met his death at the hands of his employer, who, being offended at defiance by the Englishman, had him and his mates bound hand and foot, put aboard a boat, and sunk in mid-stream of the Meghna.

In 1711, the Dutch ambassador to Bahadur Khan at Lahore mentions that John Wheeler, commander of the Feringhis in that service, ranked as a commander of 500 horse, and drew a salary of Rs. 2,000 a month. This does not imply that the numbers of men under him was so considerable, but does mean that it was considered very important. In 1722 Clement Dowson, who with Nathaniel Webb, James Lyons, and William Hocking, were gunners to the Nawab of Gujerat, mentioned that in the opposing army there were twenty others, English and Dutch, and sixty more at Delhi alone, all "well paid and considered."

In 1726, James Plantain, once a pirate king in Madagascar until the place became too sultry for even him, set sail thence with the surviving dozen of his men, to join Angria Pequera, the arch-pirate of the western coast, and to become himself his chief gunner, and the others commanders of pirate vessels. In 1750, William Irvine mentions an unnamed Irishman as gunner to the Subah of Bengal, and from thence onwards down to 1805, Europeans in such employment were even more numerous.

The Nawab of Oudh employed Sombre, commander of a company of freelances, who had a hundred of the rascality of all nations as gunners with him. At the same time a Frenchman named Madec served Main Jafir and others with another free company of near upon two hundred Europeans, mostly Frenchmen, firstly renegades from their own country and then deserters from the British. George Thomas, the Irish raja of Hariana, served the Polygars of Madras and the Nawab of Hyderabad as a gunner before joining Begum Sumru, and later becoming independent; while his conqueror, the Frenchman Perron, who commanded the great army of Scindia, and was dictator of Hindustan for some years, also commenced life as a gunner in native service, after deserting from the French.

James Skinner records that over one hundred European and Eurasian gunners in the army of Scindia were slaughtered at their guns, in the great battle of Malpura, between Scindia and the Rajputs of Jaipur. The artillery of Ranjit Singh was not, as generally supposed, brought to its great excellence by his French generals, but by deserters from the British artillery, such as John Brown and others, some of whom actually fought against us. So much for the men.

Let us conclude with a brief description of how the guns worked by them were made, premising that from the Zam Zamma to the 3 and 6-pounder battalion gun, the process was identical in all but bulk. For this we are indebted to Major Reynell Taylor, a British political officer who was engaged in settling the country in the period between the two Sikh wars, and was escorted by a battery and some battalions. belonging to the Durbar. These were under the

Eurasian, Colonel John Holmes, and the guns having been much scored by the hammered iron shot used with them, became unserviceable. Hence they were recast. Major Taylor's journal reads:—

"8th December 1848. Saw the preparations for casting guns. It is ingenious but simple. The first process is the formation of a mud model of the future gun round a pole. The pattern is beautifully made and shaped and moulded to the exact size required. When dry, the mud composition of the mould was centred on this pattern to a thickness of about half a foot. This was allowed to harden. After this, the centre pole was withdrawn, and the pattern crumbles to pieces within the mould. This mould is now fire hardened to brick-like consistency.

"Into the mould the metal is run from a mud furnace. Before running the metal, an iron bar covered with composition, and moulded to the exact size of the bore, is suspended within the mould in the exact centre, to form the bore. The gun is cast in a vertical position. Thus the whole gun, trunnions and all, is cast at once, and turned out of the mould nearly ready for use."

A few days later, Major Taylor records in his journal: "The new guns being now mounted and ready for use, were tried and found to be quite good." When we add that the shot were of hammered iron or lead, and the shell of brass or lead, costing, the former a rupee and the latter Rs. 3 each, it will be seen that both cannon and projectiles have gone a very long way since the year 1848.

# Cognitive Warfare: India's Approach to Influencing Perception and Behaviour

**Commander Arun Kumar Yadav[@]**

**Abstract**

*Warfare has evolved from conventional kinetic battles to multi-domain, hybrid conflicts where perception, cognition, and narrative dominance are as decisive as physical force. Cognitive warfare—recognised by North Atlantic Treaty Organization as the '6th Operational Domain'—targets human cognition by influencing perceptions, emotions, and decision-making through disinformation, psychological operations, artificial intelligence, and digital platforms. For India, a diverse democracy operating in a complex security environment, cognitive warfare presents both a challenge and an opportunity. Adversaries exploit social fault lines, digital ecosystems, and media vulnerabilities to shape narratives and erode institutional trust. While India has embedded elements of cognitive defence within its information warfare doctrines, gaps remain in unified command structures, technological integration, and resilience mechanisms. This essay analyses the evolving concept of cognitive warfare, assesses India's threat landscape through comparative and critical feature analysis, and proposes a whole-of-government roadmap to strengthen narrative dominance, institutional coordination, technological capability, and societal resilience in the emerging battlespace of the mind.*

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## Introduction

Warfare in recent times has undergone a profound transformation as compared to the old days of conventional, kinetic battles fought primarily on land, sea, and air. Earlier, military victory was defined by territorial control, numerical strength, and physical destruction of the enemy's forces. Today, however, conflicts are increasingly multi-domain and hybrid, blending traditional combat with cyber operations, information warfare, economic coercion, and cognitive influence campaigns. Modern warfare prioritises speed, precision, and perception—where disrupting an adversary's decision-making, controlling narratives, and influencing public opinion can be as decisive as battlefield victories. The rise of digital technologies, social media, Artificial Intelligence (AI), and long-range precision systems has blurred the lines between war and peace, state and non-state actors, and frontlines and home fronts. This shift reflects a transition from wars of attrition to wars of cognition, where the decisive battles are often invisible and fought in the information and psychological domains.

Towards addressing the changing concepts of modern warfare, the Indian Armed Forces have so far been able to maintain with the global curve and address the security threats posed by its adversaries. However, being the world's largest democracy, India faces a complex security environment. Adversaries have sought to exploit India's social, political, and cultural diversities through disinformation campaigns, psychological operations, and digital influence strategies. Therefore, cognitive warfare is emerging as both a challenge and an opportunity.

While the concept of attacking the mind is ancient[1], the term 'Cognitive Warfare' emerged only in recent years. It appeared in the North Atlantic Treaty Organization (NATO) reports in 2020.[2] The terms and concept of 'National Cognitive Security' and 'Mind Superiority' have been mentioned in Chinese doctrines.[3] It represents an evolution beyond psychological or information warfare, targeting human cognition more deeply using advanced technologies and cross-domain strategies. It extends beyond traditional information warfare, aiming not merely to control the information space but to shape the adversary's cognition itself.

Cognitive warfare has gained increasing prominence in both global and Indian strategic discourse. NATO's recognition of the concept as the '6th Operational Domain' highlights its centrality in shaping future conflict scenarios. Unlike traditional forms of information warfare that focus on information infrastructure, cognitive warfare directly targets the human mind by manipulating perceptions, emotions, and decision making. This battlefield of ideas and narratives has blurred the boundaries between war and peace, compelling states to develop resilience against manipulation as well as their own capabilities to project influence.

For India, a nation navigating a complex security environment, cognitive warfare presents both an existential challenge and a unique opportunity. This essay analyses India's approach to cognitive warfare, situating it within broader global trends.

## Cognitive Warfare

**Defining Cognitive Warfare**. The term cognitive warfare has not been clearly defined, except in NATO Allied Command Transformation 2023, wherein it has been defined as "Activities conducted in synchronisation with other instruments of power, to affect attitudes and behaviour by influencing, protecting, or disrupting individual and group cognition to gain advantage over an adversary".[4]

**Absence of Formal Doctrine**. It is essential to underscore that while there are articles and analysis reports from Indian think tanks (e.g., Manohar Parrikar Institute for Defence Studies and Analyses) discussing cognitive warfare, the Indian Government and the Indian Armed Forces have not yet published a formal doctrinal or policy document that explicitly defines cognitive warfare in the same way that NATO has.

**Nature of Cognitive Warfare**. Cognitive warfare represents the manipulation of perceptions, behaviours, and decision-making processes to achieve strategic objectives without kinetic force. It blends disinformation, propaganda and psychological operations with advanced technologies such as AI, social media platforms, and big data analytics.

**Types of Cognitive Warfare**. Like any other warfare, cognitive warfare, which is often described as the 'Battle for the human mind', has both offensive and defensive approaches. While

offensive cognitive warfare is concerned with manipulating the adversary's mind, defensive cognitive warfare seeks to secure one's own cognitive domain by anticipating, exposing, and neutralising hostile influence efforts. The key differences in the approaches for these two types of cognitive warfare are as summarised below:

| Dimension | Offensive Cognitive Warfare | Defensive Cognitive Warfare |
|---|---|---|
| **Aim** | Manipulate adversary's cognition to influence decisions and strategic behaviour | Protect and reinforce one's own cognitive re silience and clarity |
| **Tactics Employed** | Reflexive control, psychological pressure, narrative shaping, legal and media manipulation | Pre-bunking, AI detection, adaptive doctrines, coordinated societal defences |
| **Ethical Framing** | Often exploit ambiguity and lack of accountability | Bound by ethical and legal norms; focused on protection, not coercion |
| **Exiting Policy and Doctrines** | Russia's doctrine of reflexive control, and China's 'Three Warfares'[5] strategy | Democracies and alliances (e.g., NATO) focusing on transparency, media literacy, and awareness[6] |

**Table 1: Comparative Dimensions of Offensive and Defensive Cognitive Warfare**

**Cognitive Warfare: Components and Tactics**. There are numerous examples from history where attacks were directed at the information systems and the mindset of an adversary's general public. However, cognitive warfare is a relatively new term that manifests in psychological, informational, technological, cultural, and narrative forms. It blends traditional information and propaganda warfare with cutting-edge tools like AI, social media manipulation, and neuroscience to influence thought and behaviour. The common tactics used for waging cognitive warfare during wartime, peacetime, and no-war-no-peace situations have been covered below:

- **Wartime Cognitive Warfare Tactics**. During open conflicts, cognitive warfare is integrated with kinetic operations to weaken enemy morale, disrupt decision making, and manipulate perceptions. Some of the commonly used cognitive warfare tactics used in wartime are mentioned below:
  - **Psychological Operations (PSYOPS)**. Propaganda, false narratives, and misinformation targeting soldiers and civilian populations to erode willpower.
  - **Deception (Maskirovka, Camouflage, Feints)**. Creating false perceptions of troop movements, strength, or intentions.
  - **Information Denial**. Censoring, jamming, or manipulating communication channels to restrict adversary's situational awareness.
  - **Shock and Awe (Perception of Overwhelming Force)**. Demonstrating overwhelming firepower to psychologically break resistance.
  - **Exploitation of Civilian Media**. Disseminating images and stories of suffering, casualties, or destruction to reduce public support for the war.
  - **Targeting Leadership Perception**. Spreading disinformation to confuse enemy decision-makers and weaken command cohesion.
- **Peacetime Cognitive Warfare Tactics.** In peacetime, the aim is long-term shaping of perceptions, influencing societies, and preparing the ground for future advantage without overt conflict. Some of the commonly used cognitive warfare tactics used in peacetime are mentioned below:
  - **Narrative Building**. Promoting national ideology, history, or 'Civilisational' values through media, academia, and diplomacy.
  - **Disinformation Campaigns**. Spreading subtle propaganda to polarise societies, erode trust in institutions, and manipulate foreign audiences.

- **Cultural Diplomacy and Soft Power**. Using movies, literature, education exchanges, and cultural symbols to create favourable perceptions.

- **Economic Influence as Cognitive Tool**. Framing investments, loans, or trade dependency as benevolence, shaping psychological loyalty.

- **Digital Manipulation**. Social media bots, trolls, and influence campaigns to mould opinions and attitudes gradually.

- **Civilian Targeting**. Indoctrination, psychological conditioning, or selective exposure of populations to controlled narratives.

- **No-War-No-Peace (Grey Zone) Cognitive Warfare Tactics**. In ambiguous situations (e.g., border tensions, insurgencies, hybrid warfare), the cognitive domain becomes a decisive battlefield to blur lines between war and peace. Some of the commonly used cognitive warfare tactics used in no-war-no-peace situations are mentioned below:

  - **Ambiguity Creation**. Preventing clear attribution of hostile acts (cyberattacks, sabotage, fake news), confusing both governments and public.

  - **Rumour Propagation**. Fuelling mistrust and suspicion in contested regions or between allies.

  - **Hybrid Propaganda**. Combining military posturing with information campaigns to psychologically intimidate without escalation.

  - **Legitimacy Warfare**. Questioning the legitimacy of governments or movements, influencing international opinion and legal narratives.

  - **Information Saturation**. Flooding with contradictory narratives to create confusion ('Firehose of Falsehood' tactic).

  - **Exploitation of Local Fault Lines**. Amplifying ethnic, religious, or political divisions to weaken the target from within.

## India's Strategic Threat Landscape: Cognitive Warfare

**Threat Analysis**. In the Indian context, cognitive warfare intersects with a long-standing history of information influence and perception management. Analysis of the cognitive threat landscape would involve considering following aspects:

- India has been a consistent target of disinformation campaigns, particularly from Pakistan, where its military's media wing Inter-Services Public Relations (ISPR) has deployed propaganda to undermine New Delhi's legitimacy in Kashmir and to exploit communal fault lines.[7] Pakistan, through its ISPR, has perfected disinformation campaigns targeting Kashmir and India's democratic institutions.[8]

- Chinese influence operations, by contrast, are more subtle, relying on economic leverage, media partnerships, and the 'Three Warfares' doctrine to build pro-China narratives in South Asia.[9]

- India's democratic nature makes it both resilient and vulnerable in the cognitive sphere. On one hand, pluralistic media environment provides room for diverse narratives; on the other, it creates space for adversarial actors to seed misinformation and polarising content.[10]

- Non-state actors exploit digital platforms for radicalisation. Emerging technologies like AI-driven deepfakes and bot networks multiply the scale of these threats.[11]

- India's fragmented cyber and media regulatory mechanisms are inadequate in the face of AI-driven threats such as deepfakes and bot amplification.[12]

**Comparative Capability Analysis**. It is understood that there are no permanent friends and enemies in global geopolitics and the domain of cognitive warfare lies beyond the kinetic warfare, which provides enough latitude to potential adversaries to maintain deniability. Therefore, the threat in the form of cognitive warfare can be posed by any country. However, towards analysing the cognitive warfare capability of India, a comparative analysis with

present day adversaries has been undertaken and the outcome is as tabulated below:

| Country | Strategic Objectives | Doctrinal Basis | Key Tools and Methods | References |
|---|---|---|---|---|
| **China** | Shape global opinion on Indo-Pacific disputes, delegitimise adversaries, expand the Communist Party of China's ideological influence. | 'Three Warfares' doctrine (psychological, media, legal warfare) integrated into People's Liberation Army strategy. | State-controlled media (Xinhua News Agency, China Global Television Network), cyber ops, lawfare, Confucius Institutes, influence ops on social media. | Jamestown Foundation (2016)[13] ; Wilson Centre (2017).[14] |
| **Pakistan** | Destabilise Indian democracy, internationalise Kashmir issue, erode India's legitimacy. | ISPR-led information warfare targeting India, especially Kashmir. | Disinformation campaigns, fake social media accounts, jihadist propaganda networks, diaspora mobilisation. | Strategic Studies Institute, National Defence University Pakistan (2021)[15] ; Observer Research Foundation (2021).[16] |
| **India** | Defend democracy, secure digital space, counter adversarial narratives, project Indian soft power globally. | Joint Doctrine of Armed Forces (2017); Computer Emergency Response Team (CERT)-In advisories; Election Commission of India (ECI) social media guidelines; Digital Personal Data Protection Act (2023). | Narrative-building via soft power (Bollywood, yoga, diaspora), cybersecurity mechanisms, counter-disinformation task forces, AI/natural language processing projects like Bhashini. | Ministry of Defence (MoD) (2017)[17] ; Ministry of Electronics and Information Technology (MeitY) (2023)[18] ; Manohar Parrikar Institute for Defence Studies and Analyses (2023).[19] |

**Table 2: Comparative Analysis of Cognitive Warfare Capabilities**

## Critical Feature Analysis (CFA)

**Critical Features**. Development of India's approach to Cognitive warfare entails analysis of the critical features, i.e., Critical Capabilities (CCs), Critical Requirements (CRs), and Critical Vulnerabilities (CVs). The CCs are those capabilities which could contribute towards achievement of the objective. The CRs are those resources, means, or conditions which are necessary pre-

requisites in order to generate or apply 'Critical Capability'. CVs are those critical weaknesses or their elements that are especially vulnerable to enemy action.

**Outcome of CFA**. The outcome of the analysis is tabulated below:

| Critical Feature | Concept | Ways and Means |
|---|---|---|
| **CCs or key pillars of India's cognitive warfare approach** | Strategic Narrative Construction. | Use of *'Vishwa Guru'* (Global Guide)[20] and 'Digital India' narratives.<br>Projection of India as the world's largest democracy. |
| | **Information Dominance.** Research and Analysis through centres dealing with national and international information towards preventing propagation of disinformation by adversary. | Following centres are likely to play a key role, particularly with respect to maritime information:<br>■ Information Fusion Centre–Indian Ocean Region (IFC-IOR)[21] through collaboration with partner countries<br>■ National Maritime Domain Awareness Centre[22] through collaboration between national maritime stakeholders. |
| | Augmentation of cyber infrastructure. | Establishment of Defence Cyber Agency (2019). |
| | Intelligence and Surveillance[23] | National intelligence grid integration, AI-enabled open-source intelligence for counter-terror narratives,<br>Use of Defence Research and Development Organisation's (DRDO) cyber labs for threat anticipation. |
| | Cultural and Civilisational Leverage[24] | Through following soft power assets:<br>■ Use of Yoga Day at the United Nations<br>■ Bollywood<br>■ Indian diaspora. |
| | Presenting an Indian perspective on global news | Indian-owned, based, and operated international broadcasters and media houses. |
| **CRs** | Robust Legal-Policy Framework | Formulation of following doctrines or strategies:<br>■ Unified cognitive warfare doctrine<br>■ Comprehensive information warfare strategy. |
| | Technological Infrastructure[25] | AI-based fact-checking (Press Information Bureau [PIB], MyGov); Indigenous 5G rollout to secure communications. |

| Critical Feature | Concept | Ways and Means |
|---|---|---|
| | Skilled Human Capital | Academic programs at Indian Institutes of Technology, Indian Institutes of Management, or other academic institutions on AI and psychology; Defence PSYOPS units. |
| | Public Resilience Mechanisms | Digital literacy campaigns (G20 Cyber Safety for Children);<br>Fact-check initiatives (PIB Fact Check, BOOM Live). |
| | Strategic Alliances | Bilateral and multilateral partnership on disinformation countermeasures. Institutions and centres like IFC-IOR can play a significant role. |
| | Funding and Research and Development | DRDO's AI and robotics projects; Digital India Innovation Fund; Startup India for deep-tech in cognitive tools. |
| | Usage of Social Media platforms | Indigenously developed social media platforms of international standards. |
| **CVs** | Fragmented Institutional Response | Cyber warfare spread across the domains of MoD, Ministry of Home Affairs (MHA), MeitY, Ministry of External Affairs (MEA) without a unified command and control set-up. |
| | Digital Ecosystem Dependency | Reliance on Meta, X (Twitter), YouTube for narratives; vulnerability to foreign platform policies and manipulation. |
| | Internal Societal Faultline | Exploitation of communal tensions, caste politics, separatist sentiments (e.g., Khalistan online propaganda).[26] |
| | Cybersecurity Gaps | Exposure to deepfakes, bot-driven disinformation, and ransomware targeting political narratives (e.g., 2021 power grid cyberattack linked to China). |

**Table 3: Critical Factor Analysis (India's Approach to Cognitive Warfare)**

## India's Cognitive Warfare Strategy

**Current Landscape**. It is worth noting that some of the critical capability gaps have already been addressed as a part of India's cognitive warfare strategy, embedded within its doctrines of information warfare and perception management. The various measures instituted as a part of India's cognitive warfare strategy and gaps observed have been enumerated in subsequent paragraphs.

**Doctrinal Level**. At the doctrinal level, the Indian Armed Forces have increasingly acknowledged the importance of cognitive influence as under:

- The Joint Doctrine of the Indian Armed Forces (2017) explicitly recognises information as a warfighting domain and stresses the need for dominance in PSYOPS and perception management.[27] However, analysts note that implementation has been slow, with the Indian Armed Forces yet to operationalise a dedicated Information Operations Command akin to those in the United States or China.[28]

- Joint Doctrine for 'Multi-Domain Operations' has been launched recently and maps the way forward for synergised employment of the Indian Armed Forces across land, sea, air, space, cyber, and cognitive domains towards strengthening jointness amongst them and ensuring future readiness.[29]

**Participation of Civilian Institutions**. Civilian institutions, particularly the ECI and CERT-In, have attempted to fill these gaps by issuing social media guidelines, countering deepfake threats, and conducting awareness campaigns. These reflect India's recognition that cognitive warfare is as much a governance challenge as it is a military one.

**Inclusive Digital AI Initiatives**. MeitY has launched initiatives such as the IndiaAI Mission and Bhashini (an AI-powered language platform) to ensure inclusivity in India's digital ecosystem.[30] These programs are designed to strengthen India's narrative projection by enabling content creation in regional languages and enhancing digital literacy. It has been acknowledged by some of the analysts that such measures are critical not only for digital inclusion but also for insulating citizens from disinformation campaigns that exploit linguistic diversity.[31]

## Recommended Roadmap: Augmenting India's Cognitive Warfare Capabilities

**Methodology Adopted**. Formulation of way forward for augmentation of cognitive warfare capabilities has primarily been derived from the threat assessment and critical features analyses. The aim is to exploit the CCs to their potential, protect the CVs,

and meet the CRs which are pre-requisites for the CCs to be applied against the adversary.

**Whole-of-Government Approach**. The evolving nature of cognitive warfare necessitates a whole-of-government approach, as the challenge extends far beyond the mandate of the armed forces alone.[32] Cognitive warfare targets the perceptions, behaviours, and decision making of individuals and societies, exploiting vulnerabilities in domains such as media, education, technology, and governance. India, with its diverse socio-political fabric and complex security environment, requires a coordinated framework that integrates the efforts of defence, intelligence, cyber, information, diplomatic, and economic institutions. Thus, a whole-of-government approach is essential to protect India's information ecosystem while leveraging cognitive tools for influence in the regional and global arena.

**Centralised Command and Control**. Ministries like MoD, MEA, MHA, MeitY as well as agencies regulating social media, education, and strategic communications must operate in synergy to counter disinformation, strengthen societal resilience, and project India's narrative globally. A fragmented or siloed response risks leaving gaps that adversaries can exploit through propaganda, misinformation, and perception management campaigns. Thus, a mechanism with centralised command is required to create a unified national cognitive strategy.

**Capability Development**. Capability development for cognitive warfare involves building the tools, structures, and expertise necessary to shape, disrupt, or defend the perceptions, beliefs, decision making, and behaviour of adversaries, while protecting one's own population and forces. Since cognitive warfare sits at the intersection of military, psychological, technological, and societal domains, capability development must be multi-layered and interdisciplinary. The key components of the cognitive warfare capability development are enumerated below:

- **Human Capital Development**.
  - **Training and Education**. Specialised training for military, intelligence, and diplomatic personnel PSYOPS, influence operations, behavioural science, and narrative warfare. Cross-training with academia in neuroscience,

psychology, behavioural economics, sociology, and anthropology.

- **Specialised Units**. Creation of dedicated cognitive warfare units (like NATO's Innovation Hub[33] or China's Strategic Support Force[34]) that integrate information operations, AI-driven propaganda, and cyber-psychological warfare.
- **Language and Cultural Expertise**. Developing linguists and cultural experts to tailor narratives for different populations.

- **Technological Tools and Infrastructure**.
  - **AI and Big Data**. Tools for monitoring social media sentiment, detecting disinformation, and predicting audience reactions.
  - **Cognitive Persuasion Systems**. Automated systems for generating and disseminating persuasive narratives.
  - **Neurocognitive Technologies**. Brain-computer interfaces, neuro-monitoring, and cognitive load assessment for understanding vulnerabilities in perception and decision making.
  - **Cyber-Cognitive Platforms**. Integration of cyber operations with psychological targeting (e.g., hacking and disinformation release).
  - **Virtual Reality and Deepfake Tech**. Development of immersive and deceptive environments for influence campaigns.

- **Information and Narrative Dominance**.
  - **Narrative Development Cells**. Units tasked with creating coherent national and military narratives for domestic and international audiences.
  - **Strategic Communication**. Coordinated messaging across diplomacy, defence, intelligence, and media.
  - **Control of Information Ecosystem**. Ability to counter adversary propaganda through fact-checking, debunking, and alternative narratives.

- **Institutional and Policy Framework**.
  - **Doctrine and Policy Integration**. Incorporating cognitive warfare into military doctrines, national security strategies, and hybrid warfare frameworks.
  - **Civil-Military Fusion**. Partnerships between defence, academia, tech industry, and media for developing cognitive warfare resilience.
  - **Legal and Ethical Frameworks**. Establishing guidelines for offensive and defensive cognitive operations within international law and human rights norms.
- **Defensive Capabilities (Cognitive Security).**
  - **Resilience Building**. Public education programs to enhance media literacy and critical thinking.
  - **Counter-Disinformation Units**. Dedicated agencies to track, expose, and neutralise hostile influence campaigns.
  - **Psychological Defence**. Support structures to counteract stress, fear, or manipulation among military personnel and civilians.
- **Research and Innovation.**
  - **Academic Partnerships**. Investment in brain sciences, human-machine interaction, AI ethics, and cognitive resilience.
  - **Red-Teaming and Wargaming**. Simulations of adversary cognitive attacks to stress-test national systems.
  - **Cross-Domain Integration**. Merging cognitive warfare with cyber, space, and electronic warfare for multi-domain operations.

## Conclusion

Cognitive warfare represents the '6th Battlespace' after land, sea, air, cyber, and space. While there has not been a global focus on the cognitive warfare, it is an increasingly relevant domain for

India, given its contested strategic environment with China and Pakistan, both of which deploy sophisticated information operations.[35] Therefore, the requirement of the hour is to think beyond the kinetic warfare towards maintaining an upper-hand over the adversary in the domain of cognitive warfare in addition to other domains of warfare. For India, the primary objective is to defend its democratic values against external manipulation and to develop credible offensive capabilities. By integrating military doctrines, civilian frameworks, and technological innovation, India can secure a balanced cognitive posture that strengthens both resilience and influence in the global order.[36]

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# Doctrinal Evolution of the Indian Armed Forces Since 1947

**Group Captain Brijesh Shukla**[@]

**Abstract**

*The essay examines the evolution of Indian military doctrine from independence in 1947 to the present, tracing its transformation from a colonial legacy of defensive minimalism to a progressively sophisticated multi-domain orientation. It situates doctrinal change within India's volatile security environment, shaped by wars with Pakistan and China, nuclearisation, persistent insurgencies, and the emergence of hybrid, cyber, and space threats. The essay analyses key inflection points—including the 1962 Sino-Indian War, the 1965 and 1971 Wars, the Sunderji Doctrine, the Kargil Conflict, and the emergence of the Cold Start and proactive operations—highlighting how each of these reshaped India's approach to deterrence, escalation management, and jointness. It further assesses contemporary reforms such as the creation of the position of the Chief of Defence Staff, theatrisation, and multi-domain operations. The essay concludes by proposing tenets for a future doctrine that balances conventional deterrence, nuclear thresholds, and hybrid resilience while integrating civil–military, technological, and strategic instruments of national power.*

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## Introduction

Since independence in 1947, the Indian Armed Forces have undergone a profound process of doctrinal evolution. At the moment of freedom, India inherited a military structure created primarily for colonial policing rather than national defence, with its ethos, leadership patterns, and operational doctrines rooted in the British model.[1] Yet, almost immediately, the nation was thrust into existential conflict with Pakistan over Kashmir, inaugurating an era in which security threats—both conventional and unconventional—would shape military doctrine as much as technological and geopolitical change.

The concept of doctrine itself has evolved over time. Initially viewed as a narrow set of operational guidelines, the doctrine has since broadened to encompass strategic culture, force structuring, and the state's approach to escalation and deterrence.[2] India's security environment has been unusually volatile—four wars with Pakistan, one with China, multiple counterinsurgency campaigns, a nuclearised neighbourhood, and the emergence of hybrid, cyber, and space domains. Each of these has left a distinct imprint on India's doctrinal outlook.

From the defensive minimalism of the 1950s to the forward defence orientation after 1962; from the offensive–defensive doctrines of 1965-71 to the Sunderji Doctrine of the 1980s; and from limited war concepts after Kargil to the Cold Start and proactive operations approach of the 2000s, India's doctrinal trajectory has been one of gradual but uneven sophistication. In the 21st Century, this journey continues with growing emphasis on jointness, theatrisation, and multi-domain operations as India confronts collusive threats from China and Pakistan.

This essay traces this evolution across many sections, contextualising each doctrinal transformation with historical experience, scholarly debate, and policy shifts. The concluding section proposes tenets of a future doctrine capable of balancing conventional deterrence, nuclear thresholds, and hybrid threats in an era dominated by disruptive technologies and complex geopolitics.

## Colonial Legacy and Early Post-Independence Doctrine (1947-62)

At independence, the Indian Army (IA) remained structurally and culturally a continuation of the British IA. Its doctrine emphasised conventional battle formations, slow mobilisation, and imperial 'Small Wars' aimed at internal security and frontier policing.[3] In the absence of a clearly articulated national security strategy, the armed forces were not guided by a comprehensive doctrinal framework aligned with India's long-term strategic interests.

This deficiency was closely linked to the political leadership's worldview. The then-Prime Minister Jawaharlal Nehru accorded primacy to economic development and diplomacy, while military modernisation and doctrinal innovation remained secondary. The result was a strategic culture in which the use of force was viewed as the last resort, and the armed forces were largely treated as instruments of territorial defence rather than proactive tools of state policy.

The consequences of this approach became evident during the First Kashmir War (1947-48). When tribal raiders supported by Pakistan entered Jammu and Kashmir (J&K), India's response was improvised rather than doctrine-driven. Troops were airlifted into Srinagar in an emergency fashion and operations were conducted in a reactive mode. The Indian Air Force (IAF) played an important supporting role, but within limited doctrinal and resource constraints, while the Indian Navy (IN) remained a marginal factor.[4] The conflict ended in a stalemate and a United Nations-mediated ceasefire, leaving behind the Line of Control (LoC) and institutionalising a persistent zone of contestation.

Throughout the 1950s, Indian military doctrine remained underdeveloped. Some modernisation occurred—the IAF inducted jet aircraft and the IN initiated modest expansion—but the IA continued to dominate doctrinal thinking, and joint planning remained embryonic. This period can best be characterised as one of the defensive minimalisms in which the armed forces were structured primarily for territorial defence without clearly articulated offensive concepts or integrated operational planning.[5]

The neglect of doctrine was not merely a military failing but also a political one. The assumption that diplomacy and moral authority would deter adversaries created strategic complacency. When skirmishes began along the North-East Frontier Agency (NEFA) in the late 1950s, India lacked a coherent doctrine for mountain warfare, high-altitude logistics, or joint employment of forces. By the time China launched its offensive in 1962, India possessed neither the force posture nor the doctrinal clarity required to conduct effective high-altitude operations. The debacle that followed was, thus, rooted in this prolonged period of doctrinal neglect.

## The 1962 Sino–Indian War: Doctrinal Awakening

The war with China in 1962 constituted a watershed in India's military history and a turning point in its doctrinal consciousness. The IA was deployed along the disputed Himalayan frontier under the politically driven and militarily ill-conceived 'Forward Policy', which sought to establish a chain of lightly held posts in remote and inhospitable terrains. These positions were expected to deter Chinese advances despite the absence of adequate infrastructure, logistics, combat support, or reserves.[6]

Indian formations fought at extreme altitudes without sufficient winter clothing, artillery support, or reliable communications. Operational planning was weak, intelligence assessments were flawed, and command arrangements lacked coherence. Although the IAF possessed the capability to provide tactical air support, it was deliberately restrained by political leaders who feared horizontal and vertical escalation. The IN, for its part, played no meaningful role in the conflict. The result was a rapid and humiliating collapse of Indian positions in the NEFA (present-day Arunachal Pradesh) and Ladakh, with entire formations overwhelmed by better prepared and logistically supported Chinese forces.[7,8]

The doctrinal implications were stark and far-reaching. First, the conflict exposed the hollowness of India's earlier policy of defensive minimalism and the dangers of relying on diplomatic goodwill in the absence of credible military capability. Second, it revealed the severe consequences of the absence of joint planning and integrated employment of the services. The IA operated in isolation, the IAF was marginalised, and the IN remained peripheral. Third, the war demonstrated the lack of a coherent doctrine for

mountain warfare, high-altitude logistics, and sustained operations in difficult terrain.

In the aftermath of 1962, India undertook a major organisational and doctrinal reset. The IA raised additional mountain divisions, strengthened forward deployments, and placed greater emphasis on territorial defence in the Himalayas.[9] Infrastructure development in the border areas was accelerated, including roads, airfields, and logistics nodes. The IAF expanded its transport and fighter fleets and improved radar coverage and air defence networks along the northern frontier. These measures reflected a shift from strategic complacency to a more threat-driven approach to force development.

Perhaps most importantly, the defeat compelled India's political and military leadership to acknowledge that doctrinal neglect carries strategic costs. While a comprehensive national security doctrine did not immediately emerge, the experience of 1962 planted the foundations for a more systematic and professional approach to military planning. The concept of preparedness, credible deterrence, and the necessity of aligning political objectives with military means began to gain greater acceptance. In this sense, 1962 represented India's first true doctrinal awakening.

**1965 and 1971 Wars: Emergence of Offensive-Defensive Doctrine**

The conflict with Pakistan in 1965 constituted the first major doctrinal test for the Indian Armed Forces after the trauma of 1962. Pakistan's Operation Gibraltar sought to infiltrate irregular forces into J&K with the expectation of triggering a popular uprising and internationalising the dispute. India's initial response was cautious and reactive; however, as the scale of Pakistani involvement became evident, the IA undertook large-scale conventional operations across the 'International Border' in Punjab.

Although the war ended in a tactical stalemate, Indian forces demonstrated improved operational competence and resilience. Armoured engagements, particularly at Asal Uttar, revealed the IA's ability to blunt Pakistani offensives and conduct effective counterattacks.[10] These experiences reinforced the lesson that India could not rely solely on static defence and that limited offensive action was necessary to impose costs on an adversary.

Thus, the 1965 war contributed to the emergence of an offensive-defensive doctrinal concept. Under this approach, forces deployed along vulnerable sectors were tasked with holding operations, while designated strike formations were developed to undertake counteroffensives into the enemy territory.[11] This represented a conceptual shift away from a purely defensive mindset towards a more balanced posture that integrated defence with limited offensive manoeuvre.

These ideas matured and were applied with far greater coherence during the 1971 Indo–Pakistan War. Unlike earlier conflicts, 1971 witnessed the execution of a carefully planned and politically synchronised campaign. The IA conducted multi-axis offensives in East Pakistan, while holding Pakistani forces along the western front. Simultaneously, the IAF achieved rapid air superiority through systematic attacks on Pakistani airfields, enabling unhindered support to ground operations. The IN executed decisive maritime strikes, notably Operations Trident and Python, and imposed an effective blockade on Karachi.[12]

The integrated employment of land, air, and maritime power produced a swift and decisive victory, culminating in the creation of Bangladesh.[13] Doctrinally, 1971 marked the high point of India's military effectiveness in the 20th Century. It validated the principles of political-military synergy, joint planning, and manoeuvre-oriented operations.[14] For the first time, India demonstrated the capacity to design and execute campaigns based on coherent doctrinal concepts rather than ad hoc responses to crisis.

The lessons of 1965 and 1971 firmly established the offensive-defensive approach as the cornerstone of Indian conventional doctrine. However, this success also created an intellectual comfort with large-scale conventional manoeuvre that would later be challenged by changing strategic and technological conditions.

## Post-1971 Era: Sunderji Doctrine and Nuclear Context

The post-1971 strategic environment introduced a new set of complexities for Indian military doctrine. Internally, India confronted growing insurgencies in the Northeast and later in Punjab, while externally Pakistan continued to pursue revisionist objectives, increasingly through indirect means. At the same time, the conventional balance in South Asia began to evolve, and technological modernisation gathered momentum across the region.

Against this backdrop, the IA in the 1980s, under the intellectual leadership of General K Sundarji, articulated what came to be known as the Sunderji Doctrine. This doctrine envisaged large-scale, high-intensity conventional warfare based on deep armoured thrusts into Pakistani territory by powerful strike corps, supported by holding corps that would fix and attrite enemy forces along the forward edge.[15] The underlying premise was that the rapid and decisive manoeuvre, combined with overwhelming firepower, could achieve favourable military and political outcomes in a future Indo–Pakistani conflict.

Conceptually, the Sunderji Doctrine represented a continuation and refinement of the offensive-defensive ideas that had emerged after 1965 and 1971. It placed heavy emphasis on mechanisation, mobility, and synchronised corps-level operations, and drove significant organisational changes, including the raising of additional strike formations and the modernisation of armoured and artillery forces.

However, the doctrine also exhibited important limitations. Its reliance on large-scale mobilisation meant that the initiation of offensive operations would require considerable preparation time, thereby, reducing strategic surprise. The scale and visibility of such mobilisation also carried escalatory risks. These weaknesses were highlighted during Exercise Brasstacks (1986-87), which demonstrated both the operational potential of the doctrine and its propensity to generate severe crisis instability, bringing India and Pakistan close to an armed conflict.[16,17]

The strategic context of the 1990s further complicated the viability of deep offensive doctrines. Pakistan's covert development of nuclear weapons, followed by India's overt nuclear tests in 1998, fundamentally altered the character of deterrence in South Asia. The prospect of escalation to the nuclear level imposed new constraints on conventional operations. Under a nuclear overhang, the feasibility of large, deep armoured thrusts aimed at decisive victory became increasingly questionable.[18]

Consequently, Indian doctrinal thinking began to shift towards exploring options for limited conventional war under nuclear conditions. The objective was to retain credible conventional deterrence and punitive capability while avoiding actions that might cross an adversary's nuclear thresholds. This intellectual transition

marked a gradual departure from the Sunderji Doctrine's emphasis on deep, decisive manoeuvre towards more calibrated and flexible concepts of employment.

By the end of the 20th Century, Indian military doctrine had, thus, evolved from colonial defensiveness to an offensive-defensive posture, and further towards nuclear-constrained conventional thinking. This evolution reflected not only military learning but also the interplay of political will, adversary strategies, and the changing nature of war.[19]

## Kargil War (1999): Lessons for Limited War Doctrine

The Kargil Conflict of 1999 was a defining episode in India's post-nuclear strategic experience. It was the first major conventional confrontation between India and Pakistan after both states had demonstrated nuclear capability, and unfolded under conditions of intense international scrutiny. Pakistani regulars and irregulars infiltrated across the LoC and occupied tactically dominant heights in the Kargil–Dras sector, seeking to alter the status quo while remaining below the threshold of a full-scale war.[20]

India's initial response was marked by surprise and intelligence failure, which delayed accurate assessment of the scale and intent of the intrusion.[21] Once the extent of the infiltration became clear, the IA undertook a systematic campaign to evict the intruders through high-altitude infantry assaults, supported by artillery and air power. Political direction imposed a critical constraint; Indian forces were instructed not to cross the LoC in order to prevent horizontal escalation.

Several doctrinal lessons emerged from Kargil. First, the conflict demonstrated the practical reality of limited war under nuclear conditions. India was compelled to pursue strictly defined military objectives while exercising strategic restraint. Second, Kargil highlighted the indispensability of joint operations. The IAF's Operation Safed Sagar provided close air support, interdiction, and reconnaissance, significantly enhancing the effectiveness of ground operations. Third, the conflict exposed serious deficiencies in Intelligence, Surveillance, and Reconnaissance (ISR), leading to a subsequent emphasis on integrated ISR capabilities.

Kargil also underscored the importance of rapid mobilisation and preparedness. Although India ultimately achieved its military objectives, the initial delay in mounting a coherent response revealed structural and procedural weaknesses. These shortcomings were examined in detail by the Kargil Review Committee (2000), which recommended wide-ranging reforms, including improved inter-service coordination, better intelligence integration, and enhancements in higher defence management.[22]

Doctrinally, Kargil reinforced the notion that future conflicts with Pakistan were likely to be limited in scope, politically controlled, and conducted under the shadow of nuclear weapons. At the same time, it highlighted the necessity of possessing credible conventional options for swift and punitive response. This dual requirement—restraint combined with capability—set the intellectual foundation for the development of new operational concepts in the early 21st Century.

Thus, Kargil became the catalyst for a shift towards doctrines that acknowledged nuclear constraints while emphasising rapid, precise, and limited conventional action. This evolution directly influenced subsequent thinking on the Cold Start and proactive operations.[23]

**Cold Start Doctrine and Proactive Operations**

In the aftermath of Kargil and the terrorist attack on the Indian Parliament in Dec 2001, India confronted the practical limitations of its existing conventional doctrine. Operation Parakram (2001-02), which involved the large-scale mobilisation of Indian forces along the western border, revealed serious shortcomings. Mobilisation took several weeks, during which Pakistan was able to reinforce its defences and successfully internationalise the crisis.[24] India, despite its numerical and qualitative advantages, was unable to translate mobilisation into credible military action, thereby, exposing a gap between political intent and military capability.

These experiences provided the impetus for the conceptual development of the Cold Start Doctrine. This doctrine envisaged the rapid mobilisation of integrated, brigade-sized or division-sized Integrated Battle Groups (IBGs) capable of launching shallow, limited offensives within 48-72 hours of a political decision.[25] The

objective was to impose swift and punitive costs on Pakistan while remaining below its perceived nuclear thresholds. Unlike the Sunderji Doctrine's emphasis on deep armoured thrusts, Cold Start prioritised speed, surprise, flexibility, and limited territorial objectives that could serve as bargaining leverage.

For several years, India officially denied the existence of Cold Start, even as Pakistani strategic discourse treated it as an operational reality. Pakistan responded by developing tactical nuclear weapons, such as the Nasr missile, and by lowering its declared nuclear thresholds. This interactive doctrinal evolution produced a more complex and potentially unstable deterrence environment, characterised by compressed decision-making timelines and heightened escalation risks.

From the mid-2010s onwards, India began to demonstrate elements of Cold Start-type thinking through what came to be described as 'Proactive Operations'. The surgical strikes across the LoC in 2016 and the Balakot air strikes in 2019 signalled a willingness to conduct limited, time-bound, and publicly acknowledged punitive actions in response to major provocations. These operations were carefully calibrated to achieve political and psychological effects while seeking to avoid uncontrolled escalation.[26,27]

Doctrinally, Cold Start and proactive operations represent an important transformation in India's approach to conventional deterrence. They reflect an effort to regain strategic initiative by combining rapid mobilisation, joint employment of forces, and controlled escalation. Nevertheless, significant challenges remain. Without fully implemented theatrisation, integrated logistics, and seamless joint command and control, Cold Start risks remaining more a conceptual framework than a consistently executable doctrine.

### Hybrid Threats and Grey-Zone Warfare

By the late 2000s, it had become increasingly evident that conventional war was no longer the sole or even the primary mode of strategic competition in India's security environment. Pakistan progressively relied on proxy warfare, employing terrorist groups and supporting insurgency in J&K and elsewhere. Simultaneously, China adopted a pattern of grey-zone behaviour,

characterised by incremental territorial assertions, coercive diplomacy, cyber intrusions, and information operations designed to alter facts on the ground without triggering large-scale armed conflict.[28]

This environment necessitated a doctrinal shift towards recognising and countering hybrid warfare—conflict that blends conventional military force with sub-conventional violence, cyber operations, information warfare, economic coercion, and political influence. Hybrid threats deliberately blur the distinction between peace and war, creating ambiguity and complicating deterrence.

The IA responded by refining counterinsurgency and counterterrorism doctrines that emphasised population-centric approaches, intelligence-led operations, and the integration of kinetic and non-kinetic measures. Development initiatives, psychological operations, and information campaigns were increasingly viewed as integral components of operational success. The IAF and IN also began incorporating hybrid concepts, placing greater emphasis on non-contact warfare, electronic warfare, and maritime domain awareness.

Several high-profile incidents reinforced the salience of hybrid and grey-zone challenges. The 2008 Mumbai terrorist attacks demonstrated how non-state actors could generate strategic-level effects under the nuclear shadow. Chinese transgressions and standoffs in Ladakh (2013, 2020) and the Doklam crisis (2017) illustrated the effectiveness of salami-slicing tactics in pursuing limited objectives while avoiding open war.[29,30]

India's doctrinal response to these challenges has been incremental rather than revolutionary. The creation of specialised counterterrorism forces, the strengthening of cyber defences, and the establishment of information warfare and psychological operations cells represent important steps. However, the broader challenge remains the development of an integrated doctrine that can synchronise military, diplomatic, economic, and informational instruments of power to counter hybrid adversaries effectively.[31]

Hybrid and grey-zone warfare, thus, represent a persistent condition rather than a temporary phase. For India, success in this domain will depend not only on military preparedness but also on institutional coordination, strategic communication, and political resolve.

## Jointness and Theatrisation

One of the most persistent weaknesses in Indian military doctrine has been the absence of institutionalised jointness. Despite the demonstrated success of integrated operations in 1971 and the clear lessons of Kargil, the three services continued for decades to function largely within separate organisational and planning silos.[32] Service-specific doctrines, procurement priorities, and command structures inhibited the development of a truly integrated warfighting approach.

The Kargil Review Committee (2000) and subsequent reform initiatives recommended the creation of a Chief of Defence Staff (CDS) and the establishment of integrated planning structures to promote jointness. However, implementation was slow and uneven. It was only in 2020 that India appointed its first CDS, marking a significant doctrinal and institutional milestone.[33]

The CDS has been tasked with advancing theatrisation—the reorganisation of the armed forces into integrated theatre commands responsible for specific geographic or functional domains.[34] Theatrisation seeks to replace single-service operational control with unified commands capable of planning and executing operations across land, air, maritime, cyber, and space domains. In doctrinal terms, this represents the most substantial structural reform in Indian military organisation since independence.

Theatrisation promises several advantages: streamlined command and control, improved resource utilisation, faster decision making, and enhanced operational synergy. At the same time, the initiative has encountered resistance.[35,36] The IAF has expressed concerns about potential dilution of its operational flexibility, while the IN has highlighted issues of resource prioritisation and the safeguarding of maritime interests.

Despite these debates, a broad doctrinal consensus is emerging that India cannot effectively prepare for a two-front or multi-domain conflict without integrated command structures. Joint doctrines, integrated logistics, common training standards, and interoperable systems are, therefore, essential enablers of future warfighting capability. Theatrisation, though complex and contested, is central to India's ongoing doctrinal transformation.

## Technological Drivers of Doctrinal Change

Modern military doctrine is inseparable from technological transformation. Since the late 20th Century, India has sought to incorporate the lessons of the 'Revolution in Military Affairs' into its doctrinal framework. The Kargil Conflict (1999) exposed deficiencies in surveillance, precision targeting, and real-time intelligence sharing, prompting accelerated investment in unmanned aerial vehicles, satellite capabilities, networked communications, and precision-guided munitions.[37] The 2008 Mumbai attacks further underscored the need for rapid-response, technology-enabled counterterrorism capabilities.

In the 2010s, space and cyber emerged as operational domains of growing importance. India's anti-satellite test in 2019 signalled formal recognition of space as a warfighting domain. The establishment of the Defence Cyber Agency and the Defence Space Agency reflected an institutional shift towards preparing for non-kinetic forms of conflict.[38] Artificial intelligence, electronic warfare, autonomous systems, and drone swarms increasingly feature in doctrinal discussions as force multipliers capable of reshaping the character of combat.

India's acquisition of advanced air defence systems, development of indigenous ballistic missile defence, and expansion of long-range precision strike capabilities indicate a doctrinal emphasis on layered deterrence. Maritime doctrine has likewise evolved, with greater focus on the Indo-Pacific, carrier-based operations, nuclear-powered submarines, and integrated maritime domain awareness networks.

These developments collectively point towards an emerging orientation centred on multi-domain operations. Multi-domain thinking seeks to integrate kinetic and non-kinetic capabilities, conventional and unconventional means, and offensive and defensive operations within a unified operational design.[39] The challenge, however, lies in ensuring that technological modernisation is accompanied by organisational adaptation, doctrinal clarity, and sustained investment.

India's emphasis on indigenous research and development, including initiatives under the *Atmanirbhar Bharat* (Self-reliant India) framework, is intended to strengthen long-term technological

autonomy.[40] Nevertheless, procurement delays, budgetary constraints, and skill gaps continue to slow full-spectrum integration. Technology, while transformative, yields doctrinal advantage only when embedded within coherent structures of command, training, and strategy.

## Challenges in Doctrinal Consolidation

Despite notable progress in doctrinal thinking and institutional reform, the consolidation of a coherent and fully operationalised Indian military doctrine remains incomplete. A number of enduring structural, strategic, and political challenges continue to constrain doctrinal effectiveness.

First, India confronts the persistent reality of a two-front threat. The prospect of coordinated or collusive pressure from China and Pakistan stretches resources, complicates force planning, and imposes difficult choices in prioritisation.[41] Doctrinal frameworks must, therefore, be capable of addressing simultaneous contingencies across distinct theatres.

Second, escalation management under nuclear conditions remains a central dilemma. Pakistan's development of tactical nuclear weapons complicates concepts such as Cold Start, while China's expanding nuclear arsenal introduces new uncertainties into India's deterrence calculus.[42] Balancing conventional flexibility with nuclear stability requires carefully calibrated doctrine and robust political-military coordination.

Third, resource constraints undermine doctrinal ambition. Budgetary limitations delay modernisation and leave critical gaps in air defence, cyber capabilities, intelligence infrastructure, and naval power projection. Without sustained and predictable investment, doctrinal concepts risk outpacing material capability.[43]

Fourth, civil-military integration in strategic planning remains limited. Although the creation of the CDS represents a major advance, India still lacks a publicly articulated and comprehensive National Security Strategy (NSS) that clearly links political objectives with military doctrine and force development.[44]

Finally, political-military synergy and strategic communication remain uneven. In an era of hybrid and grey-zone conflict, the ability to shape narratives, signal resolve, and manage escalation

is as important as battlefield performance. Without coherent strategic messaging and whole-of-government coordination, doctrine risks remaining reactive rather than anticipatory.[45]

Addressing these challenges is essential if India's evolving doctrinal ideas are to translate into credible and sustainable warfighting capability.

**Towards a Future Doctrine: Proposed Tenets**

Drawing upon historical experience and contemporary threat assessments, a future Indian military doctrine should rest on a set of clearly articulated and mutually reinforcing tenets. These are intended to provide conceptual coherence while allowing sufficient flexibility to adapt to a rapidly changing security environment as under:

- **Multi-domain Integration.** Operations across land, sea, air, cyber, and space must be planned and executed in an integrated manner. Theatre commands supported by networked command, control, communications, computers, ISR architectures should enable seamless coordination and real-time situational awareness across all domains.

- **Flexible Deterrence.** Doctrine must offer calibrated response options across the spectrum of conflict—from sub-conventional to conventional and, if necessary, nuclear—so that political leadership retains multiple pathways for escalation control.

- **Rapid Force Mobilisation.** IBGs and theatre commands should be capable of generating credible combat power within 48-72 hours against both western and northern contingencies, thereby, preserving strategic initiative.

- **Resilience in Hybrid Warfare.** Counterterrorism, cyber defence, electronic warfare, and information operations must be integrated into mainstream operational planning to blunt grey-zone and proxy strategies.

- **Maritime Emphasis.** As the Indo-Pacific assumes central importance in global geopolitics, India's doctrine must prioritise sea control, sea denial, and power projection through a capable blue-water navy and strong maritime partnerships.

- **Civil–Military Synergy.** A comprehensive NSS should integrate military doctrine with diplomatic, economic, technological, and informational instruments of national power.

Collectively, these tenets seek to balance deterrence with adaptability. They aim to ensure that India can deter adversaries, fight limited wars when necessary, and manage escalation in a nuclearised, multi-domain environment.[46] Periodic doctrinal review, institutional learning mechanisms, and selective international cooperation should complement this framework to sustain long-term relevance.

Such a doctrine would balance deterrence with adaptability, ensuring India can deter adversaries, fight limited wars, and manage escalation in a nuclearised, multi-domain environment. Expanding on this, the tenets should incorporate adaptive learning mechanisms, regular doctrinal reviews, and international partnerships to counter collusive threats, drawing from global best practices like the North Atlantic Treaty Organization's multi-domain frameworks while tailoring to India's unique geopolitical context.[47,48]

## Conclusion

The evolution of Indian military doctrine since 1947 has been shaped by the cumulative impact of war, technology, and shifting geopolitics. From a colonial inheritance characterised by defensive minimalism, India's doctrine progressed through the shock of the 1962 defeat, the emergence of offensive-defensive concepts in the 1965 and 1971 Wars, the deep manoeuvre orientation of the Sunderji Doctrine, and the nuclear-constrained limited war thinking that followed Kargil. Each phase reflected adaptation to a distinct strategic context.

In the 21st Century, doctrinal transformation is increasingly driven by hybrid threats, disruptive technologies, and multi-domain competition. The pursuit of jointness, theatrisation, and integrated command structures represents an effort to translate conceptual evolution into operational capability. At the same time, persistent challenges—ranging from two-front contingencies and nuclear escalation management to resource constraints and civil–military integration—continue to shape the boundaries of doctrinal ambition.

India's future doctrine must, therefore, be anticipatory rather than reactive. It must integrate historical lessons with emerging realities, link political objectives to military means, and synchronise kinetic and non-kinetic instruments of power. The ultimate objective is to build armed forces that can credibly deter adversaries, respond decisively across the spectrum of conflict, and contribute to India's rise as a strategically autonomous and responsible great power.

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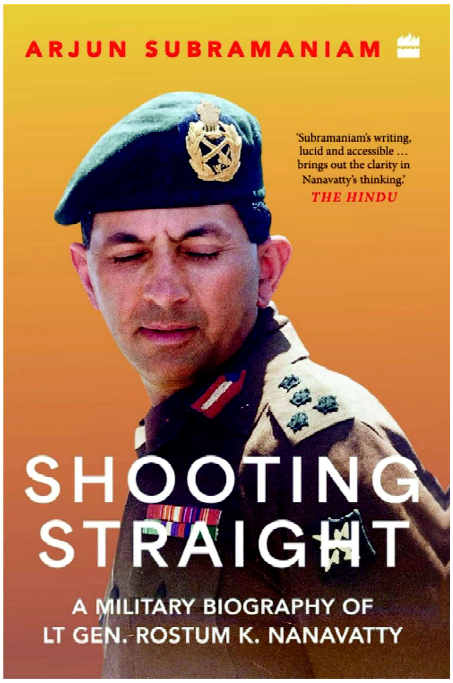
# Review Articles and Book Review

**Review Article 1**




## Introduction

'Shooting Straight', the biography of Lieutenant General Roustam K Nanavatty—undoubtedly a man of stellar character, with a passion and commitment for soldiering, a military leader who tenanted some of the most challenging operational assignments in the Indian Army with a sense of purpose and had the ability to speak 'Truth to Power'—has been meticulously researched by Air Vice Marshal Arjun Subramaniam, AVSM, PhD (Retd) undoubtedly one of the finest military historians.

Air Vice Marshal Subramaniam has not only captured the details of Nanavatty's transition from the tactical to the operational and thereafter to the strategic level but has also provided a rare insight into the people and events that shaped his values and leadership style. His unique journey in uniform commenced from being commissioned into 2/8 GORKHA RIFLES soon after the

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**Shooting Straight: A Military Biography of Lt Gen. Rostum K. Nanavatty by Air Vice Marshal Arjun Subramaniam, AVSM, PhD (Retd)**, HarperCollins India, Pages: 400 pages, Price: ₹ 469/-, ISBN: 978-9365697618

*Journal of the United Service Institution of India*, Vol. CLVI, No. 643, January-March 2026.

1962 War with China to commanding the Northern Army during Operation Parakram.

Written chronologically, this is a book that can be read at multiple levels: as a personal story, as a narrative of the evolution of the Indian Army, and as a source of leadership lessons. What stands out is the way the sheer depth and breadth of Nanavatty's insights, and his rich operational repository, have been captured by Air Vice Marshal Subramaniam. The intellectual dimension of warfighting also emerges very clearly, as does his strategic mindset.

**About the Author**

Air Vice Marshal Arjun Subramaniam, AVSM, PhD (Retd) is an alumnus of the Rashtriya Indian Military College, Dehradun. A former fighter pilot in the Indian Air Force, he has attended the National Defence College (NDC) and has served as an instructor at the Defence Services Staff College. He is an air power analyst and an accomplished writer on contemporary Indian military history and thought leader on global strategic issues. He has held the President's Chair of Excellence at the NDC.

He has also been a Visiting Fellow at Harvard and Oxford Universities and a Visiting Professor at Fletcher School, Ashoka, and Jindal Universities. He is also the author of *India's Wars: A Military History 1947-1971* and *Full Spectrum*, apart from numerous articles in leading journals, magazines, and newspapers.

**About the Book**

When Nanavatty joined his battalion, it had withdrawn to a long after the 1962 War and had lost many personnel, including the Commanding Officer. When he later had the opportunity to pen his thoughts on the war, Nanavatty was "Unsparing in his indictment of the senior leadership". He felt that there was a complete lack of foresight and planning, and that the Indian Army had been reduced to a "Mere peacetime machine—physically unfit, ill-equipped, and ill-trained".

The other issues he touched upon would remain his focus throughout the career: building defences where logistics support could be easily provided, training extremely hard, encouraging junior leaders to take initiative, and creating an offensive spirit.

The battalion soon moved to Nagaland, where, as a young officer, he became involved in operations against insurgents. The new Commanding Officer, Colonel Shamsher Singh, “Was a man on a mission, determined to ensure that misfortune did not strike the battalion twice”. Nanavatty credits him and Colonel (later Lieutenant General) Anand Swarup—who “Embodied the ideal Commanding Officer, physically tough and mentally very robust”—with laying the high training standards of the unit.

During Operation Pawan, Nanavatty headed the Para Commando Task Force for a few months. His meticulous approach laid the foundation for special operations in Sri Lanka. As per him, the “LTTE was the most efficient guerilla outfit the Indian Army has ever encountered”. It was here that he put into practice his observations regarding the functioning of Special Forces units, based on his interactions and experiences as the Indian Army Liaison Officer in the United Kingdom. However, he was scathing in his assessment of how infantry units were equipped during the early days of the Indian Peacekeeping Force deployment.

About General Sunderji, under whom he served on multiple occasions and with whom he shared a personal rapport, he states, “The brilliant General Sunderji was, and remained, an ardent proponent of the ‘Big Battle’. Consequently, he paid little attention to counterinsurgency”.

As the Brigade Commander of the Siachen Brigade, he walked to every post and was instrumental in improving the quality of training at the Siachen Battle School. He focused on achieving ascendancy over the enemy and improving the living conditions of those who served on the glacier. He remembers his General Officer Commanding, Major General VR Raghavan, as “A fine, clear-thinking and erudite commander in the soldier-scholar mould”. Throughout his career—and even after retirement—Nanavatty argued against the prevailing hawkish perspectives, advocating the retention of significant deployments on the glacier.

In Jun 1993, Nanavtty assumed command of 19 Infantry Division at Baramulla. He focused on Counter Terrorism (CT) operations and felt that Pakistan was only likely to resort to a conventional war if CT operations fail. He also opined that “However successful the Indian Army was in securing the peripheral areas, the centre of gravity of the secessionist movement would remain

Srinagar". He also felt that the Pakistan Army needed to pay for abetting and supporting terrorism and "Changed the rules of the game by dominating the no man's land". Intelligence was also given the highest priority and his leadership style was both "Enabling and empowering". He states that his Corps Commander General Padmanabhan "Had a razor-sharp mind". In his assessment after handing over, he said North Kashmir was a war zone and there was a sense of alienation and deprivation amongst the people. He felt that the government and civil administration needed to move the peace process forward.

Though he desired to command either 15 or 16 Corps, Nanavatty was posted to 3 Corps, where he was responsible for the insurgency ridden states in Northeast India: Nagaland, Manipur, Mizoram, Tripura, and parts of Arunachal Pradesh. In Sep 1998, in Manipur, he told the then-Home Minister Indrajit Gupta that "The dire situation in Churachandpur was due to the fact that the state government had completely abdicated its responsibility" and cautioned about "The dangers of ignoring Manipur". His observations, analysis, and prognosis regarding the problems in Nagaland and Manipur are striking. His tenure, which he termed complex and difficult, exposed him to "The perils and complexities of modern conflict, which involve an intersection of politics, culture, and societal fault lines".

The book provides an insight into Nanavatty's tenure as the Northern Army Commander and how he intended to carry out a series of limited, battalion-sized operations to seize and control key areas across the Line of Control. Operation Kabaddi was aimed at pushing the envelope of Northern Command's proactive deterrence and introducing a punitive paradigm. Unfortunately, it was not launched due to the geopolitical events post 09/11. At a seminar at 16 Corps in Oct 2001, he had clearly stated that "With time, Pakistan's role has dwarfed that of the Kashmiri separatists". Then, India is now faced with a relentless covert war in the guise of freedom struggle planned, organised, directed, coordinated, and controlled by Pakistan.

It was during Operation Parakram that Nanavatty came the closest to a conventional war. However, as seven of his nine divisions were committed to CT operations, he required time to prepare. "This is not what Paddy wanted to hear". Following his

experience during Operation Parakram, Nanavatty believed that "India is deceiving itself if it thinks it can prosecute a unilateral war of choice without creating the right conditions".

He ended by stating that "As the Northern Army Commander, he called the capture of Pakistan-controlled areas in Kashmir 'Achievable' but 'Would demand extraordinary synergy of political, diplomatic, economic, intelligence, and military effort', and an uncharacteristic single mindedness of purpose".

In Apr 2002, he, with the assistance of Colonel (later Lieutenant General) Sanjeev Langer, submitted a paper, suggesting a "Whole-of-government approach for the resolution of conflict in J&K". General Padmanabhan had given the "Go ahead" but told him to "Be brief and ensure there are no accusations or recrimination".

He sent copies of it to many senior government functionaries like the then-Home Minister LK Advani, Home Secretary NN Vohra, and Foreign Minister Jaswant Singh. However, except for Jaswant Singh, who took time off to discuss the strategy document with Nanavatty, there was little interest in other quarters. However, Lieutenant General Panag, who was the Northern Army Commander in 2007, calls the paper "A clear and bold contemporary road map for conflict resolution". Unfortunately, the national security establishment did not leverage his experience.

Nanavatty's view on fencing along India's borders is also interesting. He felt that with deterrence not destruction being its effect, the fence deadens the offensive spirit of the fighting man.

**Conclusion**

Given General Nanavatty's ability to articulate his thoughts in writing and anticipate what needs to be done in the future, it is surprising that his views on China have not been expressed in greater depth. However, he has stated that "Deciding the mutually acceptable Line of Actual Control is a matter of the highest priority".

This stands out for two reasons. The first is that he joined his battalion soon after it had been de-inducted from Mechuka following the 1962 conflict; as a result, he witnessed the plight of the Indian Army at that time and recorded several relevant observations. The second is that he held the appointment of Northern Army

Commander during Operation Parakram and was responsible for operations against both Pakistan and China.

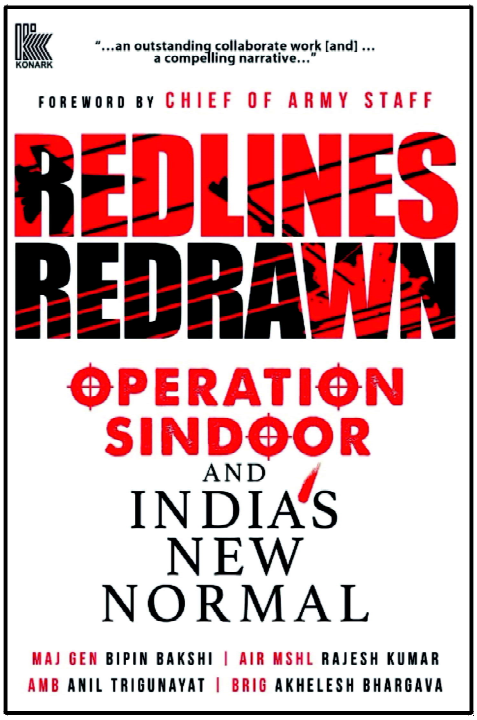
What stands apart is his professional excellence, integrity, unflinching moral courage, and the ability to always stand up for what he believed was right and unhesitatingly put across his views with courage of conviction. His emphasis was on operational efficiency rather than ceremonial trappings. Though, he also has critics, including Lieutenant General Arjun Ray who states that "Innovation, mental mobility and foresight are not his strengths" and "He had little understanding of the big picture".

The book is a masterpiece and holds leadership lessons across domains. It is strongly recommended to be read not only by those who don the uniform but also by academics, practitioners, and students of national security.

It also gives a prism of the country's security challenges and the Indian Army's operational art through the lens of one of its accomplished and distinguished soldiers. General Subramanium has yet again added a valuable contribution to India's national security literature.

**Major General Jagatbir Singh, VSM (Retd)**

**Review Article 2**




## Introduction

'In War, Truth is often the First Casualty'—buried beneath competing narratives, selective disclosures, emotional rhetoric, and strategic deception. It is within such a contested informational environment that *Redlines Redrawn: Operation Sindoor and India's New Normal* appears to put the facts into open domain for the benefit of the serious observers of conflicts between India and Pakistan. Published several months after the short but intense India–Pakistan confrontation of May 2025, the volume seeks to move beyond propaganda and reconstruct what occurred, why it occurred, and what it signifies for India's evolving strategic posture.

For this reviewer, the subject is not abstract. Having served in counterinsurgency operations in the Pahalgam region—including during the early security arrangements for the Amarnath Yatra in 1990—and later engaging with cross-border terrorism issues at

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**Underworld Tyranny: The Traffickers' Reign Unveiled** by Major Namrata Dhasmana (Retd), Sabre and Quill Publishers, Pages: 272, Price: Price ₹ 1,099, ISBN: 978-9348152213

*Journal of the United Service Institution of India*, Vol. CLVI, No. 643, January-March 2026.

the National Security Council Secretariat while monitoring implementation of the Kargil Review Committee recommendations, the subject carries both professional and personal resonance.

Authored by Major General Bipin Bakshi, AVSM, VSM, PhD (Retd); Air Marshal Rajesh Kumar, PVSM, AVSM, VM, (Retd); Shri Anil Trigunayat, IFS (Retd); and Brigadier Akhelesh Bhargava (Retd), the book brings together practitioners of land warfare, airpower, diplomacy, and strategic analysis. This multi-domain authorship is one of the book's principal strengths. The narrative benefits from technical competence, policy awareness, and institutional memory. The flow of events is coherent and well referenced.

While the book understandably reflects an Indian institutional perspective, it remains methodologically transparent. The authors acknowledge that certain insights derive from professional interactions and open-source synthesis. The interpretations remain analytical and are supported by referenced tables, statistics, graphs, and illustrations.

**Historical Context: State-Sponsored Proxy War**

The opening chapter situates Operation Sindoor with the detailed historical perspective of Pakistan's strategy of proxy warfare since the mid-1980s. Having failed to secure its objectives through conventional wars, Pakistan's military establishment, the authors argue, institutionalised terrorism as an instrument of state policy—seeking to "Bleed India by a thousand cuts" through proxy war conducted via terrorism as an instrument of state policy.

Groups such as Lashkar-e-Taiba and Jaish-e-Mohammed are presented not as autonomous actors but as instruments functioning with varying degrees of state sponsorship. Operation Sindoor, therefore, is framed not as an isolated reaction but as part of a continuum of calibrated responses to accumulated provocations.

For professional readers, this contextual grounding is essential. It underscores that limited military operations are rarely spontaneous; they are products of prolonged strategic evolution and political signalling.

### The Pahalgam Attack: Trigger and Trauma

The Apr 2025 terrorist attack in Pahalgam forms the emotional and operational trigger. The chapter reconstructs the sequence of events, intelligence leads, and forensic indicators linking the attackers to Pakistan-based networks. The chapter contains several deeply moving accounts of celebration turning into tragedy—individual grief unfolding into a national trauma. Beyond operational details, the authors emphasise the psychological design of such attacks: to erode public confidence, inflame communal fault lines, and coerce strategic overreaction. Prime Minister Narendra Modi's statement—"Those behind this heinous act will be brought to justice"—is presented not as mere rhetoric, but as the articulation of a political resolve, signalling the world that a threshold had been crossed.

### Operation Sindoor: Multi-Domain Calibration

The core of the book lies in its account of Operation Sindoor as a multi-domain campaign encompassing land, air, maritime posture adjustments, cyber operations, space-based surveillance, and information operations.

The operation's naming—Sindoor—is symbolically interpreted as signifying national resolve and sacrifice. More substantively, the authors argue that the campaign demonstrated:

- Limited, clearly defined objectives focused on degrading terrorist infrastructure rather than targeting Pakistani military formations.
- Short-duration, high-intensity action calibrated to avoid uncontrolled escalation.
- Integrated multi-domain synchronisation, reflecting doctrinal maturity.
- Readiness to respond further without seeking territorial revisionism.

The detailed description of the destruction of terrorist camps on 07 May 2025 and the subsequent air defence engagements over Indian airspace provides rare insight into layered air defence integration. Indigenous systems, combined with the Indian Air Force command-and-control architecture reportedly intercepted drones

and aerial threats with high effectiveness, signalling increasing technological integration and operational maturity.

**Airpower, Space Assets, and the Nuclear Shadow**

The chapter examining airpower and space-based assets is analytically robust. Satellite reconnaissance, early warning systems, secure communications, and networked targeting are shown as central to real-time decision making. Importantly, the authors explore how hostilities approached sensitive thresholds before being stabilised through signalling and backchannel communication.

The operation is presented as an evidence that limited conventional action remains feasible under a nuclear overhang, provided the objectives are narrow and the signalling unambiguous. The narrative also notes external commentary, including claims by United States President Donald Trump regarding de-escalation efforts, situating the episode within broader international diplomatic currents.

**Diplomacy and Indus Waters Treaty**

Diplomatic outreach, information warfare, and global perception management receive substantial attention. The authors document expressions of support for India's right to self-defence from several Western states as well as Israel and Russia, while analysing Pakistan's counter-narratives.

Particularly consequential was India's decision to hold the Indus Waters Treaty in abeyance. This move is interpreted as signalling that strategic costs could extend into economic and environmental domains. In the words of Prime Minister Modi, "Both Blood and Water cannot flow together". One might interpret this strategic signalling differently: if Pakistan historically described Kashmir as its "Jugular Vein", India's leverage over the Indus waters potentially represents a comparable strategic pressure point.

**Indigenous Capability and Doctrinal Evolution**

A recurring theme is the performance of indigenous systems under the *Atmanirbhar Bharat* (Self-reliant India) initiative. Counter-drone technologies, electronic warfare assets, and air defence systems are credited with effective performance. However, the authors do not shy away from noting structural concerns: declining fighter squadron strength, incomplete networking of platforms, and procurement delays.

The book frames Operation Sindoor as an evidence of doctrinal evolution beyond the debated 'Cold Start' construct. Rather than large-scale mobilisation, the emphasis is on swift punitive action, multi-domain integration, and escalation control. Whether this 'New Normal' emerged accidentally or evolves into institutionalised doctrine remains to be seen.

**Strategic Environment: The China Factor**

Chinese military support to Pakistan is treated as a significant strategic variable. With nearly 80 per cent of Pakistan's military hardware of Chinese origin, Operation Sindoor provided Beijing an opportunity to observe the performance of its systems in live combat conditions. The possibility of collusive two-front contingencies, therefore, emerges as a structural concern rather than rhetorical exaggeration.

**Critical Observations**

Professional readers—particularly experienced military practitioners—may question the prudence of sharing granular operational and technological details. While transparency contributes to credibility and deterrence signalling, it also invites scrutiny about operational security and potential commercial motivations in global defence markets.

*Redlines Redrawn* is a timely and substantial contribution to literature on crisis management, deterrence, and limited war under nuclear conditions. It functions simultaneously as a chronicle of Operation Sindoor and as an argument that India has entered a more assertive, calibrated phase in managing Pakistan-sponsored terrorism.

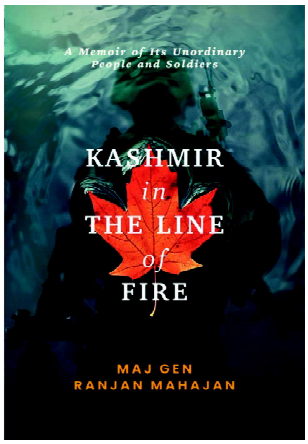
Operation Sindoor is presented not as the end of terrorism but as a demonstration of capability and resolve. Whether this 'New Normal' becomes enduring doctrine or remains situational adaptation will depend on future crises and political will. Nonetheless, the authors succeed in anchoring that debate in experience, strategic reasoning, and operational evidence rather than rhetorical flourish.

Overall, *Redlines Redrawn: Operation Sindoor and India's New Normal* is an important contribution to contemporary strategic literature. The book offers a structured account of limited conflict

conducted under the shadow of nuclear deterrence. It will also help academics and policymakers seeking to understand the trajectory of India's military transformation amid the 'New Normal' in a 'Multipolar World'.

**Colonel RC Patial, SM, PhD (Retd)**

**Kashmir in the Line of Fire** by Major General Ranjan Mahajan, JGS Enterprises Pvt. Ltd, Chandigarh, Pages: 152, Price: ₹ 594.00, ISBN 978-93-49042-44-5




Amongst the many books on the operations of the military in Jammu and Kashmir (J&K), this volume by Major General Ranjan Mahajan stands out for a variety of reasons. Foremost amongst them is the fact that it covers the resolute action of India's infantry in the most difficult of all military operations—the conduct of anti-terrorist operations. Whereas in regular operations the enemy and his location are easily identifiable, terrorists who move like ghosts and often mingle with the local population offer the defender no such advantage. The dilemma of an infantry unit commander conducting cordon and search operations in a volatile state like J&K must, therefore, be seen from its proper perspective. Bereft of any strategic jargon, the author, a die-hard and decorated infantry soldier, gets to the nub of anti-terrorist operations. Covered in six parts, the book traces the gamut of the escalating crisis of terrorism over the years. Towards the end, the author brings out the latest response of the Indian state culminating in Operation Sindoor.

The author has traced the evolution of terrorism in the state, meticulously interspersed with details of his five tenures in J&K to give us a compelling and authentic account. As befits a leader who is in complete sync with his officers and men, General Mahajan's narrative is replete with praise for his subordinates. To achieve his objective, which is the elimination of terrorists, the author creates a unique camaraderie amongst his officers, Junior Commissioned Officers, and men, so that they go the extra mile in the rugged terrain and extreme climate. In the difficult terrain of J&K, where India's effort to administer the governance of the state is hindered by Pakistan's perfidious actions of creating terrorist cells and infiltrating terrorists, the author gives graphic details of unit and sub-unit actions traversing rugged snowy terrain to liquidate terrorists. The author describes in detail the exodus of the Kashmiri Pandit community when Sopore was the hotbed of terrorists, the suspension of the Amarnath Yatra in 1990, and its

subsequent reopening in 1995. It is noteworthy that by creating an ambient atmosphere wherever his unit operated, the officers were able to establish excellent rapport with civilians, including shopkeepers to obtain useful information about terrorists.

The author's detailed narrative of his five tenures also highlights how he was constantly focused on his profession and honing his skills, which gave him the idea of creating a 'Ghatak' platoon later at the brigade level. The author has recorded full details of the minor tactics in cordon and search operations, their dates, timings, blocking of escape routes, splitting of quick reaction teams, and subunit communications including field signaling. This attention to detail percolates throughout his narrative and is a major reason for his success in anti-terrorist operations. The author has rightly praised his team of officers and men in the highest terms, and with good reason. His detailed narration of the brave actions of Lance Naik Nazir Ahmad Wani, AC, for example, highlight the ethos of the Indian Army in giving unstinted praise where it is due. The author also humbly acknowledges the guidance of his superiors. His understanding of human nature and easy accessibility to men in uniform and civilians alike have been instrumental in his success in this most difficult of military operations. Written in an easy language, this volume makes a useful contribution to understanding anti-terrorist operations, the importance of battle drills, field craft and overall, the handling of a unit in adverse operational conditions.

**Major General Ashok Joshi, VSM (Retd)**

# MEMBERSHIP

The following are eligible to become members of the Institution:

- Officers of the Armed Forces.
- Class I Gazetted Officers of Group 'A' Central Services.
- Any category mentioned above will be eligible even though retired or released from the Service.
- Cadets from the National Defence Academy and Cadets from the Service Academies and Midshipmen.

For further particulars, please write to Director General, USI of India, Rao Tula Ram Marg, (Opposite Signals Enclave) Post Bag No. 8,Vasant Vihar PO, New Delhi – 110057.

# Notification

# United Service Institution of India–Lieutenant General PS Bhagat Memorial Essay Competition 2026

## Subject: Military Leadership Challenges in the Artificial Intelligence World

### General

1. The Annual Essay Competition commemorating the leadership legacy Lieutenant General PS Bhagat seeks to institutionalise sustained intellectual engagement with the human dimensions of military leadership in an era of rapid Artificial Intelligence (AI) integration. At a time when AI-driven systems are reshaping warfare, decision making, and command structures, the competition reaffirms the enduring relevance of human judgment, ethics, and leadership. It aims to stimulate original research, critical thinking, and informed debate among military professionals, scholars, and students, bridging theory and practice while examining how leadership principles must adapt to technological transformation without compromising moral responsibility and human agency.

Objective of the Competition

2. The competition aims to:

(a) Institutionalise an 'Annual Essay Competition' commemorating the leadership legacy of Lieutenant General PS Bhagat, ensuring sustained intellectual engagement with his values and contributions.

(b) Reaffirm the enduring relevance of the human dimension in conflict, leadership, and decision making, despite rapid technological and AI-driven advancements.

(c) Stimulate critical thinking and scholarly discourse on contemporary and emerging leadership challenges, particularly in the context of military leadership in the AI era.

(d) Encourage original research, reflection, and debate among serving and retired military personnel, scholars, researchers, academicians, and students across disciplines.

(e) Bridge theory and practice by examining how leadership principles, ethics, and human judgment must adapt alongside AI-enabled systems and technologies.

## Background and Rationale

3. The rapid integration of AI into military systems is transforming the character of warfare. From intelligence analysis, surveillance, and logistics to autonomous weapon systems and decision-support tools, AI is redefining how militaries plan, fight, and sustain operations. While technological superiority has always been a key determinant of military effectiveness, the AI era presents a fundamentally different challenge—one where human leadership must coexist with machine intelligence.

4. Military leaders today are no longer required only to command troops and manage operations; they must also understand, supervise, and ethically employ intelligent systems whose speed, scale, and opacity often exceed human comprehension. This convergence of human judgment and algorithmic decision making raises critical questions around accountability, trust, moral responsibility, escalation control, and the preservation of human values in conflict.

5. This essay competition seeks to encourage deep reflection, analytical thinking, and original perspectives on how military leadership must adapt to remain effective, ethical, and resilient in an AI-driven battlespace.

## Military Leadership Challenges in the Artificial Intelligence World

6. The advent of AI in the military domain has introduced profound conceptual challenges that extend far beyond technology itself. At the heart of these challenges lies the tension between human judgment and algorithmic decision making, raising fundamental questions about command authority, accountability, and moral responsibility in warfare. As AI systems increasingly influence intelligence assessment, targeting, logistics, and operational planning, military leaders must operate in environments characterised by unprecedented speed, complexity, and information overload. This evolution compels a re-examination of traditional leadership concepts, including trust, control, and responsibility,

particularly when decisions may be shaped by systems that are not fully transparent or explainable. The central issue is not whether AI will be used in future conflicts, but how military leaders can integrate it responsibly while preserving human agency, ethical conduct, and strategic judgment—elements that remain indispensable in the conduct of war.

**Suggested Headings**

7. The essay could include:

(a) Introduction

(b) AI in the Military Domain

(c) Changing Character of Warfare

(d) Key Leadership Challenges in the AI Era

(e) Ethical and Moral Dilemmas

(f) Organisational and Cultural Challenges

(g) Command, Control, and Accountability

(h) Developing Future Military Leaders

(i) Way Forward

(j) Conclusion

**Rules and Regulations**

8. The competition is open to all commissioned officers of the Armed Forces of India, officers of the Territorial Army and Assam Rifles, gazetted officers of the civil administration, scholars, researchers, academicians, students including Senior Division National Cadet Corps cadets, as well as retired military officers and civil servants.

9. Each essay submitted must be an original work authored by a single individual. Joint authorship is not permitted. Proper citation of all sources is mandatory and must follow the prescribed format. Any entry found guilty of plagiarism will be disqualified, and disciplinary action may be recommended, where applicable.

10. Essays must be written in English and must not exceed 5,000 words, excluding endnotes. The total word count must be clearly mentioned in brackets at the end of the essay. Entries that exceed the word limit or fail to specify the word count are liable to rejection.

11. The manuscript must be typed, double-spaced, and printed on one side of the paper only. The essay should be logically structured and organised with clearly defined group, paragraph, and sub-paragraph headings. It must include an abstract of approximately 150 words, followed by an introduction and ending with a conclusion. The use of proper endnotes is compulsory, and essays lacking them will not be evaluated.

12. Three hard copies of the essay must be submitted along with a soft copy sent by email. Essays will be evaluated only after receipt of both hard and soft copies, as this is essential for plagiarism checks. Hard copies must be addressed to the Director General, United Service Institution of India (USI), Rao Tula Ram Marg, Post Bag No 8, Vasant Vihar PO, New Delhi–110 057. The soft copy must be emailed to cpl.essays@usiofindia.org. The submission deadline for both hard and soft copies is 15 Jun 2026. Late submissions will not be accepted.

13. All hard copy submissions must remain strictly anonymous. No identifying details of the author should appear anywhere in the essay or the covering letter. Each participant must select a 'Motto' (not exceeding ten words) and type it on the first page of all copies of the essay. A sealed envelope must accompany the submission, containing a sheet with the motto, personal number (where applicable), rank, name, date of commission and unit address (as applicable), email address, and contact number, along with a brief curriculum vitae of approximately 80 words. Only the motto should be written on the outside of the envelope. These envelopes will be opened during the USI Council meeting after the judges' decision. Any violation of the anonymity requirement will result in rejection.

14. For the soft copy submission, the subject line of the email must be the selected as the author's 'Motto'. The body of the email should contain only the line: "My entry for the Lt Gen PS Bhagat Memorial Essay Competition" is attached. No signature block or additional text should be included.

15. The essays will be evaluated by a panel of three judges nominated by the USI. Assessment will be based on originality and freshness of insights, depth of understanding of the subject, logical development and coherence of thought, quality of language and expression, correct and consistent use of footnotes and bibliography, and suitability of the essay, in whole or in part, for publication. The decision of the judges shall be final.

16. The judges may recommend a first prize, comprising a cash award of INR 15,000, a certificate, and gratis life membership of the USI as well as a runner-up prize carrying a cash award of INR 10,000 and a certificate. Winning essay(s), if recommended by the judges, may be published in the USI Journal. The USI reserves the right to withhold awards if the entries do not meet the prescribed standard.

17. The copyright of all submitted essays shall vest with the USI.

18. For any queries or clarifications, participants may contact the Director, Centre for Publications and Library, at cpl.essays@usiofindia.org or dircpl@usiofindia.org.

**Style Sheet**

19. General.

(a) Font style should be Arial, Font Size – 12 (Font Size – 10 for endnotes), with double spacing throughout the text.

(b) All diagrams, charts, and graphs should be referred to as 'Figure', 'Table', or 'Graph', and must be consecutively numbered. Tables should carry only essential data and must complement the text, not repeat it. Each should have a short title, a figure or table number, and the source mentioned at the bottom.

(c) The essay should be structured using group, paragraph, and sub-paragraph headings to enhance readability. Introduction and conclusion as group headings are mandatory. The essay must also include an abstract of approximately 150–200 words, placed before the 'Introduction'.

(d) English (UK) or English (India) spellings must be used consistently throughout the essay.

(e) Dates should be written beginning with the day, followed by the month, and then the year (e.g., 11 Sep 2014). Only the first three letters of the month should be used (e.g., Jan, Feb, Sep).

(f) There should be no paragraph numbering. Bullets may be used where required. Underlining is not permitted anywhere in the text.

(g) Numbers should be written in words up to nine, and in numerals from 10 onwards (e.g., two, four, nine; then 10, 11, 12).

(h) The term 'per cent' must be used instead of % or percent.

(j) Acronyms and abbreviations must be written in full at the first mention, followed by the abbreviation in brackets. Thereafter, only the abbreviated form should be used. Do not create an acronym if the word appears only once in the text.

(k) Any text written in any language other than English should be written in italics, with the English meaning provided in brackets alongside.

(l) While referring to currency, use the following formats:

(i) INR 2,000 cr (not 2000 crores of rupees)

(ii) USD 8.5 mn (not 8.5 million dollars)

(iii) Currency abbreviations must follow this standard: Million – mn, Billion – bn, Crores – cr.

(m) For emphasis, words should be placed within single quotation marks only at the first mention. If the emphasis involves two words, both should begin with capital letters. If it involves more than two words, only the first word should be capitalised.

(n) Statements by another person should be enclosed within double quotation marks. Punctuation marks should appear inside the quotation marks, while the full stop should be placed outside.

20. **Endnotes.**

(a) Authors are encouraged to provide complete bibliographic details of all books, articles, journals, and other sources cited, as endnotes. This should include the full name of the author, title of the book or article, journal name (for articles), issue details, and page numbers. In addition to endnotes, a bibliography may be included, if desired. The use of Wikipedia as a reference must be avoided.

(b) When referring to a book, follow the format below:

Lt Gen CK Kapur, Chinese Military Modernisation, (New Delhi: Manas Publications, 2003), pp 17–18.

(c) When referring to a journal article, follow the format below:

Lt Cdr Neeraj Malhotra, "Pratap Singh of the Indian Legion", The Journal of the United Service Institution of India, Vol. CXXXIV, No 556, p 283.

(d) When referring to a website, follow the format below:

"Escalation Control in a Nuclear Environment", Report of a Seminar organised by the Institute of Peace and Conflict Studies on 17 Nov 2004 at New Delhi, accessed 08 Feb 2025, www.ipcs.org (Full address of the page, not only the website).

(e) If two successive citations refer to the same source, use Ibid.

(f) If a source is cited again after intervening references, use the author's name followed by 'op. cit.', for example: Imran Khan, op. cit.

21. The style sheet available at https://www.usiofindia.org/publications.php?category=7 can also be referred to for further clarity.

# USI Latest Publication: 2024-2025

| Pub Code | Type | Title of Publication and Author | Price '₹' | Year |
|---|---|---|---|---|
| M-4/2025 (UN Forum 2024) | Monograph | USI ANNUAL UN FORUM 2024—CHANGING CHARACTER OF CONFLICTS—CHALLENGES TO PEACE OPERATIONS AND INTERNATIONAL HUMANITARIAN LAW; edited by Maj Gen PK Goswami, VSM (Retd), Maj Gen (Dr) AK Bardalai, VSM (Retd) and Col KK Sharma (Retd) **M/s Manohar Publishers & Distributors** | 350 | 2025 |
| M-3/2025 | Monograph | DRONES AND VIOLENT NON-STATE ACTORS: THE MANKIND'S QUEST FOR VIOLENCE by Maj Gen Anil Kumar Mehra, AVSM, VSM (Retd) **M/s Manohar Publishers & Distributors** | 350 | 2025 |
| M-2/2025 | Monograph | CHINA'S STRATEGIC CULTURE AND ITS IMPACT ON THE PEOPLE'S LIBERATION ARMY by Brig Sanjay Kannoth, VSM **M/s Manohar Publishers & Distributors** | 359 | 2025 |
| M-1/ 2025 | Monograph | COMPREHENSIVE STRATEGIC DETERRENCE TO MEET INDIA'S FUTURE CHALLENGES by Brig (Dr) Rajeev Bhutani (Retd) **M/s Manohar Publishers & Distributors** | 250 | 2025 |
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| OP-6/2025 | Occasional Paper | BATTLEFIELD SYMPOSIUM HAJIPIR VALOUR BEYOND THE PASS COMMEMORATING DIAMOND JUBILEE OF VICTORY AT HAJI PIR; compiled by Major General PK Goswami, VSM (Retd), Brigadier (Dr) Rajat Mohan Bhatt, and Colonel Vikas Kumar, SM **USI of India** | 250 | 2025 |
| OP-5/2025 | Occasional Paper | OPERATION SINDOOR AND REBALANCING THE DEFENCE BUDGET by Lt Gen KK Aggarwal, AVSM, SM, VSM (Retd) **USI of India** | 250 | 2025 |
| OP-4/2025 | Occasional Paper | UNVEILING CHINA'S GLOBAL HUMAN INTELLIGENCE STRATEGY THROUGH THE EVOLVING GLOBAL CIVILIZATION INITIATIVE by Col (Dr) DCS Mayal (Retd) **USI of India** | 250 | 2025 |
| OP-3/2025 | Occasional Paper | ARTIFICIAL INTELLIGENCE AND GOVERNANCE: SHRI ABHAY TRIPATHI MEMORIAL LECTURE by Shri S Krishnan, IAS, Secretary Ministry of Electronics and Information Technology **USI of India** | 250 | 2025 |
| OP-2/2025 | Occasional Paper | WEAPONISING PERCEPTION : COGNITIVE WARFARE AN INTEGRAL PART OF MULTI-DOMAIN OPERATIONS by Maj Gen Jagatbir Singh, VSM (Retd) **USI of India** | - | 2025 |
| OP-1/2025 | Occasional Paper | MANIPUR QUAGMIRE by Col Sachin Mahadik **USI of India** | - | 2025 |
| Adm/SYB 2024 | Year Book | STRATEGIC YEAR BOOK 2024; Editor-in-Chief: Maj Gen BK Sharma, AVSM, SM** (Retd); edited by Maj Gen Sanjeev Chowdhry (Retd), Ms Komal Chaudhary, Mr Vinayak Sharma, and Mr Mihir S **M/s Vij Books of India Pvt Ltd** | 2,750 | 2024 |
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# USI

(Estd. 1870)

## OUR ACTIVITIES

**Centre for Strategic Studies and Simulation (CS3)**

The erstwhile Centre for Research was re-christened as CS3 on 01 Jan 2005. The Centre focuses on detailed and comprehensive enquiry, research and analyses of national and international security related issues, and undertakes gaming and simulation of strategic scenarios, to evolve options for wider discussion and consideration.

**Centre for Military History and Conflict Studies (CMHCS)**

The CMHCS was established in Dec 2000 at the behest of the three-service HQs to encourage an objective study of all facets of Indian military history with a special emphasis on the history of the Indian Armed Forces. It focuses on diverse aspects of the history of Indian military evolution, policies, and practices – strategic, tactical, logistical, organisational, socio-economic, as well as the field of contemporary conflict studies in the broader sense.

**Centre for Emerging Technology for Atma Nirbhar Bharat (CETANB)**

The centre started as the Atmanirbhar Bharat Initiative in 2022 and later rechristened as the CETANB on 01 Jan 2024 and included Cyber Centre of Excellence (CCoE) as part of it, in conjunction with Cyber Peace Foundation. The centre's objective is to forge emerging technologies with geostrategic and geopolitical situations with a view to make the services self-reliant by making possible the indigenous production of defence equipment and spares. The CCoE trains military personnel in artificial intelligence, cyber, and machine learning, in addition to cyber forensic analysis in its well-equipped lab. Furthermore, it helps MSMEs to break into the defence industrial ecosystem.

**Centre for United Nations and Humanitarian Studies (CUNHS)**

The centre was established under the United Nations Peace Keeping Centre (CUNPK) in 2000. It organises workshops, seminars, and training courses for peacekeepers, observers and staff officers, both Indian and foreign. It also oversees the practical training of the Indian contingents. In Aug 2014, CUNPK moved to Integrated Headquarters (Army) of Ministry of Defence. The USI has now established CUNHS, which is focusing on operational, strategic, and policy issues related to United Nations Peace-keeping. It also organises seminars and conferences on such issues.

**Centre for Professional Military Education (CPME)**

The Institution conducts regular correspondence – interactive courses and mock test practices and assists and helps officers prepare in online and offline modes to help them prepare for promotion examinations and competitive examinations for entrance to Defence Services Staff College, and the Technical Staff College. Over the years, the activity has been a significant and well-received activity.

**Centre for Publications and Library (CP&L)**

This section manages the USI's key publications including the Strategic Year Book, USI Journal, books, monographs, occasional papers, and joint publications. These works contribute to an informed discourse on defence, strategy, and national security. The Strategic Year Book offers an annual review of critical developments, while other publications provide deeper analysis and collaborative perspectives. The USI Journal, Asia's oldest defence journal (est 1871), serves as a platform for military and strategic thought, welcoming contributions regardless of rank. The Journal remains a vital space for responsible and quality-driven engagement.

**USI Gold Medal Essay Competition**

Every year, the institution organises a Gold Medal Essay Competition, open to commissioned officers of the Defence Services and officers of the Territorial Army, Assam Rifles, and the Senior Division of the National Cadet Corps, and Gazetted Officers of the Civil Administration in India, including retired officers. These essays, the first one of which was introduced in 1871, constitutes a barometer of opinion on matters that affect national security, in general, and the defence forces, in particular.

**Lt Gen S L Menezes Memorial Essay Competition**

This has been instituted from 2015 on a subject related to armed forces historical research. The essay competition is open to everyone across the globe.

**USI War Wounded Foundation Joint Essay Competition**

This essay competition was instituted in 2021 through a Memorandum of Understanding between the USI and the War Wounded Foundation. The competition is open to all across the globe and must be about issues relating to the experiences and/or rehabilitation of war-wounded and disabled personnel of the Indian Armed Forces.

**USI-Lt Gen PS Bhagat Memorial Essay Competition**

The USI–Lt Gen PS Bhagat Memorial Essay Competition fosters intellectual inquiry, original research, and professional discourse on military leadership and strategic issues. It honours Lt Gen PS Bhagat's legacy while promoting strategic writing and advancing knowledge in defence and security studies.

**MacGregor Medal**

This medal is awarded to armed forces personnel for valuable reconnaissance and adventurous activity they may have undertaken.

**Lectures, Discussions and Seminars**

A series of lectures, discussions, and seminars on service matters, international affairs, and topics of general interest to the services are organised for the benefit of local members in Delhi.

**Library and Reading Room**

The library includes over 72,000 books, including rare works from the 17th–19th Centuries, with a primary focus on strategy and defence alongside diverse subjects on Indian life. It offers extensive research resources, an air-conditioned reading room with current material, and has been fully automated since 2002.

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