The Journal of the United Service Institution of India JULY-SEPTEMBER 2025 USI

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PRINCIPAL CONTENTS

Vol CLV JULY-SEPTEMBER 2025 No 641

USI Latest Publications: 2023-2025

Pub Code	Type	Title of Publication and Author	Price '₹'	Year
CMHCS-14		HONOURS AND AWARDS OF THE INDIAN ARMED FORCES by Dr Amlesh Kumar Mishra **M/s Pentagon Press**	1995	2025
CMHCS-13	Book	THE SUKRANITI: STATECRAFT AND WARCRAFT by Col Pradeep Kumar Gautam (Retd) **M/s Pentagon Press**	995	2025
CMHCS-12	Book	FORGOTTEN: HISTORY OF HONG KONG SINGAPORE ROYAL ARTILLERY by Col Mandeep Singh (Retd) **M/s Pentagon Press**	995	2025
OP-2/ 2025*		WEAPONISING PERCEPTION : COGNITIVE WARFARE AN INTEGRAL PART OF MULTI-DOMAIN OPERATIONS by Maj Gen Jagatbir Singh, VSM (Retd) **USI of India**	Nil	2025
OP-1/2025*	Occasional Paper	MANIPUR QUAGMIRE by Col Sachin Mahadik **USI of India**	Nil	2025
CMHCS-11	Book	BECAUSE OF THIS: A HISTORY OF THE INDO-PAK AIR WAR OF DECEMBER-1971 by Air Mshl Vikram Singh (Retd) **M/s Pentagon Press**	7,995	2025
M-7/2025*		INTERNATIONAL DAY OF UN PEACEKEEPERS 29TH MAY : 75 YEARS OF INDIAN CONTRIBUTION TO UN PEACEKEEPING By Maj Gen PK Goswami, VSM (Retd)	395	2025
M-6/2025*		PAKISTAN ARMY'S STRATEGIC CULTURE : IMPLICATIONS AND THREAT ASSESSMENT By Sanjay Kannoth,VSM	395	2025
M-5/ 2025*		INFORMATION AND CYBER IN NON-KINETIC WARFARE : COUNTER STRATEGIES by Lt Gen DP Pandey,PVSM,UYSM,AVSM,VSM (Retd) **USI of India**	Nil	2025
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**	250	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
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 **M/s Pentagon Press**	2,950	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
P-39/ 2023*	National Security Paper-2023	THE INDO-PACIFIC CONSTRUCT—INDIA'S MARITIME HIGHWAY TO GREAT POWER STATUS by Vice Adm (Dr) Anil Kumar Chawla, PVSM, AVSM, NM, VSM (Retd) **M/s Vij Books of India Pvt Ltd**	395	2024
M-5/2024*	Monograph	FUTURE EMPLOYMENT OF AIR POWER—STRATEGIC INFERENCES FOR INDIA by Air Mshl (Dr) Diptendu Choudhury, PVSM, AVSM, VM, VSM (Retd) **M/s Vij Books of India Pvt Ltd**	395	2024
M-4/2024*	Monograph	CHINESE AND RUSSIAN MILITARY ARTIFICIAL INTELLIGENCE: DRIVERS OF NATIONAL GOALS by Brig Pawan Bhardwaj **M/s Vij Books of India Pvt Ltd**	395	2024
M-3/ 2024*	Monograph	Fifth General KV Krishna Rao Memorial Lecture INDIA'S STRATEGIC AUTONOMY OPPORTUNITIES AND CHALLENGES IN THE EMERGING WORLD ORDER, Manekshaw Centre: 05 Oct 2023 by Gen Anil Chauhan, PVSM, UYSM, AVSM, SM, VSM, Chief of Defence Staff, Amb Sujan R Chinoy (Retd), Director General, Manohar Parrikar Institute for Defence Study and Analyses, and Lt Gen Ata Hasnain, VSM, UYSM, AVSM, SM, VSM** (Retd); edited by Maj Gen Sanjeev Chowdhry (Retd), Ms Komal Chaudhary, and Mr Vinayak Sharma **M/s Vij Books of India Pvt Ltd**	295	2024
M-2/ 2024*	Monograph	PROTECTION OF CIVILIANS IN MODERN CONFLICTS AND INTERNATIONAL HUMANITARIAN LAW edited by Maj Gen PK Goswami, VSM (Retd), Maj Gen (Dr) AK Bardalai (Retd), and Ms Kompal Zinta **M/s Vij Books of India Pvt Ltd**	395	2024
M-1/ 2024*	Monograph	PRESENT AND EMERGING THREATS TO NATIONAL SECURITY IN DIGITAL AND CYBER SPACE—AN ANALYSIS OF SECURITY AND LEGAL ISSUES by Lt Cdr Bharat Singh (Retd) and Gp Capt Raja Singh (Retd) **M/s Vij Books of India Pvt Ltd**	395	2024
OP-8/2024*	Occasional Paper	BLOODSHED IN BALOCHISTAN: PAKISTAN'S FESTERING WOUND by Maj Gen Jagatbir Singh, VSM (Retd) **M/s Vij Books of India Pvt Ltd**	250	2024

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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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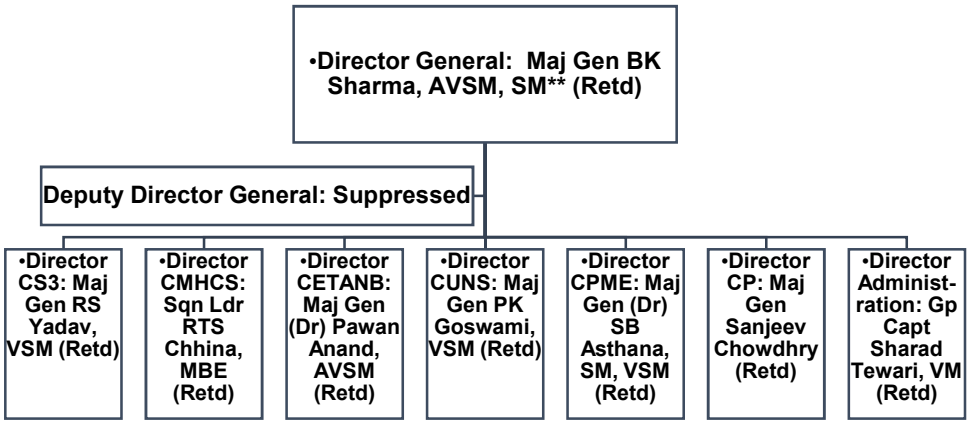

Auditorium/Seminar Room Rates w.e.f 01 Apr 2022

	Capacity	Full Day up to 8 hours	Half Day up to 4 hours	Additional per hour	Additional for Sat/Sun/ Holidays	Security Deposit
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SR-1	70	₹ 25,000/-	₹ 15,000/-	₹ 3,000/-	₹ 3,000/-	₹ 3,000/-
SR-2	20	₹ 15,000/-	₹ 8,000/-	₹2,500/-	₹ 2,500/-	₹ 1,500/-
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Notes -

1. 18% GST extra.
2. Armed Forces will be given a 10% discount.
3. Banquet Hall Pavilion – ₹ 5,000/- per day.

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- Yearly subscription - ₹ 1,100/- plus ₹ 160/- postal/(four issues) packing charges
- Overseas annual subscription (By Air Mail)- GBP 50 or USD 80.
- There is no life time subscription, however, 20 years subscription can be subscribed for ₹ 20,000/- including postal charges.

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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 **Registration open for 2026**	Sep 2026	₹ 9,000/-	Tactics B - ₹ 3,000/ Current Affairs and Military History – ₹ 2,000/- (each) Science and Military Technology – ₹ 1,500/- Tactics A – ₹ 1,300/- Administration and Military Law – ₹ 1,200/-
DSSC (Navy)	Second Week of Jan 2026 **Registration open for 2026**	Jul 2026	-	Paper 1 – ₹ 3,000/- (Current Affairs, Military/Naval History and Maritime Strategy)
DSSC (IAF)	Second Week of Dec 2025 **Registration open for 2026**	Jul 2026	-	Correspondence Course Military History – ₹ 3,000/- Current Affairs – ₹ 3,000/- Online Course Current Affairs – ₹ 4,000/- 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/- Administration and Military law – ₹ 800/-
Part D	First Week of Apr 2026 **Registration open for 2026**	Oct 2026	₹ 4,000/-	Tactics, Current Affairs and Military History – ₹ 1,500/- Administration and Military law – ₹ 1,000/-

5. **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.
6. **USI Aspire One** from 01-13 Dec 2025 for all subjects with sample paper will be 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)
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8. **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.
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13. **Prospectus and Form** : Available on Website and from Course Section.

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Civilian	₹ 4,000/-	₹ 14,000/-	₹ 18,000/-
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Civilian	₹ 1,000/-	₹ 5,000/-	₹ 6,000/-
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See USI website : www.usiofindia.org for complete details and form			

$(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 (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, Centre for Publications 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 Name of author (surname first), Title of Publication (in double quotes), Name of Publisher
(in italics), date of Publication, date Accessed and URL (optional). 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 Jun 2025

During this period a total of **20** 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). 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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Half Page	₹ 1,500/-	₹ 12,000/-
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New USI Members

During the period Jul-Sep 2025, 60 registered as new Life Members; 02 have renewed Ordinary Membership; 01 has registered as Special Member and 03 registered as new Ordinary Member.

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During Jul-Sep 2025, 58 Officers registered for Course Membership.

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July to September 2025

Editorial

I am pleased to present the Jul–Sep 2024 issue of the United Service Institution of India (USI) Journal. For more than 151 years, the USI has provided informed perspectives on national security and geopolitics. This issue brings together 12 articles and two reviews, addressing both contemporary challenges and historical legacies. The opening contributions examine India's evolving military art through Operation Sindoor and the conceptualisation of integrated 'Rudra Brigades,' highlighting shifts in doctrine, jointness, and force restructuring. Broader security concerns are analysed through studies on the politics of terrorism, the implications of China-Pakistan Economic Corridor, and the weaponisation of social media. Historical perspectives explore cartographic disputes, Rajput warfare, and the military innovations of Benoît de Boigne. Forward-looking discussions assess India–Taiwan relations, the potential of directed energy weapons, and the rise of non-contact and non-kinetic warfare. The issue concludes with an appraisal of the Indian Air Force's transformation towards joint, technology-enabled operations, underscoring India's pursuit of future-ready security.

The lead article, titled *'Application of Operational Art in Operation Sindoor'* by Major General (Dr) SB Asthana, SM, VSM (Retd), analyses India's calibrated and integrated response to the Pakistan-sponsored Pahalgam terror attack of Apr 2025. This is followed by *'Rudra Brigades: India's Leap Towards Agile and Integrated Force Structures'* by Major General Jagatbir Singh, VSM (Retd), which evaluates the army's initiative to raise all-arms integrated formations. The article underscores their potential in enabling rapid, multi-domain operations while cautioning that issues of sanction, logistics, and command clarity must be addressed for success.

The third article, *'Politics of International Terrorism'* by Lieutenant General DV Kalra, PVSM, AVSM (Retd) and Lieutenant General (Dr) SK Gadeock, AVSM (Retd), traces the historical evolution of terrorism, its hybrid manifestations, and future risks such as artificial intelligence-enabled radicalisation and weapons of mass destruction proliferation, while emphasising the urgent need for globally coordinated counterterrorism strategies. The

historical roots and enduring consequences of colonial-era cartographic boundaries in the Indian subcontinent is addressed in the next contribution *'The Lines of Fire: A History of Cartographic Conflict'* by Major General VS Ranade (Retd), which analyses how colonial-era boundary making continues to fuel disputes with Pakistan, China, Nepal, and Myanmar, while advocating for diplomacy and confidence-building measures as pathways to transform these contested lines into instruments of peace.

Geopolitical shifts are explored in the fifth article, *'Quiet Diplomacy and Strategic Interests: India–Taiwan Engagement under Modi 3.0'* by Dr Beena, which examines the delicate balance India maintains between its adherence to the One-China Policy and its quiet but consequential engagement with Taiwan in trade, technology, and strategic domains. In the next submission, *'Lethality at Light Speed: Directed Energy (Laser) Warfare',* Colonel Tirath Singh Rawat (Retd) evaluates the strategic and operational relevance of Directed Energy Weapons (DEWs) for India. The article argues that DEWs, when integrated with command, control, communications, computers, intelligence, surveillance, and reconnaissance systems and conventional platforms, could reshape India's layered air defence in the face of drone swarms and hypersonic threats.

In the seventh article, military history finds expression in *'The Rajput Way of War: Lessons from the Battle of Tarain'* by Dr Alok Yadav, which examines the tactical and strategic dimensions of Rajput warfare, drawing lessons of enduring value for contemporary military thought. Complementing this is the study of *Benoît de Boigne from the USI archives*, whose disciplined European-style battalions transformed Maratha military power in the 18th Century India, demonstrating the interplay of personal ambition, innovation, and cross-cultural exchange in shaping Indian military history.

Regional security concerns are addressed in the ninth article *'Evaluation of China-Pakistan Economic Corridor and its Security Implications for India'* by Lieutenant Colonel Pankaj Bisht, Colonel (Dr) Rajan Bakshi, and Dr Reetesh Sah. The article critiques China-Pakistan Economic Corridor as a strategic tool of China-Pakistan convergence, highlights its risks to India's territorial sovereignty, and argues for a counterstrategy to safeguard national

interests. The sociotechnical dimension of contemporary conflict is explored next in *'Weaponising Influence: Navigating the Impact of Social Media on Indian Armed Forces'* by Colonel Satish Kumar Sinha, which assesses the psychological, operational, and organisational risks of social media exposure while recommending institutional safeguards and proactive narrative dominance.

Expanding on the evolving character of warfare, *'Non-Contact and Non-Kinetic Warfare in the Indian Context: Concepts and Pathways',* the runner-up entry of the USI Gold Medal Essay Competition by Colonel Vikram Tiwari, highlights the growing importance of cyber, information, space, and psychological domains, urging integration of these tools into India's strategic architecture. Finally, the essay '*Transformation of the Indian Air Force for Future-Ready Joint Operations'*, which won first place in the USI–Chief of Air Staff Essay Competition, highlights Squadron Leader Naveen Rana's assessment of the Air Force's ongoing reforms. He underscores the efforts to deepen integration with the Army and Navy, accelerate the adoption of next-generation technologies, and develop joint capabilities across the air, land, sea, space, and cyber domains — positioning India for success in a rapidly evolving security landscape.

The final section of the Journal includes the following Review Articles:

- Review of the book, *General's Jottings* by Lieutenant General KJ Singh, PVSM, AVSM** (Retd), by Major General Jagatbir Singh, VSM (Retd). The review compiles sharp analyses on India's security challenges, including China, Pakistan, insurgencies, and defence reforms. Clear and insightful, it offers pragmatic strategies and is a valuable resource for students and practitioners of national security.

- A review of the book*, Honours and Awards of the Indian Armed Forces* by Dr Amlesh Kumar Mishra, by Dr Navaneeth Krishnan S traces India's military decorations from premodern times to the present, examining their symbolism, institutional framework, and cultural significance. It highlights both individual valour and state recognition, making it an authoritative reference and a tribute to service.

This issue underscores the breadth and depth of contemporary and historical security discourse, highlighting the interconnections between strategy, technology, and military tradition. Collectively, the contributions reaffirm the need for holistic, multi-domain approaches that integrate historical insight, strategic foresight, and innovation to safeguard India's national security and shape its future trajectory.

We await your feedback and suggestions.

Happy Reading!

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

Application of Operational Art in Operation Sindoor

Major General (Dr) SB Asthana, SM, VSM (Retd)[@]

"Operation Sindoor was more than a military response; it was a strategic statement, a template of application of modern operational art"

Abstract

Operation Sindoor marked a watershed in India's strategic doctrine, launched after the Pakistan-sponsored Pahalgam terror attack of Apr 2025. It showcased India's shift from restraint to calibrated offensive action to integrated military precision strikes with diplomatic, economic, and informational tools. By degrading terror infrastructure, suspending the Indus Water Treaty, and leveraging indigenous technologies like Akashteer and Système de Croisière Autonome à Longue Portée (SCALP) [Long Range Autonomous Cruise Missile], India demonstrated comprehensive national power and atmanirbhar (self-reliance) capability. By carefully applying principles of operational art—clear end-state, centre of gravity identification, surprise, deception, and escalation control—India executed multi-domain precision strikes while avoiding a full-scale war. The operation exposed gaps in information warfare, reaffirmed the role of drones, and tri-service integration, while establishing a new deterrence doctrine: terrorism will be treated as an act of war.

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Backdrop: The Context of Conflict

Operation Sindoor marked a significant inflection point in India's strategic and military posture towards cross-border terrorism and its sponsors. It emerged as a decisive and multifaceted Indian response to the Pakistan-sponsored Pahalgam terror attack[1] of Apr 2025. It marked a significant shift in India's statecraft from strategic restraint to calibrated offensive poise, successfully demonstrating precision strike capabilities.

The Pahalgam attack, which deliberately targeted civilians based on religious identity, marked a provocative attempt by Pakistan to fracture India's internal cohesion and provoke military overreach. In response, India launched Operation Sindoor—a finely calibrated, multi-domain operation that exemplified the principles of operational art, while leveraging multiple instruments of national power across diplomatic, economic, military, and informational domains.

This operation not only dealt a tactical blow to the terror infrastructure but also sent a strong strategic message to Pakistan's military elite about Indian resolve to strike anywhere in Pakistan, ignoring nuclear blackmail. More importantly, it showcased India's evolving military doctrine and the urgent need to recalibrate policy and institutional mechanisms to prepare for future conflicts. It also established a new benchmark in Indian response to terrorist actions by declaring all such acts to be treated as 'Acts of War'[2].

Pakistan's Strategic Aim: Provocation and Disruption

Pakistan's intention behind orchestrating the Pahalgam terror attack was not limited to inflicting casualties or spreading fear. It aimed to undermine the peace and development in Jammu and Kashmir (J&K), trigger communal unrest, and internationalise the Kashmir issue by provoking an uncontrolled Indian response. Habitual of using terror as a low-cost option under the nuclear hangover, Pakistan's strategy was intended to project its continued relevance in the region, while bolstering domestic morale through a perceived show of resistance, besides diverting domestic attention from economic and internal security debacles.

However, the strategy failed to trigger communal unrest in India or restrain the development of Kashmir. Instead, it strengthened internal cohesion in Jammu and Kashmir (J&K) and fuelled strong

national anger to punish Pakistan's terror sponsors. Pakistan faced significant degradation of its terror infrastructure and the psychological realisation that no place in its territory is safe from Indian strikes.

India's Aim: Strategic Response and Message of Deterrence

India's strategic aim was clear—to punish the perpetrators, degrade the terror infrastructure, and signal a firm red line against the use of terrorism as an instrument of state policy. The centre of gravity was to influence the minds of Pakistan's military leadership into conceding their vulnerability to the conventional reach of Indian strikes across the country—unaffected by nuclear blackmail. India used all instruments of national power during Operation Sindoor, unlike earlier occasions where only one or two were used.

Operation Sindoor's scope was deliberately limited to avoid full-scale war, yet potent enough to achieve deterrence, demonstrating its operational reach and precision strike capability to Pakistan. Precision strikes eliminated key terror camps and senior commanders across Pakistan-occupied J&K and the Pakistani heartland.

The Pakistani military's actions were met with retaliatory precision strikes, executed to demonstrate the vulnerability of its strategic and military airbases and assets across the country, ultimately forcing its leadership to plead for a ceasefire. India demonstrated a nuanced ability to control the escalatory ladder, while maintaining legitimacy through adherence to international norms and operational ethics.

Comprehensive National Power: A Synchronisation of State Instruments

Operation Sindoor exemplified India's ability to mobilise Comprehensive National Power. Kinetic military actions, including coordinated tri-service strikes and airspace denial, were supplemented by diplomatic offensives, economic sanctions, legal restrictions, and social disengagement.

The suspension of the Indus Waters Treaty[3], the closure of trade routes, and revocation of Pakistani visas collectively imposed substantial costs on Pakistan. Simultaneously, India's diplomatic outreach ensured global understanding of its actions, gradually

limiting the space for adversarial narratives. The orchestration of these instruments created a multi-layered deterrent, underscoring India's capability to respond to hybrid threats with hybrid tools.

Military Execution: Precision, Technology and Integration

Operation Sindoor represented a paradigm shift in India's conduct of warfare. Employing standoff weapons such as Système de Croisière Autonome à Longue Portée (SCALP) [Long Range Autonomous Cruise Missile] missiles and loitering munitions, India achieved deep strikes with surgical accuracy. Joint operations between the army, navy, and air force reflected the increasing maturity of India's tri-service interoperability. While the initial strikes were precisely against terrorist infrastructure[4] (non-military targets) in a non-escalatory manner, but enemy military response was anticipated and responded well by deep conventional strikes on high value military targets without undue escalation.

Electronic warfare units disrupted enemy communication, while multi-layered air defences (e.g., Akashteer, L-70, Shilka) created an effective shield. intercepted over hundreds of Pakistani drones and missiles in 25-minute operation. The operation highlighted the transformation of the Indian military into a network-centric force capable of delivering effects across all domains of warfare with precision, speed, and efficiency. The combat experience of Indian security forces in counter terror operations bore fruits as in Operation Mahadev[5] the terrorists linked with the Pahalgam attack were eliminated.

***Atmanirbhar Bharat* in Action: Indigenous Technological Superiority**

A noteworthy feature of Operation Sindoor was the successful deployment of indigenous defence technologies. The Akashteer Air Defence Control and Reporting System intercepted hostile aerial platforms, while Defence Research and Development Organisation-developed electronic warfare systems played a key role in jamming adversary radars. Intelligence, Surveillance, and Reconnaissance (ISR) assets and targeting platforms, mostly domestically produced, were instrumental in real-time mission execution. This demonstrated India's growing self-reliance in defence and reinforced the strategic utility of its *Atmanirbhar Bharat* (Self-reliant India) initiative in the national security architecture.

Application of Operational Art

Aim and Clarity of End-State. Operation Sindoor had a clear political objective—to retaliate proportionately and deter future attacks without inviting full-scale war. The military aim, therefore, was limited and achievable: to neutralise specific terrorist targets with minimal collateral damage, and to respond strongly to any military action by Pakistan with precision strikes on military targets.

Centre of Gravity. India accurately identified the psychological and operational centres of gravity—terror leadership, training camps and air bases—and degraded them through surgical strikes. At the strategic level the centre of gravity was to create psychological dislocation of the mind of Pakistani military leadership, by demonstrating the intention and strategic reach of Indian forces, raising cost of any misadventures in future, calling out nuclear blackmail.

Avoiding the 'Nuclear Trap'. By not targeting military establishments directly in the first wave and keeping the operation within the realm of counterterrorism, India effectively dodged the trap of 'Nuclear Blackmail'. Instead, it signalled readiness for further escalation if required—thus shifting the psychological balance.

Surprise and Deception. Mock drills and a veil of routine exercises masked India's real intentions, achieving absolute tactical surprise. The military assets moved quietly, and rehearsals were conducted in complete secrecy, without raising alarm. The result was a delayed and disoriented Pakistani response.

Operational Reach and Tempo. The use of long-range vectors like Rafale jets, BrahMos and SCALP missiles loitering munitions and electronic warfare ensured rapid, deep strikes. The tri-service coordination ensured operational tempo remained high, while keeping escalation controlled.

Using Strength Against Weakness of the Enemy. Among the three services, India's asymmetric advantage over Pakistan was greatest in the maritime domain, but the Indian Navy was employed primarily for deterrence—perhaps to avoid unwanted escalation. However, in a similar scenario in the future, Pakistan could expect a far greater application of naval power aimed at degrading its capabilities.

Well-Timed Ceasefire and Exit Strategy. An often-underappreciated element of conflict is its termination. India showed strategic prudence by agreeing to a well calibrated ceasefire/ strategic pause at the right moment, just after establishing dominance and imposing costs. The 'Conflict Termination/Strategic Pause' was a calibrated exit, ensuring that India retained both the initiative and the narrative of de-escalation from a position of strength. It underscored maturity in both political and military leadership and India's image as a responsible actor.

Winning the Information War?

Narrative War and Countering Disinformation. Parallel to the kinetic operations, a sophisticated information warfare campaign was a part of operations by both sides. Pakistan employed fake videos, fabricated casualty figures, and a barrage of disinformation to manipulate international perception. India countered this digital offensive with measured and timely communication. Government briefings, dissemination of credible facts with irrefutable evidence, fact-checking initiatives, and digital literacy campaigns, played a pivotal role in neutralising misinformation. However, in absence of a credible 'Information Warfare Strategy', structures and procedures, India had to do a fair amount of damage control in narrative warfare, which needs to be addressed for future conflicts.

Weaponising the Arms Market Narrative. Interestingly, global arms manufacturers entered the fray, shaping narratives based on commercial interests. Chinese and Western defence manufacturers' lobbies amplified conflicting claims to promote their platforms by underplaying Pakistani military setbacks—creating confusion in international perception. Indian-made platforms like BrahMos eventually gained credibility, but only after initial media scepticism. However, the delayed announcement of the ceasefire allowed foreign powers to capture narrative space—highlighting the need for more agile, real time strategic communication mechanisms in the future. An immediate ceasefire announcement following India's decision could have saved a great deal of the effort later required to counter hijacked news and fake propaganda.

Regional Threat Expansion

Pakistan-China-Turkey Nexus. During Operation Sindoor, India confronted a Pakistan-China-Türkiye nexus on a single front, signalling an expanded regional threat beyond Pakistan. China, the so-called 'Iron Brother,' backed the shadow war by providing space-based ISR support through Baidu satellites, J-10/J-17 aircraft, PL15 beyond visual range missiles and HongQi-9 Air Defence Missile Battery. Türkiye too demonstrated tacit support for Pakistan, in sync with its Islamic leadership ambition, by providing Byker Yiha III Kamikaze Drones and Asisguard Songar Drones.

Emerging Bangladesh Front. Beyond Sindoor India can expect Bangladesh to emerge as a new potential front, especially with political instability and terrorist network, reviving a new terror corridor in collusion with Pakistan. Despite a strong message by India, the intention of Pakistan to wage proxy war is unlikely to change, but considering the increased cost, its modalities may change to improve deniability. India could expect terrorist action routed through Bangladesh or Nepal to complicate its response.

Understanding China's Calculated Restraint. China's passive posture during Operation Sindoor—despite rhetorical, moral, diplomatic and material support to Pakistan—was telling. It reflects Beijing's prioritisation of economic interests and its ongoing strategic contestation with the United States (US). While China continues to arm Pakistan and extend credit (disguised as weapon delivery payments), it refrains from opening a second front against India, especially when its own interests vis-à-vis Taiwan dominate strategic priorities. However, in any future confrontation with Pakistan, India should assume that the minimum level of external support extended to Pakistan would be comparable to what the North Atlantic Treaty Organization is currently providing to Ukraine.

Strategic Lessons from Operation Sindoor

Multi-Domain Integration. Operation Sindoor offers multiple lessons for future conflict preparedness. It validated the relevance of multi-domain operations to include land, air, cyber, space, and information warfare. India must institutionalise joint doctrines and operational synergy across land, air, cyber, space, and information domains for resultant strategic deterrence. The relevance of strategic communication and information war was a lesson and

reminder to expedite Indian capability in this important domain of modern warfare.

Relevance of Drones and Cruise Missiles. The operation reaffirmed the relevance of drones and precision-guided munitions. Drawing lessons from the Armenia-Azerbaijan, Israel-Hamas, and Ukraine-Russia wars, India realised that future wars would rely heavily on standoff platforms. Drone production and indigenous capabilities need rapid scaling. Like Ukraine and Russia, India has the potential to become a major drone manufacturing hub if national effort is directed appropriately. Rapid advances in drone warfare and precision-guided systems are essential.

State of the Art Aerial Assets. The capability gaps in areas like 5th generation aircraft and drone warfare assets were evident. India needs to buy a few 'State of the Art' fighter aircraft to arrest the declining superiority against Pakistan and mitigate the capability gap against China. The indigenous production of Tejas and medium multi-role combat aircraft needs to be accelerated with special effort to tide over the problems of engines and other critical components. India needs to fast-track the upgradation its air defence systems in preparation for a potential conflict with China or a collusive confrontation. The announcement of Sudarshan Chakra, a future air defence shield is the right step in this direction.

Budgetary Realism. The operation underscored the urgent need of budgetary realism, raising defence spending above 2 per cent of Gross Domestic Product (GDP), accelerating indigenous defence production and prioritising defence Research and Development (R&D). It must be recognised that defence spending can stimulate R&D, industry, and GDP, and act as an economic force multiplier. Battle tested systems can boost defence exports to generate forex for critical procurements. Thankfully, there is a growing public awareness on importance of national security and people as well as corporates understand growing, multi-front strategic threats and support the need for stronger national defence, even at a higher financial cost.

Narrative Dominance. Operation Sindoor revealed that victory in the modern era is determined not just by battlefield outcomes but also by dominance in the cognitive and digital domains. There is a need to have a strategy, doctrine, appropriate organisational

structures and procedures to handle it effectively. A need to establish a permanent information warfare division for proactive and reactive narrative control with social media responsiveness needs to be examined immediately.

Upgrading Deterrence Paradigm. Operation Sindoor has upgraded the deterrence paradigm in a manner that every terrorist attack will be taken as an 'Act of War'. It entails higher preparedness and response level in escalation dynamics. Future operations must sustain this momentum through unpredictable, targeted actions to ensure that deterrence by punishment continues.

Diplomatic Caution. On the diplomatic front India was once again disappointed with US inconsistency in relation to Pakistan after events in Bangladesh. Washington's response revealed the limits of partnerships during crises. India should revisit its partnerships, as strategic autonomy has served indian interest in peacetime, but it also left New Delhi with an unpleasant taste of isolation at the time of military confrontation.

Shaping Future Strategy: Beyond Sindoor

India must now institutionalise the strategic and operational gains of Operation Sindoor. This includes the development of theatre commands, enhanced integration of space and cyber capabilities, and the creation of real-time narrative control mechanisms by creating a 'National Narrative Warfare Cell'. The recent release of cyber, space and amphibious warfare doctrines are steps in right direction. Furthermore, India must expand the indigenous defence ecosystem beyond legacy platforms by fast-tracking artificial intelligence, drone swarms, electronic warfare systems and other niche technologies. Strengthening civil-military fusion and reinforcing border infrastructure are also critical. India must make up the requirements.

New Delhi needs to recalibrate future retaliation, in context of Beijing's support to Islamabad or a regrouped Pakistan-Türkiye-China axis, granting them the opportunity to make up for their weaknesses, having tested their military assets and procedures in war conditions. It must consider substantial capability development being undertaken by Pakistan which has hiked up its defence budget by 20 per cent[6] over the 2024 allocation and China's continued efforts to modernise its military at unprecedented pace. India will thus have to fast pace its capability development too.

Pakistan has continued nuclear rhetoric beyond Operation Sindoor with Asif Munir restating the nuclear threat[7] from US soil. However, India remains firm in its refusal to yield to any form of nuclear blackmail. Islamabad has also made some diplomatic moves to get the Permanent Court of Arbitration's (PCA) decision from Hague on the Indus Water Treaty, rejected by India, which earlier sought neutral expert mechanism. India maintains that as the PCA in this case is 'Illegally Constituted'[8], devoid of jurisdiction; hence, it continues to hold the treaty in abeyance, ruling out any negotiations with perpetuators of terrorism. Our future response strategy must factor these developments. India needs to adopt proactive strategies in shaping the international environment and countering the challenges mentioned above.

'Manpower is Still Key', despite technological advancements, ground forces remain indispensable due to India's geographical compulsions. From the line of control, line of actual control to the Indo-Myanmar border, boots on ground will continue to be a critical requirement. Therefore, reducing recruitment or cutting troop strength under modernity pretexts may be strategically counterproductive.

Conclusion: Recrafting India's Future Ready Strategic Doctrine

Operation Sindoor validated the concept of integrated national power application, highlighted the relevance of standoff warfare, and underscored the importance of narrative dominance. However, it also exposed weaknesses in strategic communication, procurement delays, and budgetary constraints.

Operation Sindoor was more than a military response; it was a strategic statement, a template of application of modern operational art. It demonstrated how calibrated force, applied with strategic restraint and backed by comprehensive national power, could alter the strategic landscape without crossing red lines. India, thus, redefined the contours of regional deterrence with diplomatic maturity. It reaffirmed that in the era of hybrid warfare, success lies not just in kinetic prowess but in the ability to tell the right story, at the right time, to the right audience.

The operation marked a transition from reactive posturing to proactive doctrine—one that integrates restraint with resolve, and

technology with tenacity. By integrating lethal precision, India laid the foundation of a new deterrence doctrine—one rooted in resolve, responsibility, and readiness.

India must codify a new 'Deterrence Doctrine', making it clear that terrorism and its sponsors will be treated indistinguishably. Above all, India must maintain an unpredictable yet credible deterrence posture that dissuades adversaries from testing its resolve.

India needs to prepare for multi-front, multi-domain warfare—including conventional and hybrid forms—against a collusive threat from China and Pakistan, which would automatically cover any contingency from a lesser adversary. It needs to enhance military readiness, revamp economic thinking to support defence capacity building. It should also address new threats emerging from the east as well as maritime domains.

The overarching lesson is unambiguous: India must modernise its military while simultaneously evolving its doctrines, strengthening indigenous capability, and mastering the war of narratives.

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Rudra Brigades: India's Leap towards Agile and Integrated Force Structures

Major General Jagatbir Singh, VSM (Retd)[@]

Abstract

This article examines the Indian Army's formation of integrated 'Rudra Brigades', all-arms groupings that combine Infantry, Mechanised and Armoured units, Artillery, Special Forces, and Unmanned Aerial Systems. Conceived as part of the army's modernisation and transformation drive, these formations are intended to enable agile, technology-enabled, and rapid responses in multi-domain operational environments. The restructuring reflects a shift in India's warfighting philosophy, designed to adapt to challenges posed by nuclear overhang, contested borders, and evolving hybrid threats. This article also highlights persistent concerns—such as the absence of government sanction, redistribution of resources from existing units, gaps in logistics, and the need for decentralised control of force multipliers like cyber and electronic warfare assets. The success of Rudra Brigades depends on clear command structures, realistic training, doctrinal evolution, and effective leadership development. While representing a strategic leap forward, the initiative requires validation in simulated operations, policy alignment, and sustained budgetary support.

Introduction

On the occasion of Kargil Vijay Diwas on 26 Jul 2025, General Upendra Dwivedi, the Chief of the Army Staff, announced the formation of new 'All-arms Brigades' named 'Rudra'. As part of

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the Indian Army's drive towards modernisation and transformation, he said that all-arms brigades and lethal Special Forces units were being developed to build a 'Future-oriented Force'.

Speaking at Dras, he said, "Today's Indian Army is not only successfully addressing current challenges but is also rapidly advancing as a transformative, modern, and future-oriented force. Under this, new all-arms brigades named 'Rudra' are being formed. This will have fighting components like infantry, mechanised infantry, armoured units, artillery, Special Forces, and Unmanned Aerial Systems (UAS), supported by tailored logistics and combat support".[1]

He also stated that "Agile and lethal Special Forces units, 'Bhairav' Light Commando Battalions, have been established to shock the enemy on the border. Every infantry battalion now includes drone platoons, while artillery has enhanced its firepower manifold through 'Divyastra Batteries' and Loiter Munition Batteries. Army Air Defence is being equipped with indigenous missile systems".[2]

As per reports, two infantry brigades have already been converted into Rudra Brigades. The concept of Rudra Brigades is built on the Indian Army's previous proposal of Integrated Battle Groups (IBGs). On the other hand, the 'Bhairav' Commando Unit is a lethal Special Forces unit. It is intended for quick strikes and rapid border deployment.[3]

The plan involves converting existing units and formations without fresh troop accretions. Presently, it does not appear to have been accorded government sanction, hence, the manpower and equipment would have to be offset from existing organisations and would create voids there, which of course will have its own impact. But it is a seismically important shift in the integration of various combat, combat support, and logistic elements to fight in a multi-domain environment together.

Existing System

Typically, a brigade is made up of three infantry battalions or their equivalent regiments of armour, mechanised infantry, artillery, Army Air Defence with supporting troops forming part of a division. The same, so far, are also arm-specific, like an armoured, infantry, or artillery division.

There are also independent brigades, namely armoured, mechanised infantry, para, infantry, and engineers, with a mix of various arms and services, which come directly under a Corps Headquarter (HQ).

As per reports, Rudra Brigades will comprise a mix of battalions or regiments from different arms. The composition will vary depending on the operational requirements and tasks at hand. These would also be adequately equipped with force multipliers like drones' surveillance equipment and area saturation weapons.[4]

For example, in the mountains, it may have two infantry battalions and an artillery regiment or in the plains, it may have two armoured regiments, a mechanised infantry battalion, a self-propelled artillery regiment, and an Air Defence (AD) regiment more suited for offensive operations. The latter being on the lines of an existing independent armoured brigade. Along the Line of Control (LoC), it could be infantry battalions along Special Forces elements.

The question, therefore, being asked in some quarters is whether the Rudra is just an upgraded form of these independent brigades with certain additional elements such as drones and Intelligence, Surveillance, and Reconnaissance (ISR) capabilities. In other words, is it old wine in a new bottle or does it mark a seismic shift in India's warfighting philosophy and methodology?

Foreign Armies

The United States Army has a Brigade Combat Team (BCT), which is the basic deployable unit of manoeuvre. It consists of combat arms and its assigned support and fire unit. It was designed to be self-contained, able to fight independently and have all the combat, support, and logistics capabilities required to conduct sustained military operations. This necessitated those capabilities at the division level such as artillery, engineers, and intelligence level to be shifted to the brigade level. This was intended to provide greater flexibility, decrease the logistical footprint, improve its ability to leverage command, control, communications, computers, ISR, and precision fires to increase lethality and meet the contemporary threats.

The Independent BCTs (IBCTs) are designed for combined arms offensive operations in restrictive or complex terrain against conventional or irregular threats. The design is such that it has all the necessary capabilities to allow it to operate autonomously or semi-independently. The central capability of the IBCT resides in its lethality provided by the two or three infantry battalions and their ability to bring additional combat power to bear on an enemy force.[5]

China's Combined Arms Brigades (CAB) are a key component of the People's Liberation Army (PLA) Ground Force, representing a shift towards a more mechanised and integrated force structure. These brigades are designed to be highly mobile and capable of conducting combined arms operations, incorporating various combat arms like armour, infantry, artillery, and AD, all within a single, integrated unit.

The CAB is the primary ground unit of action of China's self-described 'World Class Military' designed to outmatch the US military by 2049.The PLA has 78 CABs spread across 13 group armies, which are corps-sized formations. CABs vary in size from approximately 4,500 to 5,000 personnel. Their composition in equipment and personnel, and the types of operations they are assigned are roughly equivalent to a US BCT.[6]

The PLA, it appears, is focusing on increasingly integrated systems and force structures that can conduct operations in and across all domains, combining a range of kinetic and non-kinetic effects.

In the Russian case, what has been witnessed recently, especially in Bakhmunt, is that while such a formation may be balanced in mechanised forces and supporting elements initially, it ran short of infantry, artillery, and air support. During the Battle of Grozny, in 1995, it faced a similar problem due to a lack of infantry as dismounted infantry is critical when fighting in urban settings, or seizing or holding terrain, as its Battalion Tactical Groups had tons of metal but little manpower.

As a result, after the initial setbacks in Ukraine, the Russians became more flexible and adaptive. Their battalions and brigades were provided tailored solutions based on the battle requirements by the higher formations, which is somewhat similar to the existing

Indian concept of combat commands and combat groups, which are flexible and tailor-made organisations for mechanised operations.

The Advantages

There are advantages to initially opting for such a grouping and mix, as the all-arms integration of armour, infantry, mechanised infantry battalions, artillery, AD artillery, Special Forces, and unmanned aerial vehicles operating under a single brigade leads to seamless coordination due to their training and affiliation.

These formations will also provide rapid deployment and flexibility. Being tailored to certain terrains and missions will enable swift offensive or defensive actions.

In the present environment of technology-enabled warfare, the use of drone surveillance, area saturation weapons, and precision-guided munitions increase battlefield effectiveness. Dedicated combat support to include artillery, AD, engineering, and communications as well as in-built logistics will allow operational independence and sustainment.

Combined arms warfighting argues against like-system fighting (i.e., tank against tank). Instead, combined arms require incorporating a diverse array of combat arms into a single organisation, so that the weakness of any single arm is compensated for by other arms' strength. Further, when properly coordinated and synchronised, combined arms complement one another: an opponent defending itself against one arm makes it vulnerable to another combat arm.[7]

Building on the proposed IBGs and Cold Start Doctrine enables generation of tempo and generates more options for employment. While rethinking the use of force to meet today's new challenges is a necessity, what is important is how these formations will be integrated into the current army's warfighting structures.

However, there are inherent disadvantages. The principal disadvantage is the logistic support and sustenance required to handle these formations, which may necessitate a change in the logistic units, which also includes the repair and recovery echelons. The other, of course, being a relook at the staffing at the Rudra

Headquarters so as to be able to manage these combined arms formations. Finally, and most importantly, is human resources, which includes developing the skill sets required and nurturing a mindset to enable prosecution of the envisaged tasks in keeping with the operational design and force application matrix. As Lieutenant General AB Shivane, former Director General Mechanised Forces, stated, the focus should be on "Molding competent leadership and directive style of command with traits such as boldness, initiative, audacity, innovative tactics, and non-linear thinking".

Analysis

While most may see the timing of the announcement to be fallout of Operation Sindoor but the army has been working on the restructuring of formations as part of its transformation studies for the past few years.

India is confronted with a strategic and operational environment characterised by complex interactions between multiple domains and fronts. This proliferation of domains and the interactions within and across them necessitates developing and implementing an effective strategy and operational art. The challenge necessitates the development of new concepts to design future capabilities and force development, basically a coherent theory of how to prepare, operate, deter, fight and win.

Hence, this restructuring is based not only on the threat perceptions and changes manifesting in the character of war but also on drawing lessons from the ongoing conflicts and experiences, following both Doklam and Galwan as well as along the LoC. With this as a background, the concept of IBG was initially mooted by General Bipin Rawat and the formation of Rudras seems to be an outcome of this exercise.

The threshold of use of atomic weaponry has been debated ever since the first atomic bombs were dropped in 1945. Thankfully that threshold has not been breached again. Nuclear deterrence between India and Pakistan has reduced the likelihood of major war but simultaneously increased the salience of military coercion below the threshold of war. It is in this nuclear overhang, which is increasingly being seen as flexible that the Rudra Brigades will be operating.

Armies around the world base their structure on the kind of wars they are likely to fight, how they plan to fight them, and the best way to balance capability, capacity, and readiness. Hence, reorganising the armour and infantry capabilities into lighter yet more effective brigade-level formations can be seen as fallout of the harder look taken regarding the evolving threats expected to be encountered on the modern battlefield.

Structural transformations succeed changes in doctrines and are based on the thought process of the concept of employment in a given terrain and environment, keeping a particular response mechanism and end state in mind. Hence, these changes would have been well thought out.

However, the key lies in training and developing its unique skill sets as well as defining the command and control, and balancing both centralisation and decentralisation in a manner that the Commander of the Rudra Brigade is able to have adequate operational freedom to identify the decisive point of an operation, synchronise assets in time and space, and mass combat power against a capable and dynamic enemy to achieve the desired results.

The Unanswered Questions

The major question that needs to be answered is whether these formations indicate a shift in the army's military doctrine for the conduct of operations which presently centre around a division and, therefore, will divisions gradually give way to prosecuting operations at a brigade level?

Further, integration of force multipliers such as Electronic Warfare (EW), cyber, AD, and firepower beyond integral support is presently controlled at a higher level and, hence, decentralising these assets to a brigade level has its own issues regarding the matrix at which a brigade operates. Knitting together sensors and shooters, and the long-range precision weapons that can target the enemy's vital rear areas and lines of communication is essential but is unlikely to be meshed at a brigade level. More importantly, it is essential to provide the robust structures for the larger span of control that these independent brigades would require. These forces would also require to be self-contained with integrated tailor-made logistics as an enabling factor.

While writing on the IBGs, Lieutenant General Shivane has stated, “Knowledge of employment of all arms and operational dimensions of battle space as the science of war and leadership cum human-will as the art of war will result in decisive outcomes of IBGs. Risk taking, audacity, and initiative are essential for success”. Therefore, he said that along with restructuring IBGs, it is also important to focus on moulding competent leadership and directive style of command with traits such as boldness, initiative, audacity, innovative tactics, and non-linear thinking. IBG commanders need to fight smart and not allow predictability and set piece operations to stall their tempo.[8]

While currently these formations are being formed from within existing resources by offsets and creating voids in existing structures, they will need to have their organisational structure and equipment accorded the necessary government sanction is required with matching budgetary support, sooner rather than later, if this path is visualised as the way forward.

Conclusion

There is no doubt that the Indian Army’s Rudra Brigades represent a transformative step in modernising its operational capabilities along the borders with China and Pakistan. The all-arms integrated formations combining various combat elements and UAS into a single cohesive unit, supported by dedicated logistics and combat support, will be a force multiplier in the contemporary and future conflicts.

This integration allows the Rudra Brigades to deliver swift, flexible, and technology-enabled responses to diverse border scenarios. It is also part of India’s larger strategy to build a modern, self-reliant military, integrating cutting-edge technology with traditional combat strategies to ensure national security in an increasingly complex geopolitical and multi-domain environment.

Rudra gives tempo, better ISR, and sharper combined-arms edge potency. It is more modern and flexible but needs to transform into a multi-domain task force with the ability to coordinate air strikes, cyber, and EW, and jam enemy radars. There needs to be extensive cooperation between different weapons systems on land with assets operating from the sky, as well as in the domains of space and cyber. The formation will become more complex with each new capability that needs to be integrated.

The EW, communication, AD control and reporting linkages, Army Aviation, integration of sensors, and any other capabilities available at the Corps HQ should also be integrated into the operational concept. But transformation and restructuring is more than only new equipment and organisation; it also involves doctrinal changes regarding responses along the full spectrum of conflict.

Undoubtedly, Rudra Brigades are a step in the right direction. This is a thoughtful initiative designed with lessons from past experiences adapting to future threats. Though the changes in organisation, equipment, and tasking will need to be refined, following validation of these formations under simulated operational conditions. The feedbacks will then need to be examined, which will enable these formations to mature and evolve.

Successful military operations are the product of combined arms warfighting carried out by the appropriate force for both the threat and the operating environment. Their proficiency is the product of organisation, being well-led and capable of effectively integrating, synchronising, and executing all-arms tactical engagements and operations. The key being employability, interoperability, and access to capabilities between the services.

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Politics of International Terrorism

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Lieutenant General (Dr) SK Gadeock, AVSM (Retd)[#]

"The achievement of disproportionately large effects from the employment of minimal resources is what political terrorism is all about"

Chalmers Johnson

"Contemporary terrorism is inextricably international in character; the global arena is its stage, international relations its inevitable target, and disruption of global order its constant implication"

Sunil Adam

Abstract

This article examines the evolution, drivers, and global impact of political terrorism as a persistent form of low-cost, high-impact violence. It traces terrorism's historical roots in tyrannicide and revolutionary struggles, through its ideological influences of nationalism, religion, and anti-globalisation, to its modern manifestations in state sponsorship, cross-border networks, and cyber-enabled extremism. The analysis highlights how terrorism exploits democratic vulnerabilities, weak international institutions, and unregulated arms flows, while increasingly adopting hybrid tactics that blur the line between conventional war and terrorism. Case studies such as the Irish Republican Army,

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Liberation Tigers of Tamil Eelam, 9/11, Mumbai 2008, and India's 2016 surgical strikes illustrate how historical grievances, ideology, and state policy converge in sustaining terrorism. Future threats include artificial intelligence-driven radicalisation and the potential use of weapons of mass destruction. The article underscores the urgent need for globally coordinated strategies that balance effective counterterrorism with the preservation of civil liberties.

Introduction: An Overview

Political terrorism on an international scale has emerged as a low-cost alternative to other forms of transnational violence. It is increasingly used by disaffected groups worldwide to exert pressure on target states through physical violence and psychological fear. As these tactics prove effective, terrorist activities continue to grow, particularly affecting democratic nations, though autocratic states are not entirely immune. A web of interconnections among global terrorist factions is becoming evident, while international countermeasures remain weak. This highlights institutional inertia and the inability of democratic states to respond swiftly to organised violence. Terrorism has surged as a global scourge with no signs of abating, increasing in both scale and intensity. Some argue that international political terrorism has replaced conventional warfare as a tool for advancing state policies. It is, therefore, hardly surprising that several states have adopted it as an instrument of state policy. With nuclear conflict deemed unthinkable, future generations will likely confront terrorism as a dominant force in global security. Political analysts and strategists must, therefore, study the dynamics of terrorism to craft effective countermeasures.

Definition

Terrorism remains challenging to define due to differing perspectives and legal ambiguities. The absence of a universal definition has hindered international counterterrorism efforts.[1] The United Nations (UN) Counter-Terrorism Committee has attempted to create a global definition of terrorism, but disagreements among member states continue to stall consensus.[2] Political terrorism is particularly complex, as it involves the legitimacy of state power,

not only against foreign entities but also against its citizens. When acts of anarchism transcend national borders, terrorism assumes international dimensions, making legal and diplomatic responses ambiguous. The absence of consensus has undermined resolutions in international forums and hindered efforts to effectively combat terrorism.

Origins

The origins of terrorism date back to tyrannicide in ancient societies, where assassinations were justified on political or moral grounds. Over time, terrorism evolved into organised revolutionary movements and insurgencies.[3] In ancient contexts, the assassination of tyrants was seen as a moral duty, and history is replete with examples of individuals taking up arms against oppression. Brutus, for instance, justified his actions on both moral and political grounds, while many figures were celebrated as heroes for their pursuit of justice and freedom. However, when organised violence shifts from individual resistance to collective revolutionary movements seeking governmental change, it acquires political significance and is often labeled a liberation struggle. No state can fully satisfy the aspirations of all its citizens, particularly in ethnically diverse nations. As a result, marginalised groups frequently emerge, with leaders advocating violence to counter perceived injustices, often fuelling political terrorism. Subnational and regional identities can sometimes overshadow national allegiance, especially in postcolonial states still grappling with nation-building. While Western nations gradually evolved into nation-states, many others were shaped by colonial rule, leading to internal divisions and ethnic tensions. The Irish Republican Army (IRA) and the Liberation Tigers of Tamil Eelam (LTTE) offer compelling insights into how deeply embedded historical grievances fuel enduring terrorist campaigns. The IRA's insurgency arose from prolonged British colonial influence and systemic discrimination against Northern Irish Catholics, leading to 'The Troubles'. Similarly, the LTTE's violent secessionist movement in Sri Lanka was a response to perceived discrimination against the Tamil minority, notably employing suicide bombings. Both groups sustained their militancy through external aid, strategic adaptability, and exploiting the perceived failures of peaceful political processes.[4]

Ideological Influence

Although political terrorism is historically rooted in leftist ideology, it is not always inherently ideological. Ideology, nevertheless, plays a crucial role in shaping international terrorism, providing a framework for beliefs, motivations, and justifications for violent actions. Key ideological influences include religious extremism, nationalist and separatist movements, and anti-globalisation economic thought. However, terrorism is ultimately driven by grievances—real or perceived—rather than strict ideological alignment, and is abetted by socio-economic injustices, political instability, and personal motivations.

Evolving Shape of Political Terrorism

A more worrisome aspect of political terrorism is state-sponsored terrorism. Notable cases include the United States (US) and Soviet Union-backed militant groups countering each other's global influence. The Soviet Union supported communist insurgencies in Latin America, while the US funded anti-Soviet militants in Afghanistan.[5] Nations have historically supported militant groups as an extension of state policy. Examples include Cold War proxy wars, Pakistan's continued support for militant groups in Kashmir as well as pro-Khalistan separatists, and Iran's support for Hezbollah, a militant group operating in Lebanon against Israel, represent such state-sponsored interventions.[6] North Korea, Cuba, and Syria have already been designated as state sponsors of terrorism by the US Government due to their alleged support for terrorist activities. Covert use of this instrument of state policy is not altogether uncommon.

Criminal violence, which lacks ideological or political motives, falls outside the realm of political terrorism. International crime syndicates and Mafia-style organisations often engage in acts of terror for financial gain, but their objectives remain distinct from those of political terrorists.

Trends in Political Terrorism

One alarming trend is that the increasing internationalisation of terrorism is met with weak institutional responses in democratic states, and the failure of international bodies to form a united counterterrorism strategy has contributed to its growth. Terrorist networks recognise these vulnerabilities and exploit them to operate

more effectively across borders. There is a clear kinship among terrorist groups, which transcends geography and ideology. A prime example is the 1975 attack on the Organisation of Petroleum Exporting Countries headquarters in Vienna, where operatives claimed allegiance to the Palestinian Revolution. Yet their leader, Carlos, was a Venezuelan trained in Moscow, backed by Cuban intelligence, and allegedly funded by Libya's Muammar Qaddafi. This reflects a global network of support, mirroring multinational corporations in their strategic operations.[7] In 2001, the Al-Qaeda network, which was responsible for the 9/11 attacks, operated across multiple countries with financial and logistical support from various sources.[8]

International Perspectives on Terrorism

Different nations hold varying views on terrorism, based on political interests and historical context. While some groups are labelled as terrorists in one country, they may be seen as freedom fighters elsewhere. For example, the Palestine Liberation Organisation is viewed as a terrorist organisation by the US, but many nations support its cause. Similarly, Sri Lankan politics have witnessed shifts in attitudes toward militant groups based on electoral gains rather than national security considerations.

Challenges in Combating International Terrorism

Governments often hesitate in counterterrorism efforts due to political constraints, public opposition, and diplomatic repercussions. Some states provide safe havens for terrorist groups.[9] While security forces occasionally arrest terrorists, the fear of hijackings or political kidnappings discourages strict enforcement. The US drone warfare program faces ethical dilemmas regarding civilian casualties while targeting terrorists in ungoverned regions.[10] The 2008 Mumbai attacks critically exposed systemic deficiencies within India's intelligence and counterterrorism frameworks.

In response, India implemented substantial reforms, notably establishing the National Investigation Agency for centralised terror investigations, bolstering coastal security through enhanced inter-agency coordination, and decentralising elite counterterrorism forces (e.g., National Security Guard) via regional hubs. These strategic overhauls aimed to optimise inter-agency synergy and response efficacy, thereby establishing new benchmarks in global

counterterrorism preparedness.[11] India's 'Surgical Strikes' in 2016, following the Uri attack, exemplified a decisive shift in its counterterrorism strategy. These precision-based operations targeted terrorist launch pads, demonstrating India's resolve to act against cross-border terrorism without escalating into a broader conflict.

This approach showcased the effectiveness of intelligence-driven, non-escalatory military responses in disrupting terrorist infrastructure, providing a potential model for global counterterrorism efforts prioritising targeted action and deterrence. India's counterterrorism approach, particularly in its neighbourhood, offers a compelling model for international cooperation. By focusing on targeted, non-escalatory operations to dismantle terrorist networks, India demonstrates a strategy that prioritises precision over broad military action. This measured response aims to achieve specific security objectives without escalating regional tensions or undermining stability. Such an approach could serve as a blueprint for global counterterrorism efforts, emphasising intelligence-led strikes and collaborative efforts to disrupt terrorist financing and recruitment, ultimately fostering greater international security while avoiding unintended consequences.

Access to Advanced Weaponry

The global arms trade enables terrorist organisations to acquire sophisticated weaponry, fuelling conflicts and increasing operational capabilities.[12] Weapons such as automatic rifles, explosives, and remote-controlled devices are frequently supplied through illegal or loosely regulated channels, making it easier for militants to arm themselves. Several factors contribute to this problem, including unregulated arms markets, state-sponsored arms transfers, technological advancements, and profit-driven arms dealers.[13] The consequences of this issue are far-reaching, affecting regional stability, increasing civilian casualties, and complicating counterterrorism efforts. Addressing this challenge requires stronger international cooperation, tighter regulations on arms sales, and strategies to prevent illicit weapons from reaching extremists.

Future Threats: Chemical, Biological, and Nuclear Weapons

The risk of terrorism involving weapons of mass destruction continues to rise, requiring international cooperation to prevent catastrophic attacks.[14] The most alarming aspect of modern

terrorism is the potential expansion into weapons of mass destruction. The Aum Shinrikyo sarin gas attack on the Tokyo subway in 1995 stands as a chilling benchmark in chemical terrorism. This coordinated assault by a doomsday cult, releasing the deadly nerve agent sarin during rush hour, resulted in 13 deaths and thousands of injuries. The incident starkly demonstrated the profound vulnerability of civilian populations to chemical weapons, highlighting the alarming potential for non-state actors to inflict mass casualties using unconventional means.[15] Without the deterrence of mutual destruction that exists between global superpowers, extremist groups may pursue the use of highly lethal weaponry, further destabilising international security.

Artificial Intelligence and Cyber Technologies

Artificial Intelligence (AI)-assisted terrorism and cyber warfare enhance attack sophistication, recruitment strategies, and operational effectiveness for terrorist organisations.[16] AI-assisted terrorism involves using machine learning, natural language processing, and automation to analyse vast amounts of data, identify vulnerabilities, and optimise attacks. Generative AI is also being leveraged for propaganda, recruitment, and influencing behaviour through social media. As AI becomes more accessible, the barriers to entry for terrorist groups are lowered, making it easier for them to deploy sophisticated attacks. Cyber terrorism, on the other hand, involves using digital tools to disrupt critical infrastructure, steal sensitive information, or manipulate public perception, attacks. Governments and security agencies worldwide are working to counter these threats by developing AI-driven defence mechanisms and policies to regulate AI usage. The challenge lies in balancing technological advancements with security concerns. However, AI-driven cyber terrorism and cybersecurity have evolved into high-cost endeavours for both sides rather than the once-perceived low-cost alternatives to conventional warfare.

Islamic State of Iraq and Syria (ISIS) adeptly exploited social media algorithms to globalise its recruitment efforts, targeting vulnerable individuals with tailored propaganda. By understanding how these platforms recommend content and connect users, ISIS created echo chambers that amplified extremist narratives and facilitated direct engagement with potential foreign fighters. This

strategic use of digital technology underscores the growing threat of AI-assisted extremism, presenting significant challenges for online counter-radicalisation.[17]

Political International Terrorism and Global Initiatives

Political international terrorism arises from global struggles for power. International efforts such as the UN Global Counter-Terrorism Strategy and UN Office on Drugs and Crime (UNDOC) programs aim to strengthen cooperative legal and strategic measures against terrorism.[18] The absence of an international judicial system or enforcement authority, coupled with a lack of political will, has allowed terrorism to flourish. While democratic societies permit dissent, they also impose limits, reacting when violence surpasses acceptable thresholds. Through these conflicts, societies adapt and grow, learning from challenges. Several international efforts are currently in place to combat terrorism, including the UN Global Counter-Terrorism Strategy and the UNODC Global Programme on Preventing and Countering. These initiatives reflect the global commitment to addressing terrorism through legal, strategic, and cooperative measures. The European Union Counterterrorism Strategy has introduced extensive measures, including intelligence sharing and financial tracking to deter terrorist funding.[19] Counterterrorism efforts must balance national security with civil liberties, ensuring that policies do not undermine democratic freedoms.[20] Counterterrorism measures face a core dilemma protecting national security without eroding civil liberties. Governments must prevent attacks, yet expanded surveillance and enhanced law enforcement powers can inadvertently infringe upon rights such as privacy and free speech. The US Patriot Act exemplifies this tension, as its broad provisions sparked intense debates over surveillance policies and individual privacy rights, highlighting the ongoing challenge of balancing security with democratic freedoms.[21]

Blurring the Gap between Conventional War and International Terrorism

Ukraine's recent drone attack on Russian air bases, dubbed Operation Spiderweb, was a highly coordinated military strike targeting strategic bombers and command aircraft. The operation reportedly damaged or destroyed over 40 Russian warplanes and inflicted billions of dollars in losses. Whether this constitutes an

act of war or international terrorism depends on the perspective taken. From Ukraine's standpoint, it was a military operation aimed at degrading Russia's aerial capabilities in an ongoing war. Russia, on the other hand, has labelled it a terrorist attack, arguing that drones were smuggled into Russian territory and launched from within. Internationally, such actions are often assessed based on intent, targets, and context. Since Ukraine targeted military assets, many would classify it as an act of war rather than terrorism. However, Russia's framing of the attack as terrorism reflects its broader narrative in the conflict. Regardless of the belligerents' views, the line between conventional warfare and international terrorism has become blurred, leading possibly to increased use of such hybrid tactics in the future, giving credence to the 'Low-cost, high payoff' operational doctrine of the terrorists.

Conclusion

Violence has historically been a catalyst for socio-political transformations. It continues to serve as a method of protest against authority and as a central force in state conflicts. Over time, the nature of violence has evolved, now taking the form of political terrorism. Terrorist violence is designed for maximum impact with minimal resources, making it a formidable strategy in modern conflicts. Low-intensity warfare will shape conflicts for years, with terrorist organisations gaining access to increasingly lethal weapons. While terrorist violence aims to drive political change, history shows that no single terrorist act has successfully overturned a government or altered the global balance of power. Confrontations with established authorities can neutralise such movements, forcing terrorists to operate in the shadows. Both democratic states and the international system face limitations in addressing terrorism. Effective counterterrorism requires balancing security measures with civil liberties. Mobilising international consensus is crucial, yet historical delays in coordinated global responses suggest that political violence may remain relevant for some time.

India's swift response to the 2025 Pahalgam terror attack reshaped regional security strategies, showcasing determined retaliation, diplomatic pressure, and deterrence-based measures. This action has bolstered global counterterrorism efforts and could influence international policies by demonstrating the effectiveness of coordinated, precise, and strategic responses.

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The Lines of Fire: A History of Cartographic Conflict

Major General VS Ranade (Retd)[@]

Abstract

This article examines the origins and enduring consequences of cartographic boundaries in the Indian subcontinent, many of which were drawn hastily by the British without consideration of ethnic, cultural, or demographic realities. It highlights how treaties such as Gandamak, Durand, and Sagauli, and lines including the Radcliffe, Johnson, McMahon, Pemberton, and others created lasting disputes that continue to fuel instability. The analysis traces the transformation of these boundaries into contentious frontiers such as the Line of Control, Line of Actual Control, and Actual Ground Position Line, underscoring their role in regional crises with Pakistan, China, Nepal, and Myanmar. The article also emphasises how porous borders have been exploited by non-state actors, intensifying insecurity. While India has strengthened border management through infrastructure and security initiatives, the article argues that only diplomacy, confidence-building, and pragmatic cooperation can transform these divisive lines into instruments of peace and shared regional prosperity.

Introduction

The Indian subcontinent in the pre-British era encompassed the present-day territories of Afghanistan, Pakistan, India, Nepal, Bangladesh, and Myanmar. The political delimitation commenced after the second Anglo-Afghan War in 1879, when the British

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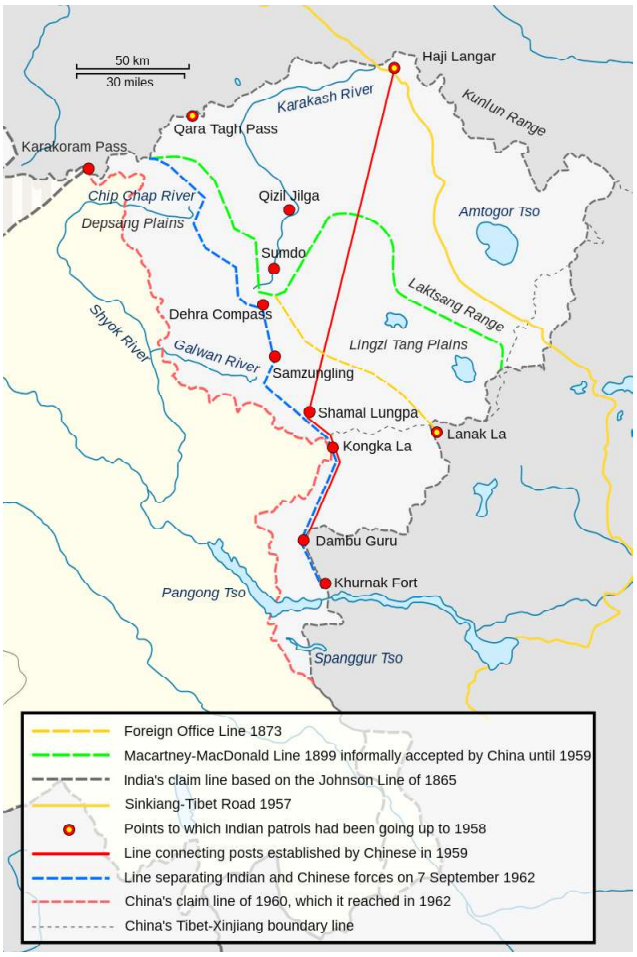
signed the Treaty of Gandamak and made the Afghan territory an official protectorate of the British Empire. In 1893, they signed the Durand Line Treaty, which established the present-day official boundary between Pakistan and Afghanistan, thereby, starting the massive battle of lines. The Indian dominion came under British rule post-1818 with the defeat of the Marathas in the third Anglo-Maratha War. In the subsequent period, the British drew boundaries separating Pakistan, Nepal, Myanmar, Bhutan, Tibet and Bangladesh (erstwhile East Pakistan), without giving any considered thought or straightening out any earlier disputes or controversies, thus, straddling India with major political and diplomatic crises. The massive exercise of delimiting the provinces was done cartographically on the map, thereby, creating what could be called as 'Cartographical Confusion'. The British just drew the lines through the continent without understanding the demographic spread, ethnicities, and social and cultural dynamics.

Geography of the Cartographic Conflict

The Radcliffe Line.[1] The present border between India and Pakistan is by far the most contentious border. Sir Cyril Radcliffe was given just about five weeks to decide on the boundary dividing Punjab and Bengal on Muslim and non-Muslim factors. The rough border was already drawn by Lord Wavell, the outgoing Viceroy, in Feb 1947. Radcliffe was to study, recommend, and finalise the boundary within five weeks. He neither had prior experience on the Indian continent nor understanding of the people and their ethnicity. The Radcliffe Line, which was to become the International Border (IB) between India and Pakistan, was always shrouded in mystery in its implementation, process for demarcation, and final announcement. The Radcliffe Line fell short in Gujarat while demarcating the maritime boundary. It left the water channel Banganga**,** which we know today as the Sir Creek Channel. The Channel, per se, was demarcated as per the Thalweg Principle.[2] Sir Creek still figures in the list of disputed agendas.

The Johnson Line.[3] The present-day Indo-China border is contentious and disputed. The McMahon Line is the so-called final version of the line dividing India and China after many versions that came over time. It all started when a civil servant, WH Johnson, proposed the 'Johnson Line' in 1865, which included Aksai Chin within the Indian borders. Sir John Ardagh proposed a boundary

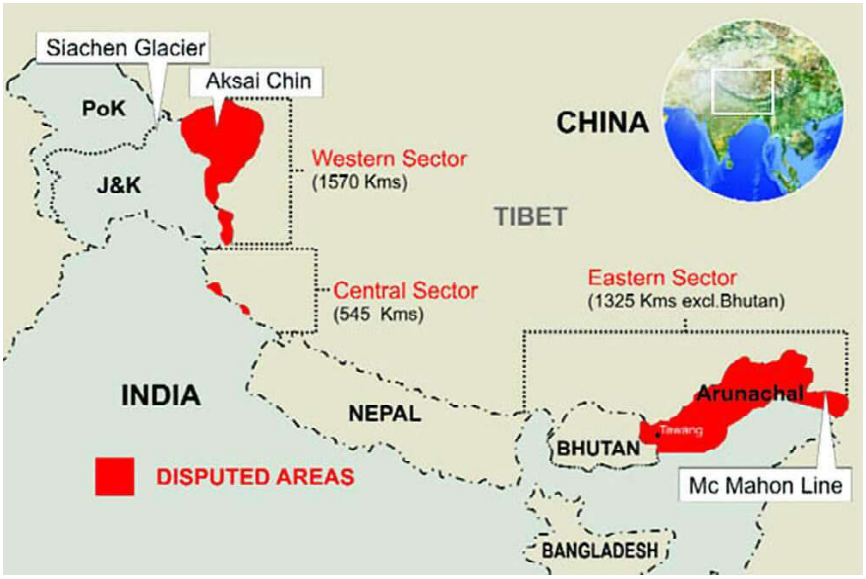
line along the crest of the Kunlun Mountains north of the Yarkand River. A modification to the Ardagh Line, called the 'Johnson-Ardagh Line', was proposed. The Macartney–MacDonald Line preceded the earlier line as proposed by the Britishers between the state of Jammu and Kashmir and Xinjiang, Tibet representing the watershed between the Indus and Yarkand and Karakash rivers. The Chinese government never gave any response to the proposal. The Indian government believed that, and subsequently, British India reverted to its traditional boundary, the Johnson–Ardagh Line. India, after independence, accepted the Johnson Line as the de facto boundary between India and China, which was not accepted by the Chinese.



Map 1: Boundary Lines on the India-China Border[4]

Source: Scroll (This line in Italics, non-bold)

The McMahon Line.[5] The line was supposed to have been the boundary between India and Tibet. The agreement was signed between the representatives of India, Tibet, and China in Shimla in 1914. The line was named after Henry McMahon, who signed on behalf of the British government and Lonchen Shatra, a Tibetan representative. The Chinese neither signed the agreement nor accept the line, as, according to China, Tibet is not a sovereign state and has no right to sign the agreement. India, however, accepts the line as a de facto border.



Map 2: The McMahon Line[6]

Source: Eurasian Times (This line in Italics, non-bold)

The Pemberton Line.[7] A lesser-known line, less disputed until recently. This is the official border between India and Myanmar. The border was first defined after the Treaty of Yan Dabo in 1826. The border was redefined in 1834, when Kabaw Valley was given to Myanmar (then Burma), and they relinquished control of Assam and Manipur. This delimited line was termed as 'Pemberton Line', named after a British Commissioner. Burma became a separate colony of the British in 1937 and gained independence in 1948. The countries also agreed to establish a Free Movement Regime (FMR) to facilitate the common ethnic people to intermingle with each other across the IB without visa rules being applied.

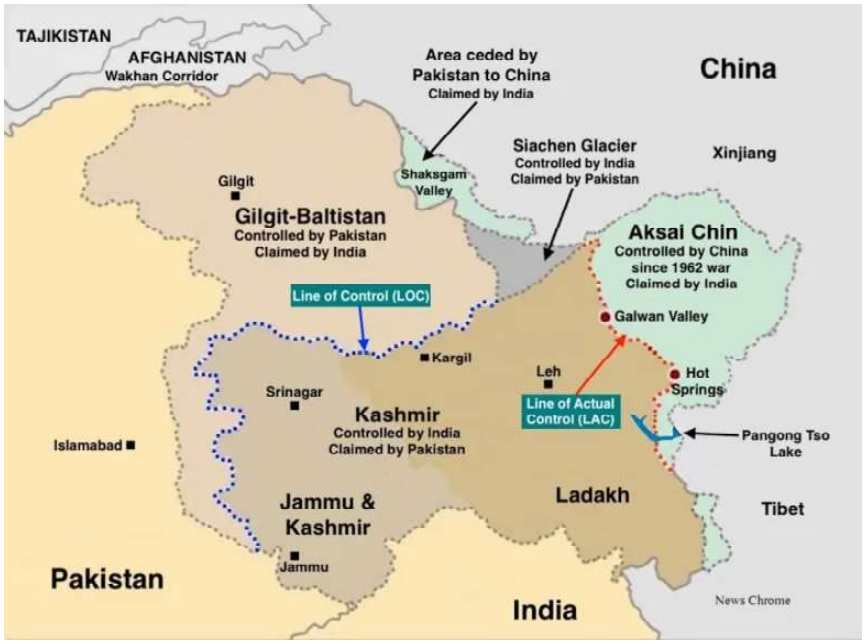
The Treaty of Sagauli.[8] After the Anglo–Nepalese war, the treaty was signed in 1816. The area included, practically, present-day Nepal. This border was delimited and forms the basis of the present-day border between India and Nepal. The existing territorial disputes between the two, over the Kalapani territory, Lipulekh, Limpiyadhura, and Susta continue.

Line of Actual Control (LAC). This line loosely follows the watershed between India and China along the McMahon Line. This was first proposed by Chinese Premier Zhou Enlai in 1959 but was rejected by former Indian Prime Minister (PM) Jawaharlal. However, this term came to be used after the 1962 Indo–China War as the de facto control line post-war for the entire length of the border with China, from the contentious Johnson-MacDonald Line to the McMahon Line in the east up to Dichu in Arunachal Pradesh.

Line of Control (LoC). Pakistan launched Operation Gulmarg in Oct 1947 to annex the state, as they felt they had been given a raw deal in the Radcliffe Award. The rest is history. The hostilities came to an end through a United Nations (UN)-brokered ceasefire in Jan 1949. The Cease Fire Line (CFL) was thus born.

Actual Ground Position Line (AGPL). The CFL became defunct post the Shimla Agreement, and the LoC serves as the military demarcation between India and Pakistan. The LoC terminates at a map reference point called NJ 9842 in the Ladakh region. As per the Karachi agreement of 1949, signed by the military representatives of both sides, the CFL line terminated at a point NJ 9842, and the agreement is clear to say the line shall run northwards to the Indo-China border. Here lies the Siachen glacier, which became the bone of contention later due to the interpretation of run northwards.

China-Pakistan Treaty of 1963. Pakistan, taking advantage of the 1962 conflict, signed a treaty to cede a portion of the disputed territory to China. A portion of the areas claimed by Pakistan post delimitation of CFL and then the LoC, called Pakistan Occupied Kashmir, was exchanged with the Chinese illegally when Shaksgam Valley was handed over to China.



Map 3: Line of Actual Control and Line of Control9

Source: Vision IAS (This line in Italics, non-bold)

Cartographic and Demographic Fault Lines

The British held a vast area under them in the landmass of the Indian subcontinent, spanning from Afghanistan to Myanmar and Tibet to Sri Lanka. The land borders are on fire, a legacy of departing Britishers. The situation in the pre-1947 period and post-World War II (WW II) was tumultuous and overbearing for the British. The Crown believed that it was high time that the colonies be set free. It was getting difficult to manage the provinces.

The Britishers were in the Indian subcontinent for more than 200 years but did not, probably, have an intimate knowledge of ethnicity and demographic patterns. They would have done extensive studies, but understanding the communities eluded them. The decision on the division of India in the period post-WW II was taken hastily. The idea of partitioning had been with the British since the beginning of the century. 1905 saw the partition of Bengal and the same for Punjab, which was considered in 1908. By 1945, the idea of Pakistan was taking root. It was initially mooted in 1933 by Rehmat Ali in London. The Indian Independence Act of 1947[10] got its royal assent on 18 Jul 1947. In Feb 1947,

Mountbatten was appointed the Viceroy of India. The date of Jun 1948, the slated date for Independence, was advanced by Mountbatten to 15 Aug 1947, thereby, giving Radcliffe just about five weeks to draw a line on the map with which he was not familiar, nor was he familiar with the subcontinent. The line was drawn without considering the sensitivities of the local communities. Durand divided the Pashtuns and the Punjabis in the newly created Afghanistan and the Northwest Frontier Province. Radcliffe did no better. He did not address the existing boundary issues with China, Tibet, and Myanmar and accepted them as the de facto border with India, China, Tibet, and Myanmar while drawing the Radcliffe Line. Therefore, he inadvertently created multiple conflict zones.

The land mass, which was so interconnected ethnically with centuries of civilisational history, was divided with a line on the map. The conditions and the situation were getting unwieldy for the Britishers, with political battlegrounds drawn up. Demand for separate states for Muslims was picking up momentum. The regional issue was taxing on Britain's finances, more so just after the WW II. The British government made the decision, probably, on the following:

- Taxing on the budget.
- The British administration felt unable to manage the worsening political situation in the subcontinent.
- Rebuilding Britain was the priority.
- Unfinished border issue with China and Tibet without considering the status of the Johnson Line, MacDonald Line, and their later modifications.
- The decision on the princely states was kept open to be decided on independence. The local and regional dynamics were too complicated, and they probably wanted to avoid getting involved in it.

As if this was not enough, there were ambiguous and open-ended provisions in the Indian Independence Act 1947. The act was preceded by then PM of England Clement Attlee's announcement in Feb 1947 and the Mountbatten Plan of Jun 1947. A few other situational events, probably, also played a greater role in advancing the date from Jun 1948.

- The poor showing of the Muslim League in the 1937 provincial elections.[11]
- Moves by anti-partition groups are gaining prominence.
- Increasing fervour for a separate Muslim state spearheaded by Jinnah.
- Knowledge of Jinnah's illness (probably).

The Burning Lines

After the ratification of the Radcliffe Award on 17 Aug 1947, both the new countries erupted in mayhem; it was a dark chapter in the history of both countries. Pakistan did not accept the line on many counts. Especially, Kashmir was the bone of contention. They decided to sort the matter out militarily. This was the start point of the birth of lines, the IB drawn by Radcliffe, followed by the CFL on termination of hostilities in 1949, later being ratified and accepted as the LoC in the Shimla Agreement, again with an ambiguous term that gave birth to AGPL past NJ 9842.

The issue of the Johnson and MacDonald and Macartney Line was untouched. The McMahon Line was not discussed. Disputed issues were kept to be decided by India, as ironically, all these issues fell into India's lap upon partition in the form of 565 princely states.

Today, the lines are still burning even after 75 years of independence. It was felt that there needed to be a focused approach to border management at the highest level, considering the burning borders. Several initiatives have been undertaken to include the construction of fences, floodlighting, roads, border outposts, company operating bases and deployment of technological solutions along India is border with Pakistan, Bangladesh, China, Nepal, Bhutan, and Myanmar.

Unfortunately, the border area development was relegated due to a misguided perception about developing the border areas, and these areas did not see much infrastructure development. Lately, in the last decade, the development of infrastructure is seeing the light of day. Surface communication has been developed, which gives an added advantage to the forces to move to the border areas in a shorter time frame, apart from the fact that the administration of these areas has also improved. However,

the situation along all the lines is still not so stable. The IB sector is somewhat peaceful in the western sector along the Rajasthan and Gujarat border till the start of Sir Creek. However, to prevent illegal migration and smuggling, a fence was constructed all along the IB and the LoC sector as an anti-infiltration obstacle system. The LAC is still smarting under disputes and perceptual differences. There have been the Dokalam and Galwan incidents, with the latter still in a stand-off mode despite about 29 rounds of talks. AGPL is, as of now, quiet with the ceasefire holding on since 2003.

LAC in the central and eastern sectors is disputed, with both sides holding on to their perceptions. The IB sector with Myanmar or the Pemberton line in Nagaland and Manipur is again on fire with non-state actors and Indian insurgent groups using the porous borders and provisions of the FMR to promote militancy and terrorism in the states of Assam, Nagaland, Manipur. The decision was taken in Feb 2024 to fence the Nagaland and Manipur, Arunachal, and Mizoram borders with Myanmar to prevent illegal migration and anti-state activities in the region. The move has been resisted by all the states, citing ethnic affinity.

Demystifying the Lines

Today, India is dealing with the unfinished agenda of partition. New Delhi is fighting a battle of lines, which include the LoC, AGPL, Johnson Line, MacDonald Line, McMohan Line, LAC, Nepal, Chumbi Valley and Dokalam, Arunachal Pradesh and its sensitive and disputed areas, Pemberton Line, and open borders of Nagaland and Manipur, and finally the Galwan imbroglio. It is war all around, and India has been dealing with it for the last 75 years. The porous nature of the country's land borders has been misused by non-state actors and powers who want instability in the region. The porosity of the northern borders and the need to strengthen it, ironically, was highlighted way back in the 1950s by the first Home Minister of India, Sardar Vallabhbhai Patel.[12] The extract of the letter highlighting the important issue is given below:

> • It is, of course, impossible to be exhaustive in setting out all these problems. I am, however, giving below some of the problems which, in my opinion, require early solutions and around which we have to build our administrative or military policies and measures to implement them.

- A military and intelligence appreciation of the Chinese threat to India, both on the frontier and to internal security.

- An examination of military position and such redisposition of our forces as might be necessary, particularly with the idea of guarding important routes or areas which are likely to be the subject of dispute.

- An appraisal of the strength of our forces and, if necessary, reconsideration of our retrenchment plans for the army in light of the new threat.

- A long-term consideration of our defence needs. My own feeling is that, unless we assure our supplies of arms, ammunition, and armour, we would be making our defence perpetually weak and we would not be able to stand up to the double threat of difficulties both from the west and north-west and north and north-east.

- The question of China's entry into the UN. In view of the rebuff which China has given us and the method which it has followed in dealing with Tibet, I am doubtful whether we can advocate its claim any longer. There would probably be a threat in the UN virtually to outlaw China, in view of its active participation in the Korean war. We must determine our attitude on this question also.

- The political and administrative steps which we should take to strengthen our northern and north-eastern frontier. This would include the whole of the border, i.e., Nepal, Bhutan, Sikkim, Darjeeling, and the tribal territory in Assam.

- Measures of internal security in the border areas as well as the states flanking those areas, such as Uttar Pradesh, Bihar, Bengal, and Assam.

- Improvement of our communication, road, rail, air, and wireless, in these areas and with the frontier outposts.

- The future of our mission at Lhasa and the trade posts at Gyantse and Yatung, and the forces which we have in operation in Tibet to guard the trade routes.

- The policy in regard to the McMahon Line.

Recommendations for Resolving Border Issues

To ensure long-term stability and effective border management, the following measures are proposed:

- Diplomatic engagement and confidence-building arrangements in a time-bound manner.
- Developing the border infrastructure in terms of connectivity, both surface and communication.
- Open border areas for tourism, especially in Arunachal Pradesh and Ladakh.
- Strengthening the security apparatus using technology.
- Border Area Development Projects (BADP) under the BADP scheme are to be speeded up.
- Provide free move facilities through modified FMR[13] along the Indo-Myanmar border.
- Fence the border, i.e., the IB sector with Myanmar and Bangladesh.
- Resolve issues through talks.

Conclusion

The lines are here to stay. The boundary issues are too complicated, muddled up with historical baggage and perceptual viewpoints. India has shown resolve and strength to deal with the problem maturely, diplomatically, and militarily. It has become a barometer of India's political maturity. Resolving the complex border disputes is crucial for regional peace and progress. These lines, drawn historically without local understanding, fuel animosity, divert vital resources towards defence, and hinder economic cooperation. A future of shared prosperity in South Asia hinges on sustained diplomatic dialogue, mutual respect for sovereignty, and a commitment to finding pragmatic, lasting solutions that transform these contested lines into bridges of understanding. The cartographical conflict continues.

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Quiet Diplomacy and Strategic Interests: India–Taiwan Engagement under Modi 3.0

Dr Beena[@]

Abstract

For the last 10 years, India–Taiwan relations have expanded, with significant cooperation in trade, cultural exchanges, and strategic planning, all occurring without official recognition because of India's commitment to the One-China Policy. The rise of tensions in the Indo-Pacific and increasing global concerns about China's actions has highlighted a renewed strategic significance for India–Taiwan ties under Modi 3.0. This article focuses on how these ties fit within the pragmatic and carefully calibrated foreign policy approach of Prime Minister Narendra Modi. It examines the quiet diplomatic mechanisms that sustain cooperation in trade, technology, education, and health, while also assessing India's cautious handling of Taiwan's international standing and the frictions across the Taiwan Strait. This article argues that although India does not publicly align itself with Taiwan politically, it leverages the relationship to diversify international partnerships and reinforce regional security. By analysing key developments, treaties, and shared initiatives, the study demonstrates that India's engagement with Taiwan under Modi 3.0 reflects a broader policy of self-reliance, economic diversification, and calibrated messaging to China. Ultimately, it indicates that India's approach to Taiwan represents a delicate balance: discreet yet increasingly consequential.

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Introduction

India–Taiwan ties under Modi 3.0 are marked by a phase of hidden yet strategic interactions that are motivated by realism and upheld by multi-alignment and strategic autonomy. While official recognition of Taiwan is not extended by India, it has consistently progressed relations in the important fields of trade, technology, education, and healthcare. Such a gradual strategy demonstrates a larger strategic objective of New Delhi's international relations. India hopes to broaden its international partnerships while modulating its reliance on any one country, all without openly contesting the larger geopolitical setting.[1]

The increasing significance of Taiwan in semiconductor supply chains and India's efforts to strengthen its manufacturing and digital sectors have naturally formed strong complementary interests. India conceptualises its partnership with Taiwan as an element of its development in technology and the economy, rather than as an act against China.[2] It is important to mention that after 2010, India's official statements dropped the customary mentions of the One-China Policy, reflecting a careful evolution without reducing cooperation. Parallel to this, India has attended multilateral dialogues involving Taiwan on a steady but inconspicuous basis, for example, the Yushan Forum.[3]

This article evaluates how the Modi government's quiet strategy with Taiwan is part of an enduring policy designed to protect national goals, grow India's impact in the region, and manage competition between major powers peacefully.

Historical Roots and Strategic Shifts in India–Taiwan Relations

India–Taiwan relations have a deeper foundation than is often understood, given that contacts between leaders from India and the Kuomintang (KMT) took place well before either country became independent. In the early decades of the 20th Century, All India Congress Committee (AICC) members, known as Indian nationalists, showed solidarity with China's nationalists. Such solidarity became clear when the AICC resolved to condemn the British recruitment of Indian soldiers for action against Chinese revolutionaries in 1925.[4] In 1927, Indian leader Jawaharlal Nehru expressed support for the Chinese struggle against imperialism during the Brussels Congress of Oppressed Peoples. Nehru, in

particular, advocated solidarity between Asian nations striving for freedom, including China. These historical linkages formed the bedrock of India's early interactions with the KMT leadership, which later governed Taiwan. Although formal diplomatic ties were never established due to India's recognition of the One-China Policy, these early expressions of Asian unity continue to influence the evolving dynamics of India–Taiwan relations in the 21st Century.

The course of India–Taiwan relations changed significantly in 1942 with the arrival of Chiang Kai-shek and his wife in India during World War II. The Chinese leaders encountered Indian representatives for the first time when they met Mahatma Gandhi and Jawaharlal Nehru. Nehru's words on All India Radio served to reinforce the harmony between India and China.[6]

Once India gained independence in 1947 and the Chinese Civil War ended in 1949, India chose to recognise the People's Republic of China (PRC) and moved away from the Republic of China in Taiwan. Nehru's decision received criticism from the KMT, which charged him with appeasing the Chinese Communists.

Until the 1990s, interaction was limited, India initiated its 'Look East Policy' during the period to enhance economic cooperation with countries in East and Southeast Asia.[8] Although, Taiwan was not explicitly mentioned in the policy, it laid the foundation for subsequent unofficial cooperation.

Since the 1990s, India–Taiwan relations have developed progressively through non-formal relations reflective of functional cooperation. The start of India's Look East Policy in 1991 made it easier for Taiwan and India to increase their cooperation. Consequently, offices of representation were opened in 1995. By creating the Taipei Economic and Cultural Center in New Delhi and in order to enhance regional engagement, Taiwan established offices in Chennai in 2012, and later in Mumbai in 2024.[9]

Although the Act East Policy was launched in 2014 under Prime Minister (PM) Narendra Modi, Taiwan is not explicitly mentioned in official policy statements. Due to India's continued adherence to the One-China Policy, Taiwan is treated as a non-political partner, with engagement limited to trade, tourism, education, and cultural exchanges.

Strengthening India–Taiwan Cooperation in the Indo-Pacific: A Modi-Era Perspective

The India–Taiwan relationship has quietly advanced, especially since PM Modi took office and emphasised independence, multi-partnerships, and regional cooperation. Since New Delhi set up unofficial ties with Taiwan in 1995 and affirmed the One-China Policy, the two sides have grown their cooperation in economics, culture, education, and technology. New Delhi's approach reflects pragmatic pursued of its interests while remaining consistent with its core diplomatic stance.[11]

The evolution of ties between India and Taiwan has been significantly strengthened by Taiwan's New Southbound Policy (NSP), launched in 2016 to diversify its partnerships and reduce overdependence on China. The NSP fits naturally with PM Modi's Indo-Pacific vision, which was presented at the 2018 Shangri-La Dialogue, as well as with India's Act East Policy.[12] The synergies between these frameworks have encouraged deeper engagement in a range of sectors. There has been strong growth in bilateral trade, so that India stands as one of Taiwan's principal trade partners in Asia, with significant Taiwanese investment in the Indian electronics, manufacturing, and technology sectors. More than 200 Taiwanese enterprises now do business in India, a sign that they trust the investment environment there.[13]

Major economic and technological initiatives have been driving the strengthening of relations. Taiwanese investors have increased their presence in India's electronics and high-tech manufacturing sectors because of PM Modi's 'Make in India' campaign. Operating under PM Modi's initiative, Foxconn and other major firms have increased their business in India, helping growth in local manufacturing, job creation, and advancements in industry. In recent years, two-way trade between India and Taiwan has crossed USD 10 bn, placing India in the category of Taiwan's key Indo-Pacific trading partners.[14] The economic relationship is in harmony with Taipei's NSP, which seeks to expand links outside China.

There has been a marked strengthening in technological cooperation since the signing of the 2007 Memorandum of Understanding (MoU) on Science and Technology. More than 130 collaborative projects have been undertaken together in biotechnology, renewable energy, disaster management, and digital

infrastructure sectors.[15] Agreements on Artificial Intelligence (AI) and the internet of things are expanding the partnership into technology's cutting edge. The ongoing developments in the bilateral partnership correspond to Modi's initiative for homegrown innovation and a digital society.[16]

Taiwan and India's strategic partnership receives added value through ongoing education and cultural activities. More than 3,000 Indian students, enrolled in universities in Taiwan, fully participate in and benefit from these academic exchanges and research programs. Several Taiwan Education Centres have been launched by Taiwan in Indian universities in order to encourage Mandarin education and to deepen cultural ties. In answer to these initiatives, Indian universities have established their exchange programs and research collaborations.[17] Matters such as film festivals, performing arts exchanges, and cultural symposiums have added to strengthening the people-to-people dimension – a major highlight of Modi's foreign policy objectives.

From a political and strategic viewpoint, India has been deepening its unofficial contacts with Taiwan.[18] At the Yushan Forum in Taipei in 2023, Rajya Sabha Member of Parliament Sujeet Kumar proposed linking Taiwan's NSP with India's Act East and Security and Growth for All in the Region strategies. Moreover, he spoke in favour of a free trade agreement, mentioning India's intention to create a reliable supply chain for semiconductors and to strengthen trade relations with Taiwan's technological sector.[19]

Track-II diplomacy has expanded. In 2023, Admiral Karambir Singh, General MM Naravane, and Air Chief Marshal RKS Bhadauria were present at Taiwan's Ketagalan Forum on Indo-Pacific Security as former Indian service chiefs.[20] That the retired chiefs came without diplomatic credentials still indicated India's growing worries about China's actions in the Taiwan Strait and its support for partnerships with like-minded nations.[21]

An important turning point was the 2023 signing of a labour cooperation MoU, designed to respond to skilled manpower needs and support the exchange of skills.[22] The cooperative cybersecurity workshop held by India, Taiwan, and the United States (US) under the Global Cooperation and Training Framework (GCTF) is evidence of deepening strategic convergence.[23]

Social media has recently become an important platform for building informal diplomatic ties between India and Taiwan. There was notable progress when PM Modi became the first Indian leader to send his condolences through X (earlier known as Twitter) after the 2024 Taiwan earthquake. The gesture was generally considered symbolic proof of solidarity, suggesting an important advance in the expanding relationship between the two democratic nations.[24]

Leader-led communications on social media highlighted the growing closeness. After PM Modi was re-elected on 05 Jun 2024, Taiwan's Vice President Lai Ching-te extended his greetings. In response, PM Modi emphasised the shared goal of expanding partnership across the Indo-Pacific. These exchanges drew significant public attention and signalled India's gradual shift from its traditional caution on Taiwan.[25]

Beijing's objections to these activities made clear the geopolitical importance attached to such exchanges. Even so, the rising participation of Indian leaders, experts, and citizens on digital media seems to reflect a growing understanding of Taiwan's strategic significance.[26] The use of social media for soft power initiatives is expanding with more significance for India–Taiwan interactions.

India, Taiwan, and the Cross-Strait Conundrum: Strategic Caution amid Geopolitical Uncertainty

Taiwan's sovereignty question is one of the most explosive issues in the geopolitics of East Asia, and its magnitude stems from ongoing tensions between Beijing and Taipei. For the PRC, Taiwan forms an integral part of its territory, and it advocates for unification under the 'One Country, Two Systems' plan. Consequently, the system would only offer minimal self-governance, but would insist that Taiwan permanently abandon full sovereignty. This 2005 law represented Taiwan's formal independence, and consequently institutionalised the probability of a military conflict.[27]

Against this backdrop, India's gradual shift in its approach toward Taiwan is attracting increased scholarly attention. The common belief that India would side with Taiwan during tensions with China oversimplifies the complexities of its foreign policy. Scholars like C Raja Mohan[28] and Harsh V Pant and Yogesh

Joshi[29] argue that India's unease with China's assertiveness might foster stronger India–Taiwan ties as a counterbalance to Beijing. Nevertheless, India's diplomatic actions remain largely measured and deliberate, reflective of its nuclear power status.

After 2010, India has avoided publicly affirming the One-China Policy, and this is generally viewed as the result of intentionally unclear practices. This response is not to back Taiwanese independence, but to maintain tactical flexibility in its dealings with China, especially over disputes along the Line of Actual Control.[30] Therefore, India's Taiwan policy centres on the ideal of preserving strategic agility.

India's connection with Taiwan should not be seen merely in terms of its dispute with China. In formulating its Taiwan policy, New Delhi is guided by objectives beyond its China-related strategy, including safeguarding supply chains, supporting regional order, and expanding economic ties. Because the global supply chain depends so heavily on Taiwan's semiconductor industry and advanced manufacturing, any instability in the Taiwan Strait could seriously undermine India's own technological and industrial development plans.[31] According to PM Modi's 2023 Independence Day address, India's goal to become the third-largest global economy in five years is closely linked to its reliable participation in the Indo-Pacific.[32]

India continues to view a US-China confrontation over Taiwan with considerable concern. Such a conflict has the potential to destabilise all of Asia, compelling India to make tough long-term choices. As a result, India has engaged with both the US and China quietly on the diplomatic front to promote moderation. Avoiding involvement in a regional crisis likely to disrupt the regional order and jeopardise India's growth is the country's foremost aim.[33]

Taiwan's evolution from a regional East Asian issue to a pivotal factor in global power dynamics has made it central to Indo-Pacific trajectories. A crisis in the Taiwan Strait would have repercussions far beyond Asia, potentially destabilising the global order. For India, silence does not imply indifference; it reflects a calculated effort to protect its diverse interests. As India's influence in the Indo-Pacific grows, it must engage proactively rather than remain a passive observer. Strategic involvement, based on foresight and balanced action, is essential to navigate this uncertainty.[34]

At the same time, New Delhi's approach must balance pragmatism with principle. Taiwan represents not only a geostrategic challenge but also a partner in areas like education, healthcare, technology transfer, and democratic governance. Quiet collaboration between Indian and Taiwanese universities, start-ups, and cultural institutions already demonstrates how cooperation can thrive without provoking open hostility from Beijing. Moreover, India's Act East Policy, which stresses connectivity and integration with East and Southeast Asia, implicitly benefits from stable ties with Taipei. The deepening of people-to-people exchanges, visa relaxations for skilled workers, and participation in multilateral forums–even without official diplomatic recognition–could all serve India's interests. Ultimately, India's Taiwan calculus reflects its larger ambition: to emerge as a responsible stakeholder in the Indo-Pacific, capable of shaping outcomes rather than merely reacting to them.

Conclusion

During Modi 3.0, India–Taiwan cooperation has generated major achievements–deeper economic ties, greater technological cooperation, and broader educational and cultural interactions–all through understated diplomacy. Engagement in forums and secret dialogues has made it possible for India to boost engagement with Taiwan without violating its One-China Policy. For future development, India should prioritise the creation of a structured semiconductor industry cooperation, negotiate a limited Free Trade Agreement, and expand trilateral forums such as GCTF. Supporting academic, defence, and policy exchanges will contribute to the future strengthening of this productive partnership. Through ongoing and well-judged interactions with Taiwan, India will be able to reinforce its access to crucial supply chains, balance growing regional risks, and develop its role in the Indo-Pacific.

Looking ahead, the prospects of India–Taiwan relations extend beyond economic and strategic calculations. Taiwan's expertise in advanced manufacturing, renewable energy, and public health can complement India's developmental agenda under initiatives such as 'Make in India' and 'Digital India'.[35] Similarly, India's large consumer base, skilled workforce, and emerging start-up ecosystem offer Taiwanese businesses new opportunities for diversification beyond the mainland Chinese market. Strengthening

linkages in education through student exchanges, collaborative research, and language programs can foster long-term trust and understanding between societies.[36] Cultural diplomacy, including tourism promotion and heritage linkages, can further add depth to the relationship. Moreover, cooperation in cybersecurity, AI, and maritime security holds untapped potential, given the shared concerns both partners face in the evolving Indo-Pacific environment.[37] For India, engaging Taiwan with foresight ensures that the partnership grows in a manner that is sustainable, mutually beneficial, and consistent with its broader vision of a stable and inclusive regional order".[38,39]

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Lethality at Light Speed: Directed Energy Warfare

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Abstract

This article outlines the strategic imperatives and tactical utility of Directed Energy Weapons (DEWs), with specific emphasis on India's capability development and battlefield employment models. Conventional surface-to-air missile systems and kinetic interceptors are increasingly unsustainable in a threat environment saturated with low-cost, high-density aerial platforms—ranging from swarm drones to hypersonic projectiles. This article assesses the transition from research and development to limited operational deployment of DEWs globally, and evaluates India's indigenous advancements including the Sahastra Shakti Mk-II(A), Directionally Unrestricted Ray-Gun Array *II, and Surya-class platforms. Utilising comparative cost-benefit matrices, real-time engagement capabilities, and magazine-depth analytics, this article illustrates how DEWs offer a high-cycle, energy-efficient solution for next-gen layered air defence. Additionally, this article evaluates the integration of laser platforms with India's existing command, control, communications, computers, intelligence, surveillance, and reconnaissance, mobile armour, naval combatants, and aerial strike platforms. In the context of a limited war or cross-border escalation scenario—particularly with Pakistan—these systems present a paradigm shift in area denial, drone suppression, and critical asset protection, reinforcing India's deterrence posture and*

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operational resilience in both symmetric and asymmetric conflict environments.

Introduction

Since the inception of organised conflict, mankind has continuously pursued technological supremacy to outmatch adversaries—from bronze-tipped spears to mechanised armour. However, since World War II, each passing decade has heralded a quantum leap in battlefield lethality and strategic doctrine. The 1950s saw the rise of jet propulsion and nuclear deterrence, the 1970s introduced precision-guided munitions, and by the 1990s, Network-Centric Warfare (NCW) redefined the tempo of operations. In the current decade, unmanned aerial systems dominate the tactical battlespace. Yet, the emerging disruptor poised to reshape future warfighting is Directed Energy Weapons (DEW)—specifically, laser-based systems capable of engagement at the speed of light.

As military doctrines evolve in the face of emerging aerial threats, DEWs are no longer conceptual edge technologies but critical enablers in multi-domain operations. Their operational relevance is being shaped not just by technological feasibility, but by battlefield necessity. The increasing density and frequency of drone incursions, loitering munitions, and low-observable aerial platforms have rendered conventional missile-based Air Defence (AD) weapon systems cost-ineffective and logistically burdensome in sustained engagements.

India's defence framework, which has traditionally focused on layered kinetic interception systems such as Akash, Surface-to-air PYthon and DERby (SPYDER) Barak-8, and S-400, is now going through a doctrinal recalibration to include high-energy laser-based capabilities. The incorporation of DEWs signifies a move towards high-tempo, cost-effective engagements and precision point-defence solutions. This shift aligns with India's broader transition towards NCW and theatre command structures, where DEWs can be guided by real-time Intelligence, Surveillance, and Reconnaissance (ISR) inputs and seamlessly integrated into the existing kill-chain hierarchy.

Military-Grade Lasers

Military-grade DEWs operate on the principle of lasers, generating a narrow, coherent, high-energy beam of light capable of neutralising aerial or ground threats with pinpoint precision. Since the beam travels at the speed of light—approximately 3,00,000 kms per second—engagement is instantaneous. At their core, laser systems comprise a gain medium such as solid-state crystals like ytterbium-doped yttrium aluminium garnet, fibre lasers, or chemical lasers; a pump source, often electrical or diode-based; and an optical resonator consisting of mirrors that amplify and direct the beam. When photons excite atoms in the gain medium, they stimulate the release of more photons, producing a highly focused beam. Advanced focusing optics then concentrate this beam onto a specific part of the target—causing heating, melting, vapourisation, or structural disruption, depending on intensity and duration.

Lasers are categorised by output power: low-energy lasers (01-10 kW) disrupt sensors and optics; medium-energy lasers (10-50 kW) can destroy Unmanned Aerial Vehicles (UAVs) or disable warheads; high-energy lasers (50-300 kW) can neutralise cruise missiles or swarming boats; and future strategic-class lasers (greater than 300 kW) may one day counter ballistic threats. Tactical effects vary from soft kills such as sensor blinding to hard kills like target destruction, along with non-kinetic disruptions that leave no visible trace. Unlike missiles or bullets, laser systems deliver silent, invisible, speed-of-light engagement, without smoke trails or sound signatures—making them ideal for stealthy AD.

The Strategic Rationale for Laser Weapon Development

India's investment in high-energy laser-based DEWs is underpinned by the need to correct battlefield asymmetries that favour saturation attacks using low-cost aerial threats. These asymmetries manifest in four interrelated tactical and logistical deficiencies in conventional AD doctrine:

- **Cost Asymmetry and Tactical Economics**. A quadcopter drone used for surveillance or improvised explosive device delivery can cost as little as INR 40,000 to INR 4,00,000 (approximately USD 500–USD 5,000). In contrast, intercepting it with a Surface-to-Air Missile (SAM)

such as Akash, SPYDER, or S-400 results in an economically disproportionate exchange ratio.[1] This imbalance allows state and non-state actors to field low-cost drone swarms that drain India's high-value interceptor stocks. This creates an economically asymmetric warfare model that favours the attacker unless neutralised by near-zero cost intercepts, such as lasers.

- **Magazine Depth and Sustainment Fragility**. Legacy AD systems are limited by fixed magazine capacities and time-consuming reload cycles. For example, a typical quick reaction SAM battery may carry only six to eight interceptors as first line scale of ammunition, creating a finite engagement window before logistical support is required. In contrast, laser-based DEWs operate on electrical input, offering deep-fire endurance—hundreds of engagements per power cycle—making them ideal for protracted or swarm-style saturation attacks.[2] DEWs, operating on stored electrical energy, can theoretically fire hundreds of times without reloading, provided continuous power and cooling.

- **Engagement Velocity for Hypersonic and Saturation Threats.** Directed energy systems operate at speed-of-light (approximately $3x10^8$ m/s), enabling real-time kill-chain execution against supersonic or hypersonic threats (greater than Mach 5) where milliseconds determine intercept viability by offering zero delay from detection to impact. This is critical in Indo-Pak theatre where tactical ballistic missiles and short-range rocket artillery may offer greater than 60-second time-to-target.

- **Surgical Precision and Collateral Minimisation**. Unlike explosive-based SAM intercepts, DEWs use thermal kill mechanisms (melting, cracking, overheating), enabling surgical elimination of drone optics, motors, or warheads without kinetic debris or collateral blast damage. This feature is vital in urban counterinsurgency/counterterrorism environments like Kashmir or border settlements in Punjab and Jammu, where civilian spillover is unacceptable, thereby, aligning with Rules-of-Engagement (ROE)[3] protocols.

Together, these factors represent a confluence of doctrinal necessity and technological inevitability—where DEWs emerge not just as adjunct systems but as indispensable components of India's future integrated air and missile defence matrix.

Global Operational Developments. Global operational developments in laser warfare are accelerating across major military powers, such as High Energy Lasers (HELs) transition from experimental labs to operational battlefields. The operational tempo is shifting from test beds to real-time deployment, and nations are racing to incorporate lasers into multi-domain combat architectures—from space denial and naval warfare to urban counter-drone grids, as under:

- **Israel: Iron Beam (100 kW Class)**. The Israeli Defence Forces, in collaboration with Rafael Advanced Defence Systems, operationally deployed the Iron Beam system in Oct 2024 during the Hezbollah-Israel skirmishes. The laser weapon successfully neutralised loitering munitions and UAVs within a 10 km engagement envelope. Cost-per-shot estimates remain around INR 900-INR 1,200 (USD 10-USD 13) due to its electric power base. Plans are underway to upscale it to a 150 kW configuration, potentially increasing effective range to approximately 15 kms and enabling it to tackle faster UAVs and rockets, artillery, and mortars targets.[4]

- **United States (US): High Energy Laser with Integrated Optical-dazzler and Surveillance (HELIOS), Directed Energy Maneuver-Short-Range Air Defence (DE M-SHORAD), and Airborne Lasers**. The US Navy's HELIOS system, fielded aboard Arleigh Burke-class destroyers, operates in the 60 plus kW power class and has demonstrated target acquisition and neutralisation of drones and ISR platforms at sea.[5] The US Army's DE M-SHORAD (50 kW)[6] mounted on Stryker vehicles entered early deployment in 2024 to counter drones, rockets, and mortars. A landmark milestone occurred in Apr 2025 when General Atomics test-fired a 300 kW high-energy laser from an MQ-9B Reaper drone, allowing stand-off engagement of aerial threats from an airborne ISR platform.

- **United Kingdom (UK): Dragon Fire**. The UK Ministry of Defence, in partnership with Leonardo, Matra BAE Dynamics Alenia, and QinetiQ, validated its DragonFire laser system in early 2025 by striking a coin-sized moving target at one km, with a cost-per-shot of approximately INR 1,000.[7] Dragon Fire demonstrates significant potential for Close-In Weapon Systems (CIWS) roles aboard Royal Navy vessels and static asset protection. Full deployment is projected by 2027.

- **China: Silent Hunter and Anti-satellite (ASAT) Lasers**. China has made rapid advancements in DEW technology, including the deployment of Silent Hunter—a vehicle-mounted fibre laser system claimed to deliver up to 30-100 kW of power. It has been showcased at international defence expos and is reportedly capable of disabling UAVs at distances of 04 kms. Open-source intelligence suggests deployment of higher-powered space-oriented ASAT DEWs and ship-mounted prototypes focused on anti-drone and anti-missile applications.[8] These developments reinforce China's strategy of leveraging DEWs in asymmetric and grey-zone scenarios.

India's Progress in Directed Energy Weapons

Sahastra Shakti Mk-II(A). The Defence Research and Development Organisation (DRDO) tested the Sahastra Shakti Mk-II(A) system on 13 Apr 2025 at the Kurnool test range.[9] The system employs a 30 kW fibre laser mounted on a high-mobility tactical vehicle chassis for rapid deployment. It demonstrated a 100 per cent kill probability during trials against fixed-wing UAVs, quadcopter swarms, and passive optical surveillance arrays at engagement ranges of up to 05 kms. The laser achieves destructive effects via localised thermal energy delivery, leading to immediate structural failure or warhead detonation. Its integrated Electro Optical/Infra-Red (EO/IR) targeting suite enables autonomous threat tracking and beam stabilisation under mobile combat conditions. The Mk-II(A) is slated for tri-service induction into frontline counter-UAS and perimeter denial roles by 2027.

Future Systems[10]:

- **Directionally Unrestricted Ray-Gun Array (DURGA) II**. DURGA II is a next-generation platform under classified development, envisioned as a modular 100 kW system for

deployment on air-superiority fighters, naval destroyers, and armoured ground vehicles. It incorporates adaptive optics for countering atmospheric degradation and is expected to provide 360 degrees engagement against UAVs, loiter munitions, and cruise missile targets across domains.

- **Surya**. DRDO's Surya-class is an ultra-high-energy 300 kW laser weapon under concept validation. Designed for extended airspace interdiction, it aims for an operational range of 15-20 kms and can intercept high-speed missiles including short-range ballistic missiles, manned aircraft, and large UAVs. Integration with long-range radar systems and strategic platforms such as the Airborne Warning and Control System (AWACS) and INS Vishal (future aircraft carrier) is under feasibility evaluation.

- **The Kilo Ampere Linear Injector (KALI) System**. An indigenous high-powered accelerator-based pulsed power source, the KALI-5000, developed by the Bhabha Atomic Research Centre, is being considered for integration into India's DEW test infrastructure. Capable of delivering ultra-short bursts of kilo-ampere electric pulses, KALI can simulate electromagnetic pulse-like disruptions and may provide the foundation for next-generation non-lethal electronic kill DEWs and ASAT applications. Reports suggest that modified KALI-based emitters are under evaluation for electro-thermal blinding of UAV guidance packages and disabling enemy ISR satellites in low Earth orbit.

Budgetary Support. India's Union Defence Budget for Financial Year 2025-26 earmarked INR 26,816 cr for the Department of Defence Research and Development. Of this, INR 14,924 cr (approximately USD 1.8 bn) is specifically allocated to projects focused on high-impact next-generation warfare technologies—including DEWs, Artificial Intelligence (AI), swarm drones, and hypersonics. DRDO has further received multi-year capital support through the Technology Development Fund for DEW-specific labs under the Laser Science and Technology Centre and the Centre for High Energy Systems and Sciences.

Integration of Directed Energy Weapons with Existing Weapon Systems

To ensure seamless battlefield utility, DEW systems must be embedded within India's Integrated AD Control and Reporting System and Battlefield Management System grids. Real-time sensor fusion from AWACS like Netra, ground-based fire control radars like Swathi Weapon Locating Radar, and passive EO/IR systems must feed targeting data to DEW operators. Laser systems on naval platforms should be networked with CMS-17 and BrahMos fire control suites, enabling integrated threat engagement. Armoured formations deploying laser-mountable Infantry Combat Vehicles (ICVs) or Main Battle Tanks (MBTs) will benefit from Helina or Nag missile guidance architecture, ensuring redundancy and dual-mode engagements (laser plus kinetic). As India operationalises Project Akashteer, a new-generation digital AD control network, DEWs will serve as both autonomous kill assets and precision effector nodes, accelerating India's shift toward distributed lethality and sensor-to-shooter loop optimisation.

- **SAM-Complementary Deployment**. Laser systems like Sahastra Shakti can be co-located with Akash and S-400 SAM batteries to form layered defences.
- **Armoured and Infantry Formations**. Future iterations of DURGA II could be mounted on MBTs and BMP-2 ICVs, providing mobile units with autonomous anti-drone and short-range aerial defence.
- **Naval Platforms**. Surya-class lasers could be integrated with INS Visakhapatnam-class destroyers, adding another line of defence to the Barak-8 and CIWS layers already in place.
- **Airborne Integration**. Lightweight DEWs could be integrated into fighter aircraft such as Su-30MKIs and Tejas Mk2 via external pods to provide airborne anti-UAV and sensor-disruption capability.
- **UAV and Drone Carriers**. Integrating compact laser modules into medium-altitude long-endurance UAVs and future high-altitude long-endurance platforms like Tactical Airborne Platform for Aerial Surveillance-Beyond Horizon-201 will enhance independent neutralisation capability against aerial threats.

- **Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR) Systems**. DEWs must be linked with integrated battle management systems, radar feeds, and electro-optical fire control for automated cueing and rapid targeting.

Enhancing the lethality of DEWs require a synergistic evolution across power delivery, beam quality, target tracking, and operational integration. Scaling output from current 30–100 kW systems to 300 kW and beyond exponentially increases destructive capacity—enabling hard-kill effects against high-speed cruise missiles, low-observable UAVs, and potentially manned platforms. Beam coherence and focus must be optimised using advanced adaptive optics and turbulence compensation technologies to ensure precision engagement across varying atmospheric conditions. Tactical effectiveness further hinges on real-time target acquisition through AI-integrated fire control systems, fused with EO/IR sensors and radar arrays for seamless multi-target tracking and rapid kill-chain execution. Sustained lethality demands sophisticated thermal management—leveraging liquid or cryogenic cooling loops to maintain beam integrity during extended firing cycles. Power supply remains a critical enabler; advances in pulsed power modules, compact turbine generators, and supercapacitor-based energy banks are vital for mobility across land, naval, and airborne platforms. Integration of DEWs with kinetic systems in hybrid defence architectures enhances overall mission survivability during saturation or layered attacks. Expanding functional lethality to soft-kill roles—via high-power microwave pulses or sensor blinding—adds a spectrum of non-kinetic disruption options in electronic warfare-contested environments. Future innovations may see DEWs coupled with electromagnetic pulse emitters for area denial, infrastructure paralysis, or strategic system degradation. DEW lethality will be defined not just by wattage, but by its integration into dynamic multi-domain operations, resilience under load, and capacity for precision at tactical, operational, and strategic tiers.

Tactical Applications in Indo-Pak Conflict Scenarios

Border Drone Incursions. The increasing frequency of drone-based incursions sponsored by Pakistan across Punjab, Rajasthan, and Jammu sectors—including reconnaissance platforms and

payload-dropping UAVs—necessitates a rapid, scalable countermeasure. Conventional SAMs such as Akash or SPYDER are logistically unsustainable for such low-cost threats. Deployment of mobile Mk-II(A) laser DEWs along forward posts, Border Security Force (BSF) compounds, and sensor-rich checkpoints offers a zero-munition, high-endurance intercept solution. These systems can autonomously track and disable UAVs via thermal kill or optical disruption modes, neutralising the asymmetric cost advantage that favours the adversary.

Defence of High-Value Assets. Strategic installations such as frontline Indian Air Force airbases (e.g., Pathankot, Ambala), oil depots, and forward ammunition stockpiles remain high-priority targets for cross-border stand-off attacks via cruise missiles, suicide drones, or artillery rockets. Integrating DURGA II and Surya-class DEWs as the terminal hard-kill layer within existing AD perimeters enables faster, cost-effective interdiction of incoming threats. These laser platforms preserve high-cost SAM inventories (S-400, Akash Next Generation) for layered engagement of stealth aircraft or long-range munitions while reducing radar cross-section exposure through silent operation.

Naval Deployment in the Arabian Sea. The Indian Navy assets in the Arabian Sea operate under increased risk of saturation missile attacks, anti-ship drones, and swarming fast attack craft, particularly from adversaries using asymmetric littoral strategies. Integration of HEL systems aboard frontline vessels (Visakhapatnam-class, Nilgiri-class) provides non-depletable, omnidirectional defence capable of 360 degrees engagement without the thermal signature or reload downtime of conventional CIWS systems. HELs offer precision neutralisation of EO-guided threats and low-radar cross section drones without compromising stealth posture or radar bandwidth.

Non-Kinetic Roles. DEWs can serve in soft-kill configurations by blinding EO/IR sensors on ISR drones, disrupting laser designators, or degrading optical surveillance pods mounted on loitering munitions and aerial platforms. These silent, instantaneous energy strikes create tactical disorientation and impede targeting accuracy. Furthermore, their psychological impact—via invisible, noiseless kills—adds to the deterrence factor in hybrid warfare and irregular border conflicts.

Strategic Cost Benefit. During prolonged border skirmishes or limited wars, the financial burden of intercepting hundreds of drones with missiles costing in the range of INR 03-INR 10 cr becomes strategically unsustainable. DEWs capable of 80 to 90 per cent intercept rates at INR 1,000 per shot present a revolutionary cost-to-kill inversion. Their unlimited magazine, powered by electric grids or mobile energy cells, ensures long-duration deployment. With minimised collateral damage due to non-explosive neutralisation and a near-zero logistic footprint, DEWs represent a disruptive leap in India's defence doctrine against Pakistan's evolving threat vectors.

Operational Challenges along the Pakistan and Bangladesh Borders

Power Generation and Thermal Management Bottlenecks. Laser weapon systems require consistent, high-density power generation to sustain operational beam output. For tactical-grade systems like Sahastra Shakti Mk-II(A), mobile power packs suffice. However, upscaling to 100–300 kW class platforms (e.g., DURGA II, Surya) along extended border sectors pose a logistical and engineering challenge:

- Pakistan border (3,323 km) and Bangladesh border (4,096 km) span multiple terrains—deserts, marshes, riverine belts—where continuous energy supply and effective cooling systems are a challenge to deploy.

- High-output laser platforms demand closed-loop thermal dissipation units and reliable fuel-based generators or supercapacitor systems, which impair mobility in forward areas.

Atmospheric Propagation and Beam Attenuation. Operational environments along India's borders, from the icy heights of Ladakh to the humid riverine belts of Bengal, impose unique constraints on sustained DEW employment as under:

- Dust storms, fog, and snow affect beam coherence and accuracy.

- High humidity and rainfall introduce optical scattering, reducing effective range by up to 40–60 per cent, requiring beam shaping and adaptive optics, which are still under

development along the Bangladesh Border (Assam, Meghalaya, Tripura).

Terrain-Based Deployment Constraints.

- In hilly regions like Kashmir and Nagaland, line-of-sight engagements are obstructed by undulating topography. DEWs rely on direct path exposure, therefore, deployment is confined to elevated terrain or ISR-assisted cueing from UAVs.

- Floodplains and riverine borders (e.g., West Bengal, Assam) have unstable soil and seasonal waterlogging, restricting platform mobility and static emplacement.

Command and Control Integration Over Diverse Theatres. Seamless laser integration demands high-bandwidth, real-time data fusion across multiple ISR and fire control systems. Current limitations include:

- Incomplete Akashteer network coverage in northeast sectors.

- Interoperability gaps between BSF, army, and air force surveillance platforms.

- Need for multi-domain fusion centres capable of synchronising satellite, UAV, and human intelligence inputs for laser cueing.

Manpower, Training, and Doctrine Gaps. Laser weapons require the development of new doctrinal frameworks, fundamentally distinct from those used for kinetic munitions. Unlike traditional missile-based systems that rely on flight-time intercepts, blast fragmentation, and magazine logistics, DEWs demand real-time C4ISR integration, adaptive energy management, and instantaneous fire control logic. This shift entails drafting theatre-specific ROE, environmental propagation protocols, prioritising power grid allocation in battlefield planning, and developing a multi-domain convergence doctrine to align with existing kinetic strike chains. Moreover, DEWs blur the lines between non-lethal deterrence and high-precision lethality, necessitating doctrinal

evolution within India's operational art and joint service command structures. Current limitations include:

- Absence of standing operating procedures for ROE under DEW usage.
- Shortage of laser-trained technicians and command staff across regular army formations and Central Armed Paramilitary Forces.
- Need to establish a Tri-Service DEW Command and Training School to develop joint tactics, techniques, and procedures.

Vulnerability to Countermeasures. Adversaries may adopt reflective coatings, ablative surfaces, rotating modules, or smoke generators to reduce laser efficiency. Without robust real-time power modulation and beam tracking, DEWs risk reduced lethality under dynamic battlefield conditions.

Logistics and Maintenance Tail.

- Laser systems, especially mobile platforms, require delicate optics, beam directors, and thermal components that are sensitive to vibration, shock, and dust.
- Establishing forward repair depots and modular component replacement protocols across border command sectors is essential but still nascent.

Policy and Legal Ambiguities.

- There is currently no formal doctrine or legal framework governing use-of-force thresholds with DEWs.
- The Geneva Convention restricts the use of lasers for anti-personnel roles, necessitating a clear distinction between anti-material versus human target engagement.

Conclusion

India's DEW programs are no longer aspirational research and development efforts; they represent a foundational shift in the country's long-term strategic deterrence matrix. Unlike traditional weapon systems that rely on kinetic saturation or attrition warfare principles, DEWs signal the arrival of a 'Light-speed kill-chain

doctrine' where rapid neutralisation, multi-target engagement, and minimal logistical dependency redefine the tempo of conflict response.

As adversaries recalibrate their threat models using low-cost drone swarms, standoff loiter munitions, and hybrid infiltration tactics, India's DEW deployment, if synchronised across services, will tilt the escalation ladder in its favour. The capacity to project precision lethality without ammunition fatigue, backed by indigenous production and reduced foreign dependency, allows India to shape the battlefield not just defensively, but psychologically and doctrinally.

Moreover, DEWs offer a dual utility—combat superiority and symbolic escalation control. Their silent, surgical, and near-invisible nature enables India to exert hard power without inviting disproportionate retaliation, making them ideal tools in a sub-conventional warfare environment where escalation management is as critical as target elimination.

Finally, the real success of India's laser programs will lie not merely in fielding hardware but in integrating them as cognitive nodes within a real-time ISR matrix—where AI, satellite feeds, and predictive threat analytics converge to trigger engagement. The weaponisation of light, thus, becomes not just a technological leap but a doctrinal inflection points in India's journey from reactive defence to pre-emptive area denial.

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The Rajput Way of War: Lessons from the Battle of Tarain

Dr Alok Yadav[@]

Abstract

This article examines the Rajput military system and combat methods, and the socio-political context that shaped its development. It analyses the strategic and tactical elements of Rajput warfare, primarily through the lens of the Battles of Tarain. The analysis also offers comparative insights with other military systems to highlight the distinctiveness of Rajput tactics. By tracing both the strengths and limitations of their approach, the article provides valuable lessons for contemporary military thought and a deeper understanding of India's martial traditions.

Introduction:

The period from the 7th Century to the 12th Century, after the death of Harshvardhan, is called the period of the Rajputs in the history of India. Who were the Rajputs? Historians have many opinions in this regard. Since ancient times, the word Rajputra has been used for the Kshatriyas, associated with royal power. Some historians believe that the term Rajput is the corrupted form of Rajputra. It is also said that the Kshatriyas living in the Rajputana region call themselves Rajputs. Notable dynasties associated with this lineage include the Tomars in Delhi, the Gurjar Pratiharas in Kanauj, the Parmars in Malwa, the Chandelas in Mahoba and Kalinjar, the Solankis in Gujarat, and the Pals in Bengal. Rajput kings established powerful kingdoms in Rajasthan, Gujarat, and the Ganga plains. Rajput warfare exemplifies a distinguished tradition in Indian history, marked by a unique blend of valour, courage, and adherence to moral principles. The major Rajputs of the Indian subcontinent, such as Chauhan, Kachwaha, and Sisodia Rajputs, have set an example of a great legacy of renunciation, sacrifice, and valour.[1]

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Military Structure:

The Rajput military system was largely feudal, with numerous minor lords serving under a paramount king. Each lord was obliged to provide a specified number of soldiers when called upon, and failure to comply was met with punishment. The Rajputs were known for their immense pride and deep affinity for warfare. The rugged terrain of Rajputana nurtured both bravery and resilience among its people. Despite this, the Rajputs were frequently engaged in internal conflicts. Being born into a Rajput family was often regarded as a destiny for warfare, with each Rajput inherently a warrior. They developed a distinctive martial tradition, while the feudal system comprised numerous minor lords serving under a dominant king. They were required to present themselves before the king, accompanied by a specified number of warriors. Failure to comply resulted in punishment and the loss of their estate.[2]

The importance of cavalry grew significantly during the Rajput era, with most Rajputs excelling as mounted warriors. Horses enhanced the mobility of the army, while elephants gained prominence despite the arid terrain. Camels were employed to transport water, troops, and supplies efficiently. The community that used to support the Rajput rulers of Rajasthan's arid region when needed was known as Rabari. When needed, they used to help in war-like situations by providing logistics and supplies of materials through camels.[3] Although the importance of elephants declined after the Harsha period, they were still used to breach fortifications and overpower enemies. The infantry comprised the largest segment of the army, with all Rajputs acquiring weapons upon the declaration of war. Those without horses were integrated into the infantry. During this era, numerous forts of varying sizes were constructed across the Rajputana region. The army of Kannauj had its forward contingent engaged in battle while the rear remained in the encampment. Jai Chandra's army had 80,000 armoured soldiers and 30,000 cavalrymen clad in cloth armour.[4]

The Rajput Way of War: Honour and Chivalry

The rugged terrain of Rajputana fostered bravery and resilience among its inhabitants. The Rajputs often engaged in continuous internal conflicts, and being born into a Rajput family was widely regarded as a destiny for warfare. Renowned for their fierce independence and martial skills, Rajput soldiers adhered to a strict

code of honour and chivalry that guided their conduct in battle. This code underscored personal valour, fidelity to sovereignty, and a readiness to combat death rather than concede loss or disgrace. Rajput monarchs and aristocrats were expected to command their forces in combat, exhibiting valour and leadership that motivated their soldiers. The notion of *Dharmayuddha* (Righteous War) was fundamental to the Rajput martial ethos, wherein conflicts were committed to moral obligation and compliance with specific ethical standards.[5]

This principle is reflected in the behaviour of Rajput soldiers in combat. They adhered to stringent rules of engagement, which frequently encompassed a contempt for deception and a desire for a transparent, honourable battle. For example, it was deemed dishonourable to assault an adversary at night or during religious observances. Their focus on individual valour occasionally resulted in insufficient cooperation in broader strategic planning, as warriors pursued personal glory on the battlefield.[6]

The Battles of Tarain: Context and Tactics

The Battles of Tarain, taking place between 1191 and 1192 CE between Prithviraj Chauhan, a Rajput king, and Mohammad Ghori, were a pivotal moment in Indian history. Due to the unity and bravery of the Rajputs in the first battle of Tarain, they achieved a one-sided victory over the army of Mohamad Gori, primarily due to the archers and fierce warriors of Prithviraj's army. In Rajput warfare, a warrior's sacrifice on the battlefield was regarded as the highest expression of valour, especially when giving one's life to protect the motherland. The Rajput Army comprised both infantry and cavalry and was largely feudal in structure, with clan-based forces loyal to their chieftains and allied to the Rajput rulers. Their primary strategy was to utilise strong cavalry attacks to smash through the opposing lines by sheer force. Minhaj-i-Siraj Juzjani's Tabaqat-i-Nasiri says that the Rajputs used heavy cavalry and infantry to assault the Ghurid lines head-on and win.[7] Indian armies were known for their war elephants, which they employed to scare and mess up the enemy's light cavalry. The Rajputs' code of chivalry emphasised open and honorable combat, forbidding the use of trickery or night attacks. The Ghurids, unprepared for such a disciplined and forceful assault, suffered heavy losses, forcing Muhammad of Ghor to retreat. While these victories highlighted

the Rajputs' mastery of traditional warfare, they also revealed their vulnerability to more adaptable strategies in future conflicts.

On the contrary, the result of the second battle of Tarain in1992 CE was completely different. This time, Mohammad Ghori used better war tactics. He left behind his heavy equipment and non-combatants and advanced with light equipment and warriors. He divided his army into five parts. He kept four for attacking the Rajputs and one as a reserve group. These reserve horsemen were ordered to advance and attack the Rajput Army and then retreat, so that a ladder battle could be avoided. This time, Muhammad Ghori learned from his past mistakes and devised a strategy that accounted for the Rajputs' previous strengths and shortcomings. Ghori assembled a formidable force of skilled horsemen and archers, and the superior quality of his horses enhanced the army's mobility, giving him a decisive advantage in battle. Additionally, internal conflicts among the Rajputs weakened their military strength. Ghori, having studied their tactics closely, planned his attack with careful precision. Mohammad Ghori first provoked the Rajput Army to attack by sending small contingents, which disrupted the Rajput Army's military coordination. Mohammad Ghori was leading under a centralised command, which made it easy to make the right decision at the right time. At the same time, the Rajput Army was feudal and relied more on individual bravery, which led to a lack of coordination.[8]

These clashes highlight the limitations of traditional Rajput warfare in the face of evolving military tactics. They underscore the necessity of adaptability in battle and the risks of relying more on symbolic gestures than on practical, effective strategies. The loss at the Second Battle of Tarain signified the onset of the decline of Rajput dominance over northern India. It made it easier for Muslims to take over the subcontinent.[9]

Lessons from the Battle of Tarain

Both the battles of Tarain brought out the strengths and weaknesses of Rajput warfare. These battles made it clear that there was a need for improvement in the leadership and tactical structure of the Rajput Army. New tactics were also required according to the new threats on the strategic front. Only individual bravery and numerical superiority could not be relied upon. Always fighting with the same tactics even in the face of a new enemy

showed a lack of tactical flexibility. A major lesson from these wars was to change military plans according to time and the enemy's plans. Fighting with the same strategy and combination could be detrimental to your army.[10]

In the First Battle of Tarain, Prithviraj Chauhan's army won using the traditional Rajput military strategy of massive cavalry attacks and the valour of infantry. On the other hand, in the Second Battle of Tarain, Mohammad Ghori employed mobility and hit-and-run tactics to weaken the strong points of the Rajput Army, allowing Ghori's army to avoid a direct battle with the Rajputs. The primary reason for the Rajput Army's defeat in this war was their complacency after previously defeating Ghori, leading them to underestimate his capabilities. While Ghori spent a year preparing for the war and fought the war with a complete plan, he forced the Rajputs to fight at the place and time of his choosing. Additionally, they had no reserve forces and were easily deceived. This war was the result of the efficient leadership of Mohammad Ghori.

The Rajputs matched the Turks in courage and bravery, yet their approach to war was guided by the highest moral standards. For them, war was almost a religion, and even in battle, they prioritised honour and valour over mere outcomes. Their unparalleled bravery and disregard for death made them truly distinctive warriors. They considered the sacrifice of the army in war as service to the motherland, which made them incapable of achieving practical success in war. On the other hand, the goal of the Turks was to achieve victory, no matter what the means.[11]

The Rajputs lost the second battle, highlighting their inability to adapt strategies to match those of their enemies. While formidable in conventional warfare, they were unprepared for the swift and flexible tactics employed by Ghori's forces. This lack of adaptability is a recurring theme in Rajput military history, stemming from their strict adherence to established codes of combat, which limited their effectiveness against more innovative opponents. The Rajputs were just as strong and courageous as the Turks, but their ideas about battle and their goals were based on the highest moral standards. For them, fighting was like a religion or a hobby; even in the middle of a fight, they did things that did not have any real effects.

By contrast, the Turks were determined to achieve victory at any cost, whereas the Rajputs were renowned for their courage and fearlessness in battle. They were driven by an idealistic notion of a warrior and military honor, which often hindered their ability to achieve genuine victory in conflict.[12]

The Turks possessed a more advanced military than the Rajputs. The Rajput Army was organised along feudal lines, with troops serving under their respective lords. It is difficult to imagine such a fragmented force fighting cohesively under a unified plan, clear objective, and single commander. Moreover, the Rajput Army was often fatigued from internal conflicts. In contrast, the Turkish Army was made up of soldiers from different castes and nationalities and worked together under the same leadership, discipline, strategy, and goal. The primary factors contributing to the dominance of the Turkish Army in warfare were horses, bows, and arrows. During that period, mobility became the primary foundation of the Turkish military structure. This period was characterised by cavalry.[13]

Lessons for Today from the Rajput Way of War and the Battle of Tarain: Impact and Relevance:

The Rajputs' defeat at the Second Battle of Tarain had significant repercussions for the Indian subcontinent. This signified the onset of Muslim supremacy in northern India and the formation of the Delhi Sultanate. The Rajputs, formerly the preeminent military force in the region, were diminished to a subordinate status. However, they opposed foreign domination and upheld their martial traditions throughout the subsequent centuries.[14]

The Battles of Tarain represent how the Rajput warrior strategy teaches numerous principles that are still important for current military strategy and leadership. A key lesson is the need to be adaptable and plan. The Rajputs' reliance on traditional tactics, such as frontal cavalry charges and individual valour, proved insufficient against Mohammad Ghori's more flexible and systematic approach at the Second Battle of Tarain in 1192. This highlights the modern lesson that military success depends not on traditional or previous achievements but on the ability to adjust to changing circumstances and the capabilities of the enemy. Modern military and political leaders should put innovative thinking and versatility first when dealing with new technologies and unusual problems, such as cyber warfare and asymmetric wars.

A crucial lesson is the significance of unity when confronted with external dangers. The Rajput kingdoms were politically disunited, with internal conflicts undermining their collective defence. The absence of coherence enabled Mohammad Ghori to capitalise on divisions and achieve victory. In the current global landscape, when countries confront transnational challenges like terrorism, climate change, and pandemics, the necessity for unity and collaboration across various groups is paramount. The modern lesson for geopolitical and military strategy is that regional or national differences may undermine the collective response to global crises. Like the Rajputs, nations that do not cultivate unity and collaboration are susceptible to foreign threats.[15]

Additionally, these battles demonstrate the limitations of a strategy centered on valour. Despite culturally placing valour and expenditure at the forefront, the Rajput Army was defeated in the second battle of Tarain. This teaches that strategy in war should be practical. Even today, at the international level, such examples can be seen when global powers take sides in war by prioritising their interests rather than theory. The formation of an integrated theatre command by the Indian Army will enable the taking of appropriate decisions in war-like situations.

In conclusion, the Rajput approach to warfare and the Battles of Tarain provide enduring insights into the significance of flexibility, cohesion, and pragmatic military strategy. The results of these conflicts remind contemporary leaders that adaptability, collaboration, and strategic foresight are crucial not just in military engagements but also in confronting any substantial problem, whether political, economic, or technical. The battles of Tarain are the best example of what lessons can be learnt from Indian warfare and history. History is often marked by mistakes, as exemplified by the second battle of Tarain. The result of the infighting among the Rajput rulers paved the way for the downfall of the Rajputs and the beginning of Muslim rule in India. The security of a nation can be ensured only through national unity, and the Battle of Tarain serves as a lesson in this regard.

The lesson of the Second Battle of Tarain is that leadership should be centralised. Furthermore, Mohammad Ghori's activities, including gathering information through espionage on the Rajput Army and its growing complacency, teach us that preparation for war should always continue for peace. Along with this, to win any

war, the nation must always have the latest technology available to the army. Battles highlight how cultural values and strategic innovation must be balanced. This is a lesson that modern forces may learn from as they deal with new technologies and complicated geopolitics. Contemporary strategists could benefit from the Rajput style of fighting, which emphasises the importance of being united, flexible, and able to think on the ground to win on a battlefield that is constantly changing.

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From the Archives
THE EUROPEAN MILITARY ADVENTURERS IN INDIA: BENOIT DE BOIGNE.
By

C. GREY.

Of all the Soldiers of Fortune, for whom India in the Eighteenth Century was a Golden Age, none was of such a romantic figure, or more successful than this Savoyard. It was he who raised and trained for Madhoji Scindia, the greatest and best regular army ever owner! by a native Prince in India, and one which gave Wellesley and Lake very stern fights at Aligarh, Assaye and Laswari after its creator had left India.

Benedict de Boigne, son of a hide merchant of Chambery, was born in 1751, and early decided for a military life. As a commission in a regular French Regiment demanded at least eight quarterings, or three centuries of noble descent, it was, for him, impossible. However, this rule did not extend to the Swedish, Swiss, German, or Irish regiments in French service, and as these were open to Frenchmen of humble birth, he managed to secure an ensigney in the Irish Regiment of Olare. We may here remark that these regiments were not, as generally supposed, recruited exclusively from Irishmen, but had always a proportion of Frenchmen or other foreigners in their ranks, and their officers were interchangeable with those of other foreign regiments in the French service.

De Boigne served in Flanders and at Mauritius for about three years, when, finding his prospects not very promising, he resigned. after securing a captaincy in a Greek Regiment in the Russian service. A curious mixture, one might remark. The Russians were then at war with the Turks. and in a descent on the Island of Tenedos de Boigne was taken prisoner and interned at Scios, where he remained until the close of the war. His Russian commission having lapsed, he proceeded to Smyrna where he fell in with some Englishmen whose accounts of India so fascinated him that he decided to try his luck in that EI Dorado.

Accordingly, he joined a Caravan setting out for Baghdad, thus proceeding overland as so many adventurers had done before him. Arrived there, he found that the war between the Russians and Turks precluded any further progress, and had to

return to Aleppo. Not to be baulked, he passed over to Cairo, being wrecked at the mouth of the Nile, and taken prisoner by the Arabs on the way. They, however, not only released him, but helped him on the way to Cairo, a tribute to his personality.

At Cairo he so interested the British Consul-General, that he not only gave him a free passage to India, but letters of recommendation which, on his arrival in India, procured him an ensigney in the 6th Madras Sepoys in the year 1778. Being away on convoy when the regiment was cut up, and the remainder taken prisoner by Tippoo Sultan at Polliorein in 1780, he escaped their fate. In 1781 he resigned because he considered the prospects inadequate, though other reasons have been assigned, one being that he had taken liberties with the wife of another officer, and another that he was passed over for an appointment. Both are incorrect, as he was acquitted of the one and declined the other when it was offered him.

Having secured a recommendation to Warren Hastings, he proceeded to Calcutta, where he was again fortunate enough to find an English officer who put him up and financed him, till he obtained an interview with Hastings. To him he confided his intention of journeying overland to Russia, and asked for letters of introduction to the rulers of the various countries and Indian States through which he would pass. Hastings, greatly impressed, furnished all he desired, amongst which was a letter to the Nawab of Oudh at Lucknow.

He was again very fortunate, for the Nawab not only gave him a Khillut, he subsequently sold for Rs. 4,000, but also letters of credit on Kabul and Kandahar for Rs. 12,000. At Lucknow he made the acquaintance of Claude Martine, afterwards his lifelong friend and business partner for many years. From Lucknow he went on to the camp of Madhoji Scindia, ostensibly on a visit, but really we think to see how the land lay. Being very suspicious of this wandering stranger, Scindia had his baggage plundered, and though it was afterwards restored to him, his progress was stopped, as his money and letters of credit were retained.

Being now penniless, he applied for military employment to the Rana of Gohad, whose fort of Gwalior, Scindia was besieging. The Rana refused him, as he had already employed the battalions of Rene Medoc, now under a Scotch ex-watchmaker, named Sangster. He then applied to Pertab Singh of Jaipur who declared himself quite willing to engage him provided the

necessary permission was given *by* Warren Hastings. This was refused; whereupon de Boigne went to Calcutta, and by a personal interview, secured permission, only to find on his return that Pertab Singh had changed his mind. As a solatium, however, he gave de Boigne Rs. 10,000.

Meanwhile Scindia, having met with some military reverses from Sangster's battalions, decided that similar units were worth having, so early in 1784 engaged de Boigne to raise two battalions of 800 men each, with four guns per battalion, and to be officered, or commanded, by Europeans. These were speedily organised, for de Boigne was a man of indefatigable energy, and found men to whom he could impart it. The first battalion was commanded by a Dutchman named Hessing, the second by Fremont, a Frenchman, with whom were associated some minor Europeans or Eurasians, and the guns were worked by Europeans, mostly deserts, runaway sailors or half caste Portuguese, who were the N.C.Os,. or gunners, the matrosses or gun crew being Indians.

In November 1784 the new formations were employed at, the storming of Kalinjar, near Allahabad, and acquitted themselves so well as to gain the approbation of the Mahratta general, which they understood as license to plunder the town. In January 1785 they were present at the taking of Delhi, which fell to Scindia, who held the senile old Mogul Emperor in pawn. Till February 1787 they saw nothing but a few minor actions, when *in* that month they drove off the Rajput cavalry, numbering some 10,000, who for the first time in history were routed by hitherto despised footmen, their repeated charges against the indomitable squares always proving of no avail.

Here the artillery also distinguished themselves, for though the cavalry got in amongst them and cut many down, they did not capture a single gun, or gunner. But the bravery of de Boigne's men was discounted by the inertia of the Mahratta horse, and he was compelled to retire within the walls of Ulwar, losing nothing in his retreat.

The next action was at Chaksana, in April 1788, and at Agra in June of the same year, both hard fought battles, where he gained more honour and glory. Having thus justified himself, de Boigne asked sanction to increase his force to ten battalions, which, on being refused, he quitted Scindia's service, and

proceeded to Lucknow where he set up in business in cloth and indigo with Claude Martine.

Repenting shortly afterwards, Scindia implored de Boign to return on his own terms, which he did in January 1790. The new army constituted ten battalions of 800 each, 500 cavalry, and 60 guns of various calibre, the whole officered by over 100 Europeans, the senior officers all being Frenchmen or Continentals at the beginning, though later a few Englishmen and Anglo-Indians were given command. In supreme command of this force, de Boigne met the combined forces of the Moghul rebel Ismail Beg, and the Rajas of Jaipur and Jodhpur at Patan Tanwar in the Shekawati district on the 29th June, 1790. The two opposing forces were considerable, de Boigne having some 12,000 Mahrattas beside his own men, and the enemy mustering 12,000 Rahtore cavalry, 25,000 foot and 130 guns.

After the opening skirmishes the Mahrattas took no part in the battle, which resolved itself into a continual succession of cavalry charges on de Boigne's squares and artillery, all of which were repelled with great loss to the enemy. These proving unsuccessful, a general advance was ordered and the enemy completely routed, de Boigne taking 107 guns, 6,000 stand of arms, 15 elephants, 200 camels, 513 horses, and over 3,000 oxen, as well as 12,000 prisoners. His Own losses were 700 of whom 130 were killed, whilst the enemy dead not only covered the field, but the pursuit of some ten miles. In the afternoon he took the town of Patun, which afforded more booty, including 2,000 horses.

The defeat of the hitherto invincible Rajput horse so infuriated the Raja of Jodhpore, that he assembled every Rajput between 16 and 60, and adding to these 100,000 foot and twenty-five guns, awaited battle at Merta, a walled city about 30 miles east of Ajmer. At dawn on the 12th September 1790, de Boigne, who had 30,000 horse, his own ten battalions and 80 guns, taking advantage of the fact that night attacks were very unusual in India, fell on the camp and nearly destroyed the foot soldiers before the Rajputs awoke to the danger.

Nobly they redeemed their sloth, for they charged down on two of de Boigne's battalions, who had imprudently advanced too far and cut them up. Seeing this, de Boigne formed his others into squares linked up by the guns, against which the

waves of horsemen beat in vain until but 4,000 were left. These, donning yellow turbans in token of devotion to death or victory, renewed their charges until only 15 were left, who, dismounting, advanced on foot against the squares, where they too met the death they desired.

De Boigne records that at times the squares were absolutely surrounded and invisible amidst the swarms *of* horsemen, from whom the gunners saved themselves by taking refuge within the squares until the attacks were driven off, when they emerged and opened fire. His own loss was about 900 including many gunners, most of whom were slain by the sabres of the Rahtore horse. The battle was over by ten, and at three the columns assaulted and took Merta, "of which the pillage lasted three days, and to mention all its particulars would make your mouth water. The ladies at first were displeased at our abrupt entry, but at length grew more kind, acknowledging that none but the brave deserved the fair."

This account by one of de Boigne's officers was published in the C*alcutta Gazetle,* and rather upsets the popular idea of the Rajput ladies; but may be the "fair ones" were not Rajputs. So pleased was Scindia at this victory, that he sanctioned the formation of two more brigades and cavalry, artillery, etc., bringing the disciplined forces up to 30,000, officered by 130 Europeans of all nationalities, including some Eurasians, such as Butterfield, Evans, Hearsey, Skinner and Vickers. Besides these there were about 350 drill sergeants, military artisans, and gunners, recruited from the peripatetic military rascality of India, and of the same classes as the officers.

Of these latter, Compton remarks that “though in ordinary times they reflected little credit on the European, they were extraordinarily brave and stubborn in action.” His next battle was that of Lakhairi in September 1793, where he defeated the army of Tukoji Holkar, with which were three disciplined battalions under the Chevalier Dudrenec who were annihilated, losing every European officer and gunner present with them. The last battle in which his troops were engaged was that of Kardla, where they defeated the army of the Nizam of Hyderabad, which mustered 110,000 men, amongst whom were 17,000 disciplined infantry under command of Colonel Raymond, and another 6000 belonging to the two Free Companies under an Englishman named Finglas, and an American named Boyd.

As, owing to ill health, de Boigne was not present, the battle was fought by his second in command, and ultimate successor, Perron, an ex-sergeant of French Marines. Continued ill health induced de Boigne to resign and, in December 1795, he left for Calcutta escorted *by 600* Pathan Horse. whose mounts, arms, and equipment were his own personal property. His other effects were carrierd on four elephants, 150 Camels, and 150 bullock carts, with which he arrived at Calcutta in June, having stopped at Lucknow for some time to dose his business there.

At Calcutta he *was* honourably received by the Governor-General, who purchased the cavalry horses, and equipments, and enrolled the men in his own forces. In September 1795 he left India, taking with him a son and daughter by a Persian lady, the latter of whom left descendants who carry on the name and title of Benedict, Count de Boigne. He died at Chambery in June, 1831, closing an honourable career by an equally honourable and respected old age. His character *is* thus summarized hy Ferdinand Smith, one of his officers:

"I have seen him daily and monthly rise with the sun, survey his arsenal, view his troops, enlist recruits, direct the vast movements of his brigades, raise resources and encourage the manufacture of arms, ordnance and stores; harangue in his durbar, administer the affairs of a jaidad of thirty lakhs of rupees, carry on an intricate system of intrigue in various courts, superintend a private trade of many lakhs, keep his own accounts, public and private correspondence, and direct a most complicated political machine.

Evaluation of China-Pakistan Economic Corridor and its Security Implications for India

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Abstract

The China-Pakistan Economic Corridor (CPEC) was conceived as a multidimensional development project under China's Belt and Road Initiative to connect the Gwadar Port of Pakistan to Kashgar region of China, aimed to reduce the travel time and dependency of China on Malacca Strait and provide easy access to the Arabian Sea. China's investment through CPEC is seen as a strategic move to maintain its regional hegemony, economic gains, and strategic alliance with Pakistan. The Pakistan-China relations have always had India as its central theme, with China trying to balance India in South Asia while Pakistan seeing China as a counterweight to India. India has opposed the CPEC project as it passes through Gilgit-Baltistan region,

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which is a disputed area and illegally occupied by Pakistan. Moreover, CPEC is facing numerous obstructions in Pakistan due to security issues, economic crisis, and frequent terror attacks on its infrastructures. The development of the CPEC through disputed territories will have security implications for India's territorial sovereignty. *Issues that encompass India's territorial integrity significantly challenge its strategic, economic, and geopolitical interests in the region. India is, thus, not in agreement with the proposal of CPEC and must work out its own stratagem that would assist as a counterweight in the region.*

Introduction

China and Pakistan signed a major agreement on 20 Apr 2015, to launch the China-Pakistan Economic Corridor (CPEC), a multi-billion-dollar project aimed at connecting Gwadar Port to Kashgar in western China.[1] The agreement was signed with an initial investment of USD 46 bn. Since then, the project has expanded to around USD 62 bn and has become a central element in the strategic relationship between the two countries.[2]

These developments have become a cause of concern, as there is a growing apprehension that this corridor is being developed for strategic gains to encircle India.[3] However, both China and Pakistan rather claim that the alliance does not have any offensive intent, rather, it is driven by necessities of national interests in the form of energy security for China and socio–economic development for Pakistan. India has consistently opposed the projects in the so-called CPEC, which are in the Indian territory and illegally occupied by Pakistan.[4] In Feb 2025, the Prime Minister of Pakistan reaffirmed Pakistan's commitment to advancing the CPEC into its second phase, emphasising its role as a cornerstone of Pakistan's economic and regional connectivity.[5]

However, CPEC is facing numerous challenges and setbacks to its progress due to security concerns, economic crisis, insurgency and unrest in the Baluchistan region, internal politics, and terrorism inside Pakistan. Although, Islamabad has been working hard to refuse every extremist action and any form of terrorism, the problem with terrorism is still not declining in the country. There have been several attacks on Chinese engineers working in Pakistan, and

Map 1: CPEC Route from Kashgar to Gwadar

Source: Indian Defence Review

some of them even lost their lives.[6] India needs to carefully monitor the developments around CPEC and its expansion, engage in diplomatic efforts to safeguard its interests and explore opportunities for collaboration and cooperation with regional partners to ensure a stable and prosperous South Asia. This article uses qualitative methods and delves into CPEC, its present status, strategic interest of China and Pakistan, security concerns for India and lastly, it offers a way forward and conclusion.

Understanding CPEC

The CPEC projects are broadly divided into energy, transport infrastructure, Gwadar, industrial cooperation/special economic zones, and social sector development. The 3,218 kms land corridor

will run from Kashgar to Gwadar and is expected to be completed by 2030. The CPEC is passing through Gilgit–Baltistan (GB) in Pakistan-occupied Kashmir (PoK) and the disturbed region of Baluchistan. Out of USD 62 bn investments, nearly USD 33 bn is earmarked for energy projects, USD 11 bn is for transport infrastructure, and a little over an additional USD 18 bn is shared across various industrial and urban development projects.[7] The most significant project within CPEC is Gwadar Port.[8] Gwadar Port holds great importance as it offers China a shorter and more secure route for importing oil and goods, bypassing longer maritime routes like the Strait of Malacca. It is expected that Gwadar Port's development into an economic powerhouse will stabilise Pakistan's Baluchistan region and provide China access to the Arabian Sea. According to a Chinese media report, under CPEC Phase- (Ph) I China and Pakistan have completed 38 projects (USD 25.2 bn) and an additional 26 projects (USD 26.8 bn) are in the pipeline, with many included in CPEC Ph-II.[9] A total of 63 projects were planned to be completed by 2030; however, till now only 38 projects have been completed, which is much behind schedule. The present status of major projects is as under:

Ser No	Gwadar Projects	Estimated Cost (USD mn)	Location	Status
1.	Gwadar Port and Free Zone	300	Gwadar	Ph-I Completed; Ph-II started in Jul 2001
2.	East Bay Expressway	179	Gwadar	Completed
3.	Pak China Friendship Hospital	100	Gwadar	Completed
4.	1.2 MGD Sea Water Desalination Plant	13	Gwadar	Completed
5.	Pak China Technical and Vocational Institute	10	Gwadar	Comp-leted
6.	New Gwadar International Airport	230	Gwadar	Completed
7.	Fresh water treatment, water supply and distribution	INR 11.39 bn	Gwadar	Ph-I and II completed; Ph-III under progress

Ser No	Gwadar Projects	Estimated Cost (USD mn)	Location	Status
8.	Hoshab and Awaran (M-8)	INR 26 bn	146	Under progress
9.	Zhob Quetta (Kuchlak) (N-50)	INR 66.8 bn	305	Under Construction
10.	Reconstruction of the Karakoram Highway Ph-II (Havelian to Thakot)	1,315	120	Completed
11.	Multan-Sukkur Motorway(M-5)	2,889	392	Completed
12.	Hakla DI Khan Motorway	INR 122.2 bn	297	Completed
13.	Khuzdar-Basima Road N-30	INR 19.19 bn	106	Completed
14.	Orange Line (Lahore Metro)	1,626	27	Completed
15.	Upgradation of Karachi-Peshawar Line ML-1	6,806	173	In Planning
16.	Cross border OFC	44	820	Completed
17.	Pakistan Port Qasim PowerProject	1,912	1,320	Operational
18.	Thar Coal Power Project	995	660	Operational
19.	HUBCO Thar Coal Power Project	498	330	Operational
20.	Sahiwal Coal Power Project	1,912	1,320	Operational
21.	Quaid-e-Azam Solar Park	1,301	1,000	Phase I Completed 400MW
22.	Suki Kinari Hydropower Project	2,000	884	Operational
23.	Karot Hydropower Project	1,720	720	Operational
24.	China hub coal Power project, Hub Balochistan Company	1,912	1,320	Operational
25.	Gwadar coal power project	542	300	Under process

Ser No	Gwadar Projects	Estimated Cost (USD mn)	Location	Status
26.	UEP Windfarm, Jhimpri, Thatta	250	100	Operational
27.	Dawood wind power project, Thatta	113	50	Operational
28.	Sachal Windfarm, Thatta	134	50	Operational
29.	Matiari to Lahore Transmission Line	1,658	4,000	Operational
30.	Kohala Hydropower Project	2,400	1,124	In Planning
31.	Azad Pattan HydropowerProject	1,600	701	In Planning
32.	Three Gorges Second and Third Wind Power Project	150	100	Operational
33.	SSRL Thar Coal Block-I 7.8 mtpa and Power Plant (2×660MW) (Shanghai Electric)	1,912	1320	Operational
34.	HUBCO Thal Nova Thar Coal Power Project	498	330	Operational
35.	Rashakai Economic Zone, M-1, Nowshera	1,000	Nowshera, Khyber Pakhtunkhwa	
36.	Dhabeji Special Economic Zone	1,530	Thatta, Sindh	
37.	Allama Iqbal Industrial City, Faisalabad	3,217	Faisalabad, Punjab	
38.	Bostan Industrial Zone	1,000	District Pishin bordered with Quetta, Baluchistan	

Table: Status of Major Projects under CPEC[10]

It is also believed that instead of improving the economic condition of Pakistan, CPEC has drained its economy. Pakistan's debt is at its highest-ever level. The total public debt of Pakistan as of Mar 2025 has reached PKR 76,007 bn. The PKR 76,007 bn

figure includes PKR 51,518 bn of domestic debt and PKR 24,489 bn of external debt.[11] Islamabad is finding itself sinking deeper into a debt trap due to China's continued investments in Pakistan. While many projects under CPEC 1.0 are still pending, it is necessary to look at the future of CPEC 2.0 with debt-trap diplomacy of China in the background.

China-Pakistan Strategic Alliance

China and Pakistan have long enjoyed close diplomatic and military relations, often described as an 'Ironclad Friendship'. CPEC is considered to achieve strategic purposes for both Pakistan and China, besides the narrated economic goals. China said CPEC would continue since it benefits everyone and would not endanger Indian interests. Although not affecting India's national interests, CPEC may strain China-Pakistan-India relations.[12] Besides its main role as a channel for inflow of resources, the corridor may become the medium for spreading China's military belligerence to the region.[13] CPEC links China to the Gwadar port in the Gulf of Oman and provides it a direct access to the Arabian Sea. This will subsequently increase the Chinese naval activities close to the Indian water, making a stronger Pak-China naval nexus. Further, the CPEC, which is passing through PoK and GB, would see a surge in People's Liberation Army presence, aimed at providing security to Chinese engineers and workers. This aspect establishes Pakistan's grip on the disputed territory and offers a 'Safe Cover' from Indian counterstrikes in response to cross-border terrorism.[14]

In the area of defence, Pakistan has ordered many advanced weapons and equipment of Chinese origin, including the VT4 Main Battle Tank, SH-15 self-propelled howitzer, frigates, JF-17 fighter jets, etc.[15] During Operation Sindoor, China provided critical military and strategic support to Pakistan. This assistance encompassed advanced weaponry like PL-15E missile, JF-17 fired Chinese CM-401 hypersonic missiles, Chinese-made CH-4 drones, HongQi (HQ)-9 and HQ 16 systems, besides intelligence sharing.[16] Recently, China has offered to sell new military equipment to Pakistan, including 40 5th generation Shenyang J-35 stealth aircraft with PL-17 missiles, after Pakistan's brief military conflict with India from 07 to 10 May 2025.[17]

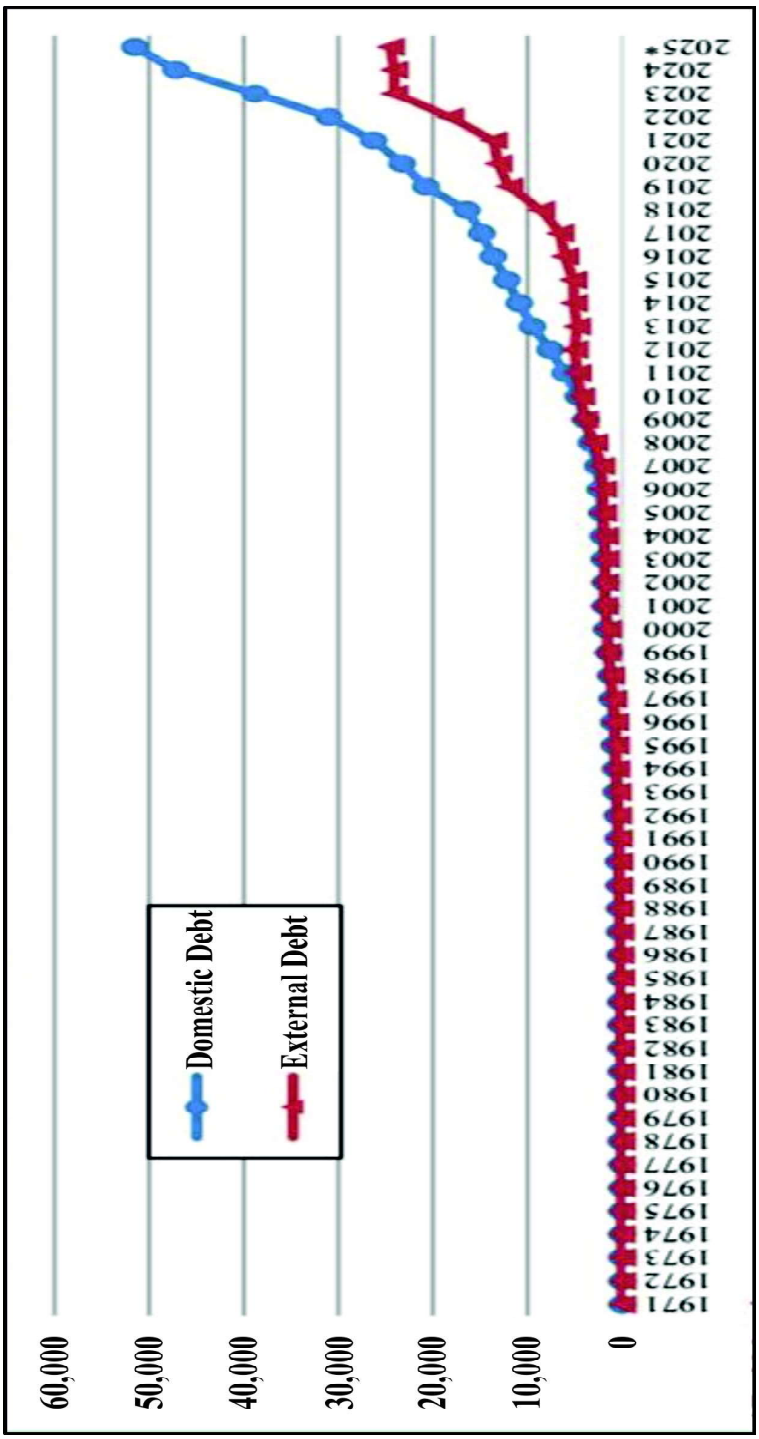

Figure: Pakistan's Domestic and External Debt

Source: Mettis Global Economic Survey

In a strategic move to back Pakistan, China has fast-tracked the construction of a major dam project there just weeks after India suspended the Indus Waters Treaty in the wake of the Pahalgam terror attack. The state-run China Energy Engineering Corporation has been developing the Mohmand Hydropower Project in Pakistan's Khyber Pakhtunkhwa province since 2019. Originally scheduled for completion in 2026, the project is now being accelerated.[18] However, the relationship between China and Pakistan has seen strain in the recent past due to increasing security threats to CPEC and its infrastructure as well as Chinese nationals. High-profile incidents, such as the 26 Mar attack on Chinese engineers in Shangla, a 2021 Dasu bus attack that killed nine Chinese engineers, and a 2022 attack on Karachi University's Confucius Institute, have underscored the vulnerability of Chinese citizens working in Pakistan.[19] The Baloch Liberation Army opposes CPEC projects, arguing that the Chinese exploit local resources without benefiting the region's indigenous population. The groups have targeted CPEC infrastructure, which has upset China. It has begun to put pressure on Pakistan to resolve this issue. As a result, Pakistan has undertaken a campaign of aggression and oppression to protect CPEC.[20] These challenges in Pak-China relations could prompt Beijing to recalibrate its South Asia strategy. China may not overlook Pakistan completely; however, the ongoing security issues could push Beijing to expand its regional relationships, with other partners like Afghanistan to diversify its economic goals and protect its interests in the region.

Security Implications for India

The CPEC passes through GB, which is an administrative province of Pakistan; however, it is not a constitutional part of Pakistan. The GB region is covered by nearly 72,971 sq kms and shares a boundary with China, India, Kazakhstan, and Afghanistan. The geographical location makes GB strategically significant[21] and helps fulfil China's long-term objective of accessing the region's natural resources. China's growing military capabilities, defence modernisation, and increasing role as a development and security partner to Pakistan and other states in India's neighbourhood concerns New Delhi.[22] China and Pakistan are becoming closer in many areas of cooperation and have formed geostrategic and military alliances. The region of Kashmir, including GB is seen as

the physical 'Umbilical Cord' linking Pakistan and China[23], hence, it is the most critical part for the CPEC.

India is aware of the threat emanating from the development of CPEC infrastructure inside the disputed area. Upgrading the Karakoram Highway imposes a high-security threat to India's border security; the highway was constructed through territory illegally ceded to China by Pakistan.[24] In fact, the former Indian Minister of External Affairs, Late Shri Atal Bihari Vajpayee stated that the development of the Karakoram Highway has serious strategic implications for the region, notwithstanding the illegality of the construction.[25] India, thus, has a valid reason to oppose CPEC to safeguard its national interest. These projects consist of many national security elements, which are a cause of concern to the sovereignty and security of the nation.[26] The presence of the Chinese military in PoK's GB region, ostensibly to repair and upgrade the Karakoram Highway, has enormous implications for Indian security.[27] Considering the overall strategic scenario, any conflict in the future may well develop into a joint, two-front offensive, with Jammu and Kashmir (J&K) becoming the centre of gravity. China is India's near neighbour, and both countries in the Asian region would benefit more from finding ways to cooperate rather than escalating their issues.

Way Forward

India must formulate a robust strategy—leveraging diplomatic, economic, and defence instruments—to counter the deepening Pakistan–China partnership in the region under CPEC. Diplomatically, New Delhi must raise concerns at various international platforms regarding illegal construction of CPEC through disputed territories, which is in violation of India's sovereignty and territorial integrity. India must workout alternatives to CPEC to get trade access to Central Asia and Europe. For example, India is developing the strategically important Chabahar Port in Iran to secure direct access to Afghanistan and Central Asia—bypassing Pakistan—and is advancing the International North–South Transport Corridor, a multimodal transportation route connecting India, Iran, Russia, Central Asia, and Europe. India's Act East Policy is in the right direction to improve trade and commerce between the Association of South-East Asian Nations' countries and reduce dependency on China. As per the projections,

India's Gross Domestic Product (GDP) in 2025 was likely to be USD 4,187.03 bn, which will be marginally higher than the GDP of Japan at USD 4,186.43 bn. Thus, in all probability, India will be the fourth largest economy of the world in 2025 after the United States, China, and Germany.[28]

India also needs to fast track infrastructure development projects to connect the border areas, specially the J&K region. On 06 Jun 2025, Prime Minister of India Narendra Modi visited J&K and inaugurated several key infrastructure projects worth INR 46,000 cr to boost road and rail connectivity across the union territory including the Anji Bridge, India's first cable-stayed rail bridge.[29] On similar lines, Defence Minister Rajnath Singh, on 07 May 2025, launched 50 strategic infrastructure projects across six border states, including 30 bridges and 17 roads to strengthen India's defence preparedness.[30] Lastly, India needs to have a robust defence industry to support the current and future defense and military requirement across the land, naval, aerospace, and electronic systems domains. India needs to emerge as a key global leader in defence production and manufacturing. During Operation Sindoor, indigenously manufactured weapon system like Pinaka Multi-barrel Rocket Launcher, BrahMos Supersonic Cruise Missile, Akash played a crucial role and gained global recognition and confidence in Indian weapon systems.

Conclusion

The CPEC is a major concern for India as it seeks to protect its territory from Chinese encroachment. The corridor could further integrate the northern areas into Pakistan and entrench its control there. The Chinese presence may even become a permanent feature, creating the possibility of future claims by China to strategically important areas of GB. This would complicate any resolution of the Kashmir dispute for years and pose a continuing security concern for India. Moreover, given the Chinese presence in both GB and at Gwadar, this region could become increasingly unstable owing to the conflicting interests of China, Pakistan, and India. New Delhi today stands at a strategic crossroads and must devise a suitable response byincreasing diplomatic and economic engagement with countries that have not endorsed CPEC; accelerating indigenous defence production to enhance self-reliance; and fast-tracking border-area infrastructure projects to achieve last-mile connectivity.

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Weaponising Influence: Navigating the Impact of Social Media on Indian Armed Forces

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Abstract

The advent of Web 2.0 has revolutionised communication paradigms, with social media emerging as a pervasive force influencing every facet of modern life—including national security and the armed forces. While traditionally shielded by institutional seclusion, military personnel today are intensely enmeshed in a digital ecosystem that fosters connectivity as well as vulnerability. This article critically examines the multidimensional impact of social media on the Indian Armed Forces, primarily focusing on behavioural, operational, and organisational aspects. It evaluates threats such as psychological manipulation, information or narrative warfare, ideological polarisation, and data leaks, and proposes a roadmap that balances operational security with strategic narrative dominance. The article recommends an institutional recalibration of internal communication, artificial intelligence-enabled monitoring tools, and a proactive narrative strategy to safeguard morale and operational effectiveness of the armed forces.

Introduction

The advent of social media has been one of the most significant technological phenomena of the 21st Century, reshaping not just personal communication but also institutional interactions, public discourse, and the strategic information environment. In

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India, the rise of platforms such as Orkut, Facebook, WhatsApp, Twitter (now X), and Instagram has led to a profound transformation in information dissemination and citizens' engagement. Social media platforms have redefined the boundaries of individual expression, information dissemination, and collective behaviour. Originally conceptualised for civilian networking, platforms like Facebook, Instagram, and X have evolved into instruments of influence, propaganda, and even psychological warfare.[1] While these tools offer unparalleled connectivity, they also represent a double-edged sword—especially for national security institutions like the Indian Armed Forces.

In the yesteryears, the Indian Armed Forces were largely insulated from these changes due to their hierarchical and security-centric structure which ensured controlled flow of information, but the landscape has undergone a sea change. Resultant to the exponential surge in digital penetration owing to affordable smartphones and widespread data access, the military is no longer insulated from the societal transformations driven by these technologies. The ubiquitous digital technologies and increasing number of tech-savvy personnel have necessitated a reassessment of the armed forces' approach towards social media. This article examines the complex intersection between social media and the armed forces', analysing its psychological, behavioural, and institutional implications. It further explores how social media is weaponised by state and non-state actors and offers salient recommendations to counter its adverse effects while harnessing its potential for institutional gain.

The Rise of Social Media in India and the Armed Forces

India's social media journey began in the mid-2000s with platforms like Orkut, followed by the explosive popularity of Facebook and WhatsApp in the early 2010s. The affordability of smartphones, reduced data costs post-2016 (Reliance Jio's entry and its impact), and a youth-dominated demographic profile created a fertile ground for digital engagement.

As of Mar 2024, India reported 954.59 million internet subscribers[2] and 491 million active social media identities[3]. As on date, India has emerged as the largest market by the number of users for Facebook, WhatsApp and Instagram.[4]

These social media platforms have not only facilitated communication but also fostered digital activism, the mobilisation of public opinion, and contributed towards the democratisation of information while giving voice to the voiceless. However, they have also become breeding grounds for misinformation, hate speech, surveillance, and data exploitation—issues particularly sensitive in the context of national security. The armed forces', being one of the primary stakeholders in national security, have come a long way from viewing social media with scepticism to gearing up to embrace and fully leverage it.

Initial Caution: Armed Forces and Digital Scepticism

The armed forces have traditionally maintained a conservative approach towards public communication and media engagement, rooted in the need for operational secrecy, hierarchical command structures, and the utmost importance of political neutrality. During the early phase of social media evolution, there was a widespread perception that social media posed risks related to information leakage, breach of discipline, and reputational harm to the organisation.

However, as armed forces personnel began using these platforms in personal capacities to stay in touch with families or for entertainment, the line between institutional control and individual freedom started to blur. The first serious concerns emerged with cases of operational details being shared inadvertently on public platforms or soldiers falling victim to phishing scams and hostile intelligence agencies. Instances of honey-trapping via fake social media profiles led to court-martials and administrative action against armed forces personnel, including officers.[5] Such incidents prompted the services to issue formal advisories and guidelines on permissible digital behaviour. In a nutshell, armed forces personnel were discouraged from using social media platforms.

Institutional Engagement and Emergent Policy

By the mid-2010s, the Indian Armed Forces began adopting a more structured approach toward social media. The Indian Army, for instance, launched official Twitter handles and began using YouTube and Instagram to broadcast ceremonial events, motivational videos, and recruitment campaigns. The navy and air

force followed suit, using these platforms to project professionalism, valour, and technological prowess.

Simultaneously, policy frameworks began to evolve. In 2013, the Indian Army issued comprehensive guidelines on social media use, later updated to ban the use of specific apps deemed high-risk due to security vulnerabilities. In 2020, an order on the subject required personnel to delete 89 apps, including Facebook, TikTok, and Instagram, citing data security concerns and potential links to foreign intelligence agencies.[6] Violations were classified as offences under the Army Act and Air Force Act, indicating the seriousness of digital compliance.

To address the growing influence of social media on perception management, the Ministry of Defence initiated collaborations with public relations experts and digital media consultants to modernise its outreach. However, these efforts remained cautious, often constrained by bureaucratic clearance procedures and deep-rooted risk aversion on reputational aspects.

Digital Soldiers

The digital revolution within the armed forces accelerated with the entry of Generation Z (individuals born between 1996 and 2012). Having grown up in an era of smartphones, gaming, and instant communication, Gen Z exhibits behavioural patterns marked by multi-tasking, visual learning, and social validation through likes and shares.

This shift presents both opportunities and challenges. On one hand, the digital fluency of new recruits can be harnessed for Information Warfare (IW), cyber operations, and strategic communications. On the other hand, unchecked use of social media may affect mental health, discipline, and information security. A 2022 study by the Defence Institute of Psychological Research found that 47 per cent of cadets checked their phones more than ten times a day during training breaks, and 21 per cent reported feelings of restlessness when cut off from the internet.[7]

Impact of Social Media on Armed Forces Personnel

Psychological Conditioning and Addiction. Social media platforms exploit reward-based neurological mechanisms, primarily through dopamine release associated with likes, comments, and

views.[8] This leads to addictive patterns of use, particularly among Gen Z recruits, whose digital immersion predates their induction into the military. For military personnel, whose duties demand emotional discipline, alertness, and mental clarity, this addiction has corrosive consequences, including impaired sleep, reduced attention spans, and diminished capacity for introspection and creativity.

Behavioural Changes and Reduced Information Discipline. The instant, audiovisual gratification offered by social media reduces tolerance for text-heavy, structured communication formats such as official publications or briefings. Platforms prioritise emotive content, making individuals more reactive and susceptible to misinformation. The algorithmic structures of social media foster impulsive behaviour by promoting emotionally charged content over fact-based discourse, undermining reflective thinking essential to the military ethos.[9]

Ideological Polarisation and Echo Chamber Effect.

- Platforms such as Instagram, Facebook, and X are designed to serve users content reinforcing their preferences, creating an 'Echo Chamber' effect that reduces exposure to diverse viewpoints and entrenches ideological polarisation.[10] This dynamic not only reduces exposure to diverse viewpoints but also entrenches ideological extremities, creating a fertile ground for polarisation. Though the Indian Armed Forces are traditionally insulated from overt politicisation due to their institutional ethos and strict codes of conduct, the pervasiveness of social media has begun to breach this historical firewall. Internal army communications have reported growing instances of political discussions, policy-related frustrations, and the circulation of divisive content within unit-level WhatsApp and Telegram groups. While these developments may appear trivial in isolation, their cumulative impact can erode unit cohesion, foster distrust in military leadership, and undermine the collective identity vital to combat effectiveness. The phenomenon is not merely theoretical; historical precedents such as the desertion of Sikh soldiers in the aftermath of Operation Blue Star illustrate how fragmented ideological perceptions can trigger organisational instability, particularly when amplified by communication technologies.[11]

- Though the armed forces are apolitical and cohesive, the seepage of ideological content via social media has created subtle ideological polarisation. The echo chamber effect, where individuals are exposed primarily to views that reinforce their own, diminishes critical thinking and fosters confirmation bias.[12] Although institutional mechanisms like community living and regimental discipline buffer against ideological polarisation, the risk remains potent.

Social Media in Counterinsurgency and Internal Security Operations

The consequences of social media use extend into the operational realm, especially in conflict theatres. In contemporary Counter-Insurgency (CI) and Counter-Terrorism (CT) environments such as Jammu and Kashmir or the northeastern insurgency zones, militants and their supporters have weaponised social media to amplify propaganda, intimidate civilian populations, and demoralise security forces.[13] Terrorists often release real-time audio-visual content depicting armed encounters, casualty figures, or public mourning ceremonies to establish dominance over the narrative landscape.[14] These materials, unencumbered by fact-checking or institutional scrutiny, spread virally before any official response can be issued.

Military press releases, though factually accurate and responsible, often suffer from bureaucratic delays and sanitised language, limiting effectiveness in the high-velocity digital ecosystem. This temporal and tonal asymmetry contributes to psychological stress among Counterinsurgency/Counterterrorism (CI/CT) operators, who often find themselves reacting to a hostile narrative that has already taken root among the public. In majority of CI/CT incidents in the Kashmir Valley, the initial media narrative was shaped by hostile or unverified sources rather than official military accounts. Soldiers deployed in conflict zones may face moral dilemmas and psychological distress due to this asymmetry in IW.[15]

Organisational Communication Gaps

Due to the hierarchical and security-conscious nature of the armed forces, information is typically disseminated on a 'Need-To-Know' basis through multiple chains of command. While this preserves

operational secrecy, it creates significant information gaps at the unit level, increasingly filled by external sources such as news portals, influencers, or leaked documents that often present distorted versions of reality.[16] A prominent case was the rollout of the *Agnipath* (Path of Fire) scheme, where delays in internal communication allowed misinformation to circulate widely before the official narrative could be asserted.[17] Incidents of perceived high-handed treatment of army officers by police in Odisha (Sep 2024) and Punjab (Mar 2025) were similarly distorted by rapid, sensationalised third-party narratives, creating confusion and mistrust.[18] This erodes trust in internal communication structures and challenges efficacy in the digital age.

Espionage and Cybercrime

Espionage and cybercrime facilitated by social media remain pressing concerns. Cases have emerged wherein adversarial agencies lured Indian service members via honey-traps on social media to extract operational data or gain system access.[19] In response, the armed forces periodically issued updated lists of banned apps, with the 2020 order requiring soldiers to de-platform from Facebook, Instagram, and 87 other apps marking a major step.[20] However, manual phone inspections remain labour-intensive and prone to oversight, necessitating systemic and technology-driven countermeasures.[21]

Recommendations

The armed forces must move from a reactive posture to a proactive digital doctrine, recognising the centrality of IW and human cognition as both vulnerability and asset. Given the multifaceted nature of social media threats to cohesion, discipline, and security, comprehensive countermeasures are essential.

- **Legal and Regulatory Framework**. India's Information Technology Rules (2021) and Digital Personal Data Protection Act (2023) offer a foundation but require stricter enforcement and refinement.[22] Lessons may be drawn from the General Data Protection Regulation and Australia's Online Safety Act for enhanced protections and platform cooperation with defence institutions.[23]

- **Artificial Intelligence(AI)-Based Monitoring**. AI tools should monitor public platforms for hostile narratives and device-level apps should flag or disable banned apps, while encrypted, locally stored data should preserve privacy alongside institutional control.[24]

- **Tri-Service Social Media Command**. Establish under Integrated Defence Staff for monitoring, training, and coordinated digital operations.

- **Civil-Military Coordination**. Work with Press Information Bureau Fact Check, Indian Computer Emergency Response Team, and Ministry of Information and Broadcasting for coherent responses to disinformation.

- **Narrative Engagement**. Expand permissible commentary, delegate approvals, and incentivise positive digital engagement while establishing a Social Media Impact Assessment Framework.

- **Unified Digital Conduct Policy**. Covering all ranks, with clear penalties, incentives, and case studies for reinforcement.

- **Social Media Literacy Training**. Integrated into all training levels for fake news identification, emotional management, and responsible engagement.

- **Narrative Response Protocols**. Establish for operations, ensuring verified, visual, and timely communications.

- **Internal Communication Transformation**. Publish non-sensitive updates on secure intranets and issue regular digital bulletins to reduce misinformation demand.

- **Psychological Resilience**. Integrate counter-propaganda modules into CI/CT training, using real-world social media scenarios to build resilience against digital manipulation.

Conclusion

Social media is not merely a technological tool but a theatre of influence where ideas, identities, and ideologies collide. As modern warfare increasingly expands into the cognitive and informational domains, the battlefield is no longer confined to borders but it exists in hashtags, viral videos, and emotional resonance. Social

media poses a complex set of challenges to military personnel, ranging from psychological fatigue and ideological polarisation to operational compromise and cyber espionage. For the Indian Armed Forces, navigating this space requires a fine balance between operational security and cognitive freedom.

With its capacity to influence morale, discipline, and even mission success, social media must be managed with a strategy that is simultaneously restrictive, proactive, and adaptive. Addressing these challenges requires a multi-pronged strategy that incorporates legal regulation, AI deployment, communication reform, narrative engagement, and psychological resilience training. The armed forces must now evolve from a posture of cautious restraint to a position of proactive, secure, and strategic engagement with social media.

By integrating AI tools, refining communication protocols, and embracing narrative competitiveness, the armed forces can reclaim the digital space as a domain of strength rather than vulnerability. With a well-thought-out plan and embracing the change, the armed forces can transform social media from a liability into an instrument of national strength and military credibility.

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Non-Contact and Non-Kinetic Warfare in the Indian Context: Concepts and Pathways

Colonel Vikram Tiwari[@]

"*The future of conflict will not be fought in trenches or skies, but in the minds and hearts of people"*

- Shri S Jaishankar, External Affairs Minister of India

Abstract

The essay examines the evolving paradigm of non-contact and non-kinetic warfare within the Indian context, highlighting its critical relevance in the age of 5th generation warfare. It explores historical precedents, current challenges posed by adversaries like China and Pakistan, and the growing role of cyber, information, space, and psychological warfare in shaping modern conflict. Through a detailed analysis of India's threat landscape, the essay outlines strategic pathways for integrating non-contact and non-kinetic domains into the national security architecture. The essay concludes with a call for holistic, proactive, and coordinated national efforts to secure India's interests in an increasingly contested and interconnected world.

Introduction

The evolution of warfare has transcended traditional battlegrounds, moving beyond physical confrontations to embrace non-contact and non-kinetic strategies. The adoption of

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these strategies by state and non-state actors has led to disproportionate successes with minimal resource commitment by the initiators, thereby, rendering these approaches of significant importance in the evolving landscape of modern conflict. The additional attribute of plausible deniability offered by this form of warfare makes it an even more attractive option for subtle yet impactful strategic signalling and power projection. For nations, like India, which face multifaceted security challenges, non-contact and non-kinetic forms of warfare need to be recognised as a major security threat. There is an urgent and inescapable requirement to incorporate effective measures to counter and mitigate their effects, while simultaneously developing credible capabilities to leverage them against adversaries as part of the national security strategy.

Non-contact warfare refers to tactics that do not require physical presence or direct engagement with the adversary. Non-kinetic warfare, on the other hand, involves methods that do not rely on conventional kinetic force. Both, often encapsulated within the framework of 5th Generation Warfare (5GW), represent a paradigm shift in conflict. The rise of digital technologies and global connectivity has amplified the impact of these tactics. Unlike traditional warfare, which relies on physical force and direct engagement, 5GW leverages information, cyber capabilities, and psychological operations to achieve strategic objectives without direct confrontation. This form of warfare is characterised by its focus on influencing perceptions, disrupting societal norms, undermining trust in institutions through sophisticated means such as misinformation campaigns, cyber campaigns, and social engineering besides leveraging cyber-attacks to disrupt critical infrastructure. As nations and non-state actors increasingly adopt these methods, the battlefield extends beyond physical territories into the realms of cyberspace and public consciousness. Effective national security in the age of 5GW requires a holistic, adaptive approach and seamless coordination to address these multifaceted threats.[1,2]

Historical Context of 5th Generation Warfare in India

India's Legacy in 5GW. India's historical experience, from ancient statecraft to modern-day conflicts, illustrates the gradual evolution of warfare towards the principles that define 5GW today. India's

history provides rich examples of how non-traditional forms of warfare (now termed as 5GW) have been and continue to be a critical aspect of the nation's strategic landscape. Understanding the historical context and evolving nature of non-contact and non-kinetic warfare is crucial for comprehending the complexities of contemporary conflicts and preparing for future challenges in an interconnected world.

***Arthashastra* (The Science of Statecraft) and Early Forms of Psychological Warfare**. One of the earliest references to what could be considered a precursor to 5GW is found in the *Arthashastra*, outlining covert operations like espionage, propaganda, and psychological tactics to weaken enemies. Chanakya's strategies in unifying India under Chandragupta Maurya involved diplomacy, alliances, and subversion, which are key elements of modern 5GW, focusing on influencing adversaries without direct confrontation.[3]

Medieval India: The Marathas and Asymmetric Warfare. In the 17th and 18th Centuries, the Maratha Empire offered another historical perspective on the evolution of warfare strategies that resonate with 5GW concepts. The Marathas, under Shivaji, employed guerrilla tactics to disrupt and exhaust the Mughal forces. Their strategy of mobility, surprise, and local terrain knowledge reflects the non-linear, decentralised tactics of 5GW, emphasising indirect confrontation with stronger foes.

Modern Era: Insurgencies and Proxy Wars. Post-independence, India faced 4th generation warfare through insurgencies in Punjab, Kashmir, and the North-East, marked by proxy wars and terrorism fuelled by Pakistan and China. These conflicts, where non-state actors played a significant role, have been marked using civilian violence, terrorist acts, associated propaganda, and the manipulation of local populations.[4]

Early 21st Century: Cyber Threats, Information Warfare (IW), and Social Engineering. By the early 21st Century, as India became increasingly integrated into the global digital ecosystem, cyber warfare and information operations emerged as significant concerns, with instances of cyber espionage and the spread of misinformation aiming to disrupt India's political and economic stability. With the widespread prevalence of social media, the associated spread of disinformation through social media platforms

emerged as a significant concern in India. These threats have assumed increasing relevance in an interconnected world.

Concepts of Non-Contact and Non-Kinetic Warfare

Modern Forms of Warfare. Non-contact and non-kinetic warfare represent modern approaches to conflict that diverge from traditional and direct military engagements. Non-contact warfare emphasises strategies where physical confrontation is minimised or avoided altogether. This form of warfare leverages technology, cyber capabilities, and information operations to achieve objectives without the need for conventional force deployment. Non-kinetic warfare, on the other hand, involves methods that do not rely on physical force to achieve strategic goals. The intent is to undermine the opponent's decision-making processes, morale, or infrastructure without direct physical impact. Both forms of warfare reflect the changing nature of conflict in the 21st Century, where the boundaries between peace and war blur, and the focus shifts to influence and disruption rather than outright destruction.[56]

Dimensions of Non-Contact and Non-Kinetic Warfare. Non-contact warfare encompasses a variety of strategies designed to engage an adversary without direct physical confrontation. Key constituents include cyber warfare, which involves hacking, cyber espionage, and cyber-attacks to disrupt critical infrastructure and communication networks. Electronic Warfare (EW) is another critical component, targeting the enemy's radars, communications, and navigation systems to gain a strategic advantage. Additionally, information operations, including psychological operations, are employed to manipulate perceptions and influence the morale of the opposing force. On the other hand, non-kinetic warfare includes elements of cyber and IW besides new domains of conflict i.e., utilising economic, diplomatic, and legal statecraft to achieve strategic objectives. IW is a significant constituent, utilising propaganda, media manipulation, and disinformation to control narratives and influence public opinion along with psychological operations aimed at eroding the enemy's will to fight by targeting their decision-making processes, leadership, and societal cohesion.

Hybrid and Grey-Zone Operations. Hybrid and grey-zone warfare represent complex and evolving strategies within the broader framework of 5GW, characterised by the integration of conventional and unconventional tactics to achieve strategic objectives in a

manner that blurs the lines between war and peace. These approaches exemplify the shift away from traditional warfare towards more nuanced and multifaceted methods of conflict, where the focus is on influence, disruption, and subversion rather than direct military engagement.

Hybrid Warfare. Hybrid Warfare seeks to exploit the vulnerabilities of an adversary by blending traditional military operations with non-traditional methods to create a more comprehensive and unpredictable strategy. It aims to achieve strategic objectives by integrating various forms of power to confuse, destabilise, and ultimately subdue an opponent without necessarily engaging in full-scale combat.[7]

Grey-Zone Warfare. Grey-zone warfare operates in the ambiguous space between traditional warfare and peace, where actions fall below the threshold of conventional conflict and are often characterised by their ambiguity and indirectness. Grey-zone tactics include cyber espionage, political subversion, economic sanctions, and the strategic use of proxy forces. The goal is to achieve strategic gains while avoiding overt conflict and maintaining plausible deniability. This strategy involves the use of economic leverage, legal arguments, and incremental territorial expansion to achieve strategic goals without provoking an all-out military response.[8]

Challenges in the Indian Context

India's Strategic Landscape. This is characterised by its geostrategic compulsions and complex security environment. With hostile neighbours like Pakistan and China, and internal security challenges, India faces a range of threats across the wide spectrum of conflict, from non-contact and non-kinetic realms to nuclear domain that require innovative and multifaceted responses.

Indian Security Concerns in the Era of 5GW. India's main adversaries i.e., Pakistan and China, are considered masters of 5GW. Pakistan's focussed approach towards IW was primarily driven by its early realisation that it was up against a much more powerful adversary but one with diverse ethnicity, faiths, regions, and linguistics, all of which could be exploited to weaken it. China embarked on conceptualising the doctrine of 'War under conditions of informationalisation' relatively early in 1993. Anticipating the

rapid rise in information and communication technology, China invested in transformational change to its war-fighting doctrines, adopting the strategy of Three Warfares i.e., Media, Legal, and Cyber. China is adopting concepts to contribute to hybridity through 'Wolf Warrior' diplomacy, aggressive political posturing, and legal warfare, with the latest border laws being a subset of the latter. With India, border coercion mixed as a low-level conventional threat with 5GW is likely to remain its strategy.[9]

Cyber Warfare. India, as an emerging global power and a significant stakeholder in digital transformation, faces increasing threats in the cyber domain. These threats range from state-sponsored cyber espionage to attacks on critical infrastructure, aiming to disrupt the nation's economic, military, and governmental functions. Notable incidents, such as the 2012 cyber-attacks on Indian government websites and the alleged Chinese cyber intrusions targeting India's power grid in 2020, underscore the growing relevance of cyber defence. These attacks highlight vulnerabilities in India's cyber infrastructure and the potential ramifications of cyber-attacks on national security. The range and scope of cyber-attacks have increased manifolds. The persistent and evolving nature of cyber threats emphasise the need for robust cybersecurity measures to protect the nation's critical infrastructure and data.[10]

Information Warfare.

- **EW**. This plays a crucial role in the evolving landscape of Cyber and ElectroMagnetic Activities (CEMA) dominating future battlespace. Both Pakistan as well as China have significant EW capabilities. The situation assumes additional gravity in the likely collusivity scenario.

- **Information Operations**. India faces significant challenges in this domain, owing to its diverse religious, ethnic linguistic, and cultural fault lines. Pakistan and China have on numerous occasions attempted to exploit these through propaganda, disinformation, and psychological operations to shape narratives and destabilise internal security. IW, through the realms of psychological warfare and social engineering, necessitates robust countermeasures to protect national security and societal cohesion. Its evolving nature—such as

> the rise of deepfakes and artificial intelligence-generated content, which complicate the information landscape—presents fresh challenges. As information becomes increasingly weaponised, India's approach to IW needs to not only defend against these threats but also to proactively shape narratives that support national security objectives.[11]

Space Warfare. India has made rapid strides in space-based technologies. Owing to its image as a peaceful democracy and its rapid economic and technological growth, India has emerged as a preferred choice for many developing countries for partnership in the field of space technologies. India's growing dependence on space-based systems for both civilian and military applications make the protection of these assets a strategic priority. The rise of China's space capabilities, including its demonstrated ability to target satellites, has heightened India's concerns about the potential for space to become a new domain of conflict. In this scenario, space-based warfare assumes increasingly vital importance from an Indian perspective. The successful execution of Mission SHAKTI in 2019, where India tested its own Anti-Satellite (ASAT) weapon, was a clear response to these emerging threats, signalling India's resolve to defend its space assets against potential adversaries. As space becomes increasingly contested, India's approach to space warfare is crucial for maintaining strategic deterrence and ensuring the security of its space-based assets without engaging in direct conflict.[12]

Economic Coercion, Diplomatic Manoeuvring, and Legal Warfare. These are vital components of non-contact and non-kinetic warfare, with profound implications for India's strategic autonomy and national security. As an emerging global power, India has the capacity and the capability to actively engage in these domains to assert its interests while safeguarding its sovereignty.

Challenges in the Domains of Hybrid and Grey-Zone Warfare

Hybrid Warfare. This poses intricate challenges for India. These tactics exploit vulnerabilities within India's diverse society, particularly in a geopolitical environment marked by tensions with Pakistan and China. Pakistan's use of proxy groups to sponsor terrorism in Jammu and Kashmir, coupled with disinformation campaigns aimed at inciting unrest, exemplifies hybrid warfare in

its true context. Similarly, China's cyber intrusions targeting Indian infrastructure and its economic coercion through trade policies illustrate the multifaceted nature of this threat. To counter hybrid threats, India must continuously update its strategies and strengthen internal mechanisms. Efforts like the abrogation of Article 370 to curb separatist sentiments have been a major game changer. These need to be sustained, and a pro-active stance would reap substantial dividends.[13]

Grey-Zone Warfare. Grey-zone warfare seeks to exploit ambiguities while avoiding full-scale conflict. China's salami-slicing tactics in the Himalayas and Pakistan's use of non-state actors for cross-border skirmishes while officially denying involvement typifies the deniable characteristic of this warfare. The difficulty of attributing these non-military actions often leaves India in a reactive posture, struggling to craft responses that deter aggression without escalation. To counter these, India needs to undertake measures like enhancing border infrastructure and engaging in diplomatic efforts to isolate Pakistan internationally, while strengthening its internal security apparatus and public awareness campaigns to counter disinformation.[14]

India's Threat Landscape. The advent of 5GW amplifies the complexity of India's national security challenges. The ongoing proxy war with Pakistan and the tensions with China along its northern borders highlights the mix of conventional threats with various forms of non-contact and non-kinetic warfare including cyber-attacks, IW, and proxy conflicts. Adding to this mix, a substantial degree of hybrid and grey-zone tactics by its adversaries renders the security environment extremely volatile for India. Addressing such a threat landscape requires strategic policy shift to align the nation to its new security challenges and develop robust countermeasures and appropriate capabilities.

Potential Pathways for Integration

India's Response to Non-Contact and Non-Kinetic Warfare. As the global security landscape continues to evolve, traditional forms of warfare are increasingly complemented, and in some cases, replaced by non-contact and non-kinetic warfare. In this scenario, effectively dealing with non-contact and non-kinetic warfare threats is critical for India to ensure its national security and advancing its interests on the world stage. Potential pathways

and recommendations for building resilience against these threats while leveraging the same to further own national interests in key domains of non-contact and non-kinetic warfare are covered below:

- **Cyber Warfare**.
  - Central agencies like the National Cyber Security Coordinator and the Indian Computer Emergency Response Team should be empowered with the latest tools and technologies to detect, prevent, and respond to cyber threats.
  - Adequate investment in advanced research and development in the domain of cyber security.
  - Leverage the extensive talent pool of young cyber professionals and freelancers to foster innovation through public-private partnerships.
  - Strengthen digital sovereignty through initiatives like *Atmanirbhar Bharat* (Self-reliant India) to reduce dependence on foreign technology and retain control over critical cyber infrastructure.
  - Collaborate with global partners in intelligence sharing and conducting joint cyber exercises to further bolster cyber defence.

Strategic Offensive Capabilities. Development and maintenance of robust offensive cyber capability, capable of striking back at adversaries, will serve as a powerful deterrent. This involves not only the creation of dedicated cyber organisations with clear mandate and development of advanced hacking tools and techniques but also the establishment of clear doctrines and rules of engagement for cyber warfare.

Information Warfare.

- **Information Operations and Strategic Communication**.
  - Recognise information operations as an integral operational domain, where dominance is indispensable for achieving success. In many cases, shaping perceptions may be as crucial, if not more, than achieving operational success.

- Maintain the strategic communication initiative by proactively deploying own narratives in a timely manner, rather than responding reactively to adversary's propaganda, disinformation, or fake narratives.
- Develop specialised units, both civilian and military, at the national, strategic, and theatre levels to undertake proactive information campaigns that align with own objectives.
- Develop structures and systems to detect and counter-act against disinformation campaigns. These are to be equipped with advanced tools for tracking the spread of disinformation and deploying counter-narratives.
- Undertake public awareness campaigns and media literacy programs to empower citizens to recognise and resist disinformation.
- Harness the power of the nation's vast netizen youth, particularly influential social media voices, to amplify strategically crafted narratives and secure advantage in the battle of perceptions.
- Leverage India's soft power including its global diaspora, industry and technology leaders, cultural ambassadors, and rich civilisational heritage rooted in democratic values to project strategic narratives globally and effectively counter adversarial propaganda.

Enhancing EW Capabilities.

- Integrate EW capabilities of respective services through joint commands to ensure a unified approach to electronic threats.
- Acquisition of advanced EW systems for modernisation of armed forces.
- Focused investment in research and development efforts for developing indigenous EW systems through collaboration between Defence Research and Development Organisation, private industry, and academic institutions to reduce dependency on foreign technology.

CEMA. CEMA represents the convergence of cyber and EW, creating a comprehensive approach to dominate the electromagnetic spectrum and cyberspace. CEMA allows for synchronised and effective approach to not only enhances India's multi-domain advantage but also ensures a more resilient defence against emerging threats.

- **Space-Based Warfare**.
  - **Leveraging Space Capabilities**. As space-based assets become more integral to national security, the need to protect them from adversarial actions has grown. Following aspects need prioritisation:
    - o Enhance real-time space-based Intelligence, Surveillance, and Reconnaissance (ISR) capabilities and integrate with terrestrial and aerial ISR assets to enhance battlefield transparency.
    - o Strengthen space-based communication and navigation systems to ensure secure, resilient, and uninterrupted support for military operations across all domains, including contested and denied environments.
    - o Development of indigenous space industry for sustainability and independence of space program. Develop indigenous capabilities to reduce dependency on foreign technologies and supply chains.
    - o Explore dual-use technologies to serve both civilian and military purposes.
  - **Counter Space-Based Threats**.
    - o Enhance space situational awareness, crucial for the safety and security of space assets, given the increasing congestion in space and the potential for collisions. Collaborate with international space agencies and private sector entities to timely detect and track potential threats, enabling pre-emptive measures to avoid or mitigate risks.

- Refine ASAT capabilities, focusing on both kinetic (missile-based) and non-kinetic (cyber, EW) methods to act as a deterrent against adversaries.

- Focus on enhancing the resilience of satellite infrastructure by implementing advanced encryption, hardening against electronic attacks, and ensuring redundancy through deployment of backup satellites. Additionally, explore use of small satellite constellations that are less vulnerable to single-point failures and can quickly replace any lost capability.

- Incorporate space-based missile defence by integrating space-based sensors capable of detecting and tracking ballistic missile launches in real time for early warning and tracking data to ensure timely and effective response.

- Engage in space diplomacy and collaboration to enhance own capabilities. Actively participate in international space forums and treaties to promote norms of responsible behaviour in space, including the prevention of space weaponisation and the management of space debris.

Economic Warfare.

- **Utilising Economic Statecraft**. As a rising economic power, India holds significant potential to leverage economic statecraft as a strategic tool. By employing targeted sanctions, trade policies, and investment strategies, India can execute punitive measures while effectively countering adversarial influence. Additionally, strategic investments in infrastructure and development projects enable India to expand its sphere of influence and foster long-term alliances to safeguard its national interests.

- **Promoting Economic Security**. India needs to focus on strengthening its economic resilience by diversifying supply chains, reducing dependency on foreign goods and technologies, and investing in critical industries like technology, defence, and energy. India should continue to promote self-reliance through initiatives like *Atmanirbhar Bharat*, as they aim to enhance domestic production and reduce vulnerability

to external economic pressures. By building strategic reserves of critical resources, investing in renewable energy, and fostering innovation in key industries, India can reduce its exposure to global economic shocks and enhance its strategic autonomy.

Diplomatic Manoeuvres.

- **Strengthening Diplomatic Networks**. In a multipolar world, where the balance of power is constantly shifting, India should continue to bolster its presence in international organisations, such as the United Nations and the World Trade Organization, and regional alliances like the grouping of Brazil, Russia, India, China, and South Africa, and the Quadrilateral Security Dialogue, to influence global norms and protect its national interests. India should strengthen strategic ties through bilateral and multilateral engagements, while engaging in diplomatic efforts for building coalitions to address common threats, such as terrorism, climate change, and cyber threats.

- **Diplomacy as a Deterrent**. Effective diplomacy can serve as a deterrent to adversaries by demonstrating a nation's ability to mobilise international support and isolate those who threaten its interests. By positioning itself as a responsible global power committed to peace and stability, India can enhance its diplomatic leverage and deter adversaries from pursuing aggressive actions.

Legal Warfare.

- **Leveraging International Law**. In an increasingly rule-based international order, legal warfare has become a critical tool for states to achieve strategic objectives and protect their interests. India should aggressively leverage international law as a tool of statecraft. This includes challenging the inimical actions in international courts and advocating for legal norms that protect its interests.

- **Defending National Interests**. India should actively advocate for the establishment of international legal frameworks governing emerging domains like cyber and space warfare, and ensure that its core concerns are addressed in legal frameworks, so that it has the legal tools to challenge adversaries who engage in aggressive actions.

Conclusion

Non-contact and non-kinetic warfare are becoming increasingly important in the modern strategic landscape. While India adapts to these multifaceted threats, the integration of these strategies into a comprehensive national security framework is essential. By enhancing its capabilities in cyber, space, and information operations domains, and leveraging its existing capabilities in economic statecraft and diplomatic engagement while formulating comprehensive policies, India can not only safeguard its sovereignty but also assert its influence in the region. As technology continues to evolve and the nature of warfare changes, India's ability to adapt and innovate will be crucial. With the right investments and strategic initiatives, India has the potential to lead while ensuring its security and sovereignty in an increasingly interconnected and contested world. The path forward requires a blend of technological innovation, strategic foresight, and robust international collaboration to ensure that India remains resilient and proactive in securing its national interests.

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Transformation of the Indian Air Force for Future-Ready Joint Operations

Squadron Leader Naveen Rana[@]

Abstract

This essay explores the strategic transformation of the Indian Air Force (IAF) into a future-ready force capable of executing seamless joint operations across air, land, sea, space, and cyber domains. This evolution is driven by shifting geopolitical dynamics, emerging non-traditional threats, and rapid technological advancements. The IAF aims to enhance jointness with other military services, strengthen multi-domain capabilities, and adopt cutting-edge technologies such as artificial intelligence, unmanned aerial vehicles, and 5th generation fighters. Key focus areas include modernisation of airbases, improved command and control systems, integration of space and cyber domains, and human capital development through advanced training and leadership programs. The transformation also addresses interoperability challenges, cybersecurity threats, and the need for cost-effective modernisation. By fostering innovation and unity, the IAF aspires to bolster India's strategic deterrence, operational flexibility, and global defence posture in an increasingly complex security environment.

Introduction

The Indian Air Force (IAF), a cornerstone of India's military power, is undergoing a pivotal transformation to meet the demands of modern warfare. As technological advancements and

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geopolitical complexities redefine the contours of global conflict, the IAF's evolution into a future-ready force is not just an aspiration but an imperative.[1] Central to this transformation is the goal of achieving seamless integration across land, sea, air, space, and cyber domains, enabling joint operations that enhance India's strategic edge. The need for inter-service cooperation, technological advancement, and operational flexibility has never been greater, as threats become more complex and multifaceted. The IAF's preparedness for future joint operations will be central to India's strategic defence outlook and ability to maintain air superiority in a rapidly changing global security environment.[2]

Objectives

The transformation of the IAF has three overarching objectives:

- **Enhancing Holistic Joint Operations**. As warfare becomes increasingly complex and multi-dimensional, the importance of joint operations and co-ordinated efforts between the IAF, Indian Army, Indian Navy, and other defence arms cannot be overstated.[3] This involves refining Command and Control (C2) systems, standardising procedures across different services, and promoting interoperability between air, land, and sea forces. Furthermore, these endeavours also extend to fostering interoperability with international military forces. This collaborative approach will ensure agility and adaptability in a dynamic and volatile geopolitical landscape, allowing for rapid responses to emerging global security challenges, joint training exercises, and the sharing of intelligence and resources across borders. Strengthening these international partnerships will significantly enhance operational readiness and global strategic positioning—ensuring a robust and unified defence posture on the international stage.

- **Strengthening Multi-Domain Capabilities**. The evolving nature of warfare, especially in the context of hybrid and non-traditional threats, demands that the IAF strengthen its capabilities across multiple domains like air, space, cyber, and even the electromagnetic spectrum. This involves the integration of assets and forces across these varied dimensions to provide enhanced flexibility and strategic depth.

- **Future-Proofing National Defence**. As geopolitical dynamics evolve and new threats emerge, future-proofing national defence is crucial for maintaining strategic deterrence and operational readiness. For the IAF, this entails adopting cutting-edge technologies, such as Artificial Intelligence (AI), Unmanned Aerial Vehicles (UAVs), and next-generation fighter aircraft like the 5th generation stealth fighters. Futureproofing also includes modernising airbases, upgrading weaponry, and ensuring sustainability in defence capabilities.

Changing Geopolitical and Security Environment

The shift in global power dynamics, emerging threats, and evolving alliances significantly impact India's defence strategy, necessitating the adaptation of its military forces to ensure national security and regional stability as under:

- **Shifting Global Power Dynamics**. The rise of China as a military and economic superpower and the ongoing competition between major global powers such as the United States, Russia, and China are altering the global security landscape. China's growing military assertiveness in the Indo-Pacific, coupled with its advancements in technologies like hypersonic weapons and cyber warfare, presents a unique challenge to India's security. The IAF must adapt by not only enhancing its deterrence capabilities but also strengthening regional alliances.

- **Regional Instability and Border Security**. India's geographical position, surrounded by both stable and unstable regions, demands a dynamic approach to its security. The ongoing tensions with neighbouring countries, such as Pakistan and China, require the IAF to maintain high levels of readiness and to adapt its air defence strategies. The unresolved territorial disputes in regions like Kashmir continue to be flashpoints, necessitating advanced surveillance, reconnaissance, and rapid-response capabilities.

- **Asymmetric and Non-Traditional Threats**. The changing security environment is also characterised by the rise of non-traditional threats such as terrorism, cyberattacks, and hybrid warfare. These threats often transcend traditional military domains, requiring the IAF to enhance its capabilities in both cyber defence and Electronic Warfare (EW).

- **New Domains of Warfare**: The technological revolution in areas such as AI, robotics, and space has introduced new dimensions to warfare. Space is a vital domain that has become increasingly contested, with adversaries developing capabilities to disrupt or destroy satellites critical for communication, navigation, and intelligence.

Need for Jointness

The concept of jointness involves the integration and coordination of all branches of the military to achieve a unified operational approach, enhancing overall efficiency, effectiveness, and strategic impact as given below:

- **Synergy and Operational Efficiency**. Jointness allows the Indian Armed Forces to leverage the unique strengths of each service. The IAF, with its air superiority, can provide crucial Intelligence, Surveillance, and Reconnaissance (ISR) capabilities, along with strategic bombing and close air support. The army, with its ground-based operations, and the navy, with its maritime capabilities, can benefit from this support in real-time combat scenarios.

- **Improved Interoperability**. The integration of platforms allows for better coordination and communication. With the increasing reliance on technology, a joint approach ensures that all services can operate in tandem, even when using different technologies. This interoperability is crucial not only in real-time combat situations but also during peacekeeping operations, humanitarian missions, or natural disaster response, where multiple military services might be involved.[5]

- **Cost-Effective Resource Utilisation**. Jointness allows the Indian Armed Forces to make more efficient use of resources by combining assets such as transport aircraft, reconnaissance systems, and logistics networks. The IAF, for instance, can assist the army by deploying forces to remote or inaccessible regions, while the navy can provide maritime security or evacuate personnel during crises. By sharing these assets across services, the military can reduce redundancies and ensure that resources are deployed most strategically and cost-effectively.

- **Strategic Decision-Making and Political Objectives**. Jointness ensures that the military's strategic decision-making aligns with national political objectives. By establishing a unified military command structure, political leaders can have a clearer understanding of military capabilities and limitations, leading to more coherent defence policies and quicker decision-making during crises.

Key Drivers for Transformation

The following key drivers are central to the IAF's transformation:

- **Evolving Geopolitical and Security Landscape**. As India faces increasingly complex regional security challenges, the need for a modern and responsive military force becomes more urgent. The rise of China as a strategic competitor, coupled with ongoing tensions with Pakistan, necessitates a transformation in how India's air power is utilised. The need to secure India's borders and maritime interests in an era of strategic ambiguity drives the push for a more adaptable and technologically advanced air force.

- **Advancements in Military Technology**. The rapid development of new technologies such as stealth aircraft, drones, AI, cyber capabilities, hypersonic weapons, and unmanned aerial systems demands that the IAF continually evolve its operational doctrines and adopt these technologies to stay ahead of potential adversaries.

- **Integration of Multi-Domain Operations**. Modern warfare is multi-domain, extending beyond air and ground forces to include space, cyber, and the electromagnetic spectrum. The IAF must evolve to operate seamlessly across all these domains.

- **Resource and Budgetary Considerations**. The IAF must balance the need for modernisation with the resources available, driving efforts to prioritise cost-effective yet high-impact upgrades. Investments in indigenous defence technologies, such as the development of advanced fighter aircraft under the 'Make in India' initiative, reflect a strategic push to reduce dependency on foreign defence suppliers and increase self-reliance in defence production.

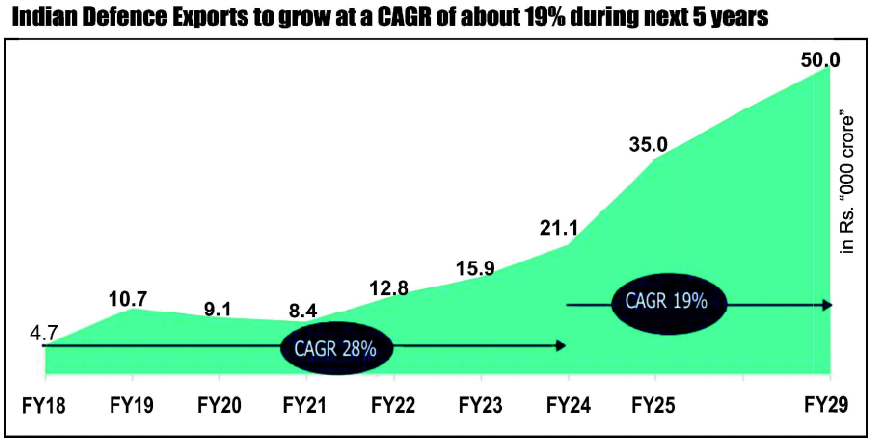

Figure 1: Indian Defence Exports to Grow at a CAGR of about 19 per cent during next five years

Source: Department of Defence Production, Press Information Bureau, and CareEdge Ratings

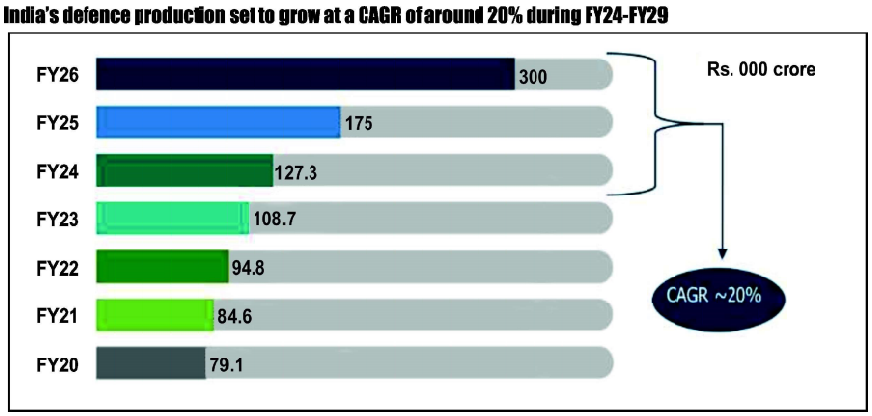

Figure 2: India's defence production set to grow at a CAGR of around 20 per cent during FY24-FY29

Source: Department of Defence Production, Press Information Bureau, and CareEdge Ratings

Operational and Capability Transformation

The IAF is undergoing a comprehensive transformation driven by the need to address emerging security challenges, evolving technologies, and shifting towards multi-domain warfare. These focus on:

- **Enhanced Air Combat and Operational Flexibility**. Increasing the flexibility, speed, and precision of its air operations. Modern air combat requires adaptability in response to a wide range of scenarios, from conventional warfare to asymmetric threats. This transformation involves:
  - **Multi-Role Aircraft**. The IAF is upgrading its fleet with multi-role aircraft to increase versatility and combat readiness. These aircraft can perform a variety of roles like air superiority, ground attack, reconnaissance, and precision strikes, all while maintaining a high level of survivability in contested airspace.
  - **5th Generation Fighters**. IAF is focused on developing and inducting 5th generation stealth fighters (e.g., the indigenous Advanced Medium Combat Aircraft), which will give the force an edge in air superiority and countering emerging threats like advanced enemy air defences and stealth aircraft.[8]
  - **High-Speed Precision Strikes**. The IAF is integrating precision-guided munitions, such as laser-guided bombs and cruise missiles, to enhance strike capabilities with minimal collateral damage.
- **Strengthening Multi-Domain Warfare Capabilities**.
  - **Space and Satellite Capabilities**. The IAF is focusing on integrating space capabilities for surveillance, communications, and navigation. Space-based assets play a crucial role in intelligence gathering, missile warning, and satellite-based communication.
  - **Cyber Warfare and EW**. The integration of cyber and EW capabilities is a key aspect of operational transformation. The IAF is building specialised units for the cyber defence to protect critical air defence infrastructure and aircraft systems from cyberattacks. Additionally, the IAF is expanding its EW capabilities to neutralise enemy radar, communication systems, and missiles, ensuring air superiority in hostile environments.
- **Advancements in Surveillance, Intelligence, and C2**. One of the key elements in the transformation of the IAF is its shift towards improving situational awareness, surveillance,

and C2 systems. The ability to operate effectively in complex, fast-evolving situations is crucial, and modernising the IAF's C2 and ISR capabilities is essential for future operations.

- **Modernisation of Airbases and Logistics Support**. The ability to rapidly deploy and sustain air operations is a vital aspect of the IAF's transformation. Modernising airbases, improving logistics networks, and developing rapid deployment capabilities are critical for operational readiness as given below:
  - **Strategic Airbases and Infrastructure**. The IAF is modernising and constructing new airbases with improved infrastructure to support advanced aircraft and provide greater operational flexibility, particularly in border areas or areas of high conflict.
  - **Logistics and Maintenance Transformation**. The IAF is modernising its logistics and maintenance frameworks to ensure faster turnaround times and greater operational availability of aircraft. The introduction of new technologies in aircraft maintenance, such as predictive maintenance systems powered by AI, allows for proactive management of aircraft performance, and reduces downtime.
  - **Rapid Deployment Capabilities**. Strategic airlift capabilities, including the induction of advanced transport aircraft like the C-130J Super Hercules, allow the IAF to rapidly move troops, equipment, and supplies to any part of India or its neighbouring regions in times of crisis.

Human Capital Development

To remain agile, effective, and future-ready, the IAF is focusing on the continuous professional development and well-being of its personnel as under:

- **Training and Education**. With the rapid advancements in technology and the increasing complexity of multi-domain warfare, IAF personnel need to be well-prepared to operate a variety of advanced systems.
- **Advanced Pilot Training**. The IAF has established world-class pilot training programs to ensure that its pilots are equipped to operate the latest aircraft, including multi-role fighters, UAVs, and advanced transport aircraft.

- **Simulation-Based Training**. The IAF is increasingly relying on simulators and virtual environments for training. This allows for realistic, low-cost, and high-frequency training, where personnel can experience combat scenarios, practice coordination with other services, and familiarise themselves with new technologies and operational systems.

- **Leadership Development**. Strong leadership is essential for maintaining operational readiness and executing complex, high-stakes missions.

- **Specialised Skill Development**. As warfare becomes increasingly technological and multifaceted, specialised skills are crucial for ensuring that personnel are equipped to handle the complexities of modern military operations.

- **Diversity and Inclusion**. A modern and progressive military force must reflect the society it serves. The IAF is committed to promoting diversity and inclusion by recruiting and training personnel from diverse backgrounds, including women and marginalised communities.

Space and Cyber Domain Integration

The IAF, acknowledging the significance of these domains in modern warfare, is working on an integrated approach to leverage space and cyber capabilities alongside its traditional air combat role as under:

- **Space Domain Integration**. The IAF recognises that integrating Space assets into its operational framework is vital for modern defence strategies.

  - **Surveillance and Reconnaissance.** Space-based surveillance platforms like satellites provide real-time ISR, which are crucial for monitoring adversary movements and gathering vital intelligence.

  - **Communication Networks**. Space-based communication systems ensure secure and uninterrupted communication channels, even in remote or contested areas. The seamless flow of information between various units, including aircraft, ground forces, and other military services, is enabled by space communication networks.

- **Space-Based Early Warning Systems**. The integration of space systems into air defence operations includes the development of space-based early warning systems to detect missile launches and other potential threats. These systems allow for timely warnings and enable defensive measures such as intercepting incoming threats before they reach their target.

- **Cyber Domain Integration**. As digital technologies increasingly influence military operations, the cyber domain has become a key area of concern. The ability to protect, defend, and even attack through cyberspace is essential for the IAF to maintain superiority.

  - **Cyber Defence of Air Systems**. The IAF must defend its cyber infrastructure including aircraft communication systems, radar, and C2 centres from cyberattacks that could disrupt operations.[10]

  - **Offensive Cyber Capabilities**. The IAF is also developing offensive cyber capabilities that can be used to disrupt the adversary's C2 systems, communication networks, and sensor systems. This allows the IAF to neutralise enemy systems without having to rely on traditional kinetic strikes, making cyber capabilities a force multiplier in modern warfare.

  - **EW**. This is an essential component in the modern battlespace, allowing the IAF to gain an advantage by blinding enemy systems, disrupting C2, and protecting its assets from similar attacks.

The integration of space and cyber domains is a key strategy in modern warfare, and the IAF is working to create a seamless synergy between the two domains to enhance operational effectiveness.

Challenges in Transformation

The transformation of the IAF into a future-ready, multi-domain, joint force is an ambitious and complex process. While the IAF has made significant strides in modernising its technology, enhancing jointness with other services, and adapting to new domains such as space and cyber, the journey is not without its

challenges such as:

- **Technological and Operational Challenges**.
  - **Integration of Advanced Technologies**. While newer technologies like 5th generation fighter jets, drones, and space-based surveillance systems promise enhanced capabilities, they require a substantial overhaul of training programs, maintenance procedures, and operational doctrines.
  - **Interoperability of Modern and Legacy Systems**. The IAF's modernisation efforts involve upgrading its existing fleet of aircraft and equipment while introducing cutting-edge technologies. However, this creates challenges in ensuring the interoperability of modern platforms with older systems. Bridging this gap is essential for maintaining the IAF's operational efficiency during the transformation phase.
  - **Cybersecurity and Space Vulnerabilities**. Space assets like satellites and communication systems are highly vulnerable to cyberattacks, jamming, and other forms of disruption. Similarly, the increasing reliance on cyberspace for operational control and communications makes the IAF's cyber infrastructure a potential target for adversaries.
- **Resource Constraints**.
  - **Financial Limitations**. With limited defence budgets, allocating sufficient resources for the transformation process while maintaining existing operations is a difficult balancing act. Moreover, the high costs associated with acquiring state-of-the-art equipment can strain the budget, leading to delays or the scaling back of some projects.
  - **Procurement Delays and Bureaucratic Hurdles**. Procurement is often delayed due to bureaucratic hurdles, lengthy decision-making processes, and challenges in negotiating with foreign suppliers.[11] These delays can affect the timely induction of critical technologies.

- **Organisational and Structural Challenges**.
  - **Cultural Shift Towards Jointness**. The transformation of the IAF into a more joint and integrated force with the army and navy requires a cultural shift towards greater collaboration and cooperation. Historically, the IAF has operated as an independent service, and fostering a joint operational mindset among personnel is a significant challenge.
  - **Adapting to Multi-Domain Warfare**. Adapting to multi-domain operations requires a major shift in how the IAF plans, executes, and coordinates missions. The challenge lies in developing a robust and agile C2 system that can handle the complexities of multi-domain battlespaces.
  - **Resistance to Change**. Like any large organisation, the IAF faces some resistance to change, particularly among senior personnel who may be accustomed to traditional methods and systems. Adapting to new technologies, doctrines, and organisational structures can be met with scepticism or reluctance, which can slow down the pace of transformation.
- **Strategic and Geopolitical Challenges**.
  - **Emerging and Evolving Threats**. Adversaries are rapidly advancing their technological capabilities, especially in areas like hypersonic missiles, stealth aircraft, and space warfare, creating a constant need for the IAF to stay ahead in terms of innovation and capability development. The challenge lies in predicting future threats and ensuring that the IAF's transformation is forward-looking, adaptable, and capable of countering emerging technologies and tactics.
  - **Strategic Autonomy and Indigenisation**. The IAF is focusing on achieving greater self-reliance through initiatives like 'Make in India'. While domestic defence manufacturers are making progress, the IAF remains dependent on foreign suppliers for certain high-end technologies. This reliance could pose strategic risks, particularly in the event of a crisis that disrupts supply chains or diplomatic relations.

- **Policy and Regulatory Challenges**.

  - **Regulatory and Legal Issues**. The transformation of the IAF also involves navigating complex regulatory and legal frameworks. The procurement of advanced defence technologies often involves navigating export control laws, intellectual property concerns, and international regulations. These legal barriers can slow down the pace of modernisation and complicate collaboration with international defence partners.

  - **Adapting to Changing Defence Doctrines**. The IAF's transformation is also tied to the evolution of India's broader defence doctrine. As national security priorities shift in response to new threats and strategic partnerships, the IAF must continuously adapt its strategies, training, and capabilities. The challenge lies in aligning the IAF's transformation with national defence policies while maintaining flexibility to respond to unforeseen circumstances.

Implementation Roadmap

The implementation roadmap as projected here outlines key steps to achieve the IAF's vision of modernisation, integration, and operational readiness. This roadmap will span multiple years and requires sustained efforts in technological advancement, human resource development, strategic planning, and inter-service coordination.

Phase 1: Foundation Laying (Short-Term Goals—1 to 3 Years). This phase focuses on short-term objectives like organisational restructuring, technological upgrades, and initial integration efforts.

- **Strategic Planning and Policy Development**.[12]

  - Establish the 'IAF Transformation Steering Committee' to guide and oversee the process of transformation.

  - Develop a comprehensive long-term modernisation and multi-domain integration strategy aligning with national defence policies and strategic objectives.

- **Technological Upgradation**.
  - Procurement of advanced air assets.
  - Upgradation of existing platforms for enhanced capabilities and integration with advanced systems.
  - Laying a standard operating system to assess advancement requisites.
- **Cyber and Space Initiatives**.
  - Establish a dedicated 'IAF Cyber and Space Command'.
  - Develop space-based ISR capabilities, focusing on satellite communication, reconnaissance, and navigation.
- **Training and Human Capital Development**.
  - Revamp training curricula at the Air Force Academy and other institutes to include multi-domain operations, focusing on space, cyber, and joint operations.
  - Begin specialised training programs for emerging roles, including cyber defence experts, space operators, and drone operators.
- **Jointness and Inter-Service Coordination**.
  - Establish joint operational commands to facilitate coordinated, multi-service operations.
  - Initiate joint training exercises involving all three branches, with a focus on interoperability and understanding the operational roles of each service in a joint environment.

Phase 2: Expansion and Integration (Medium-Term Goals—3 to 7 Years). Focus on expanding technological capabilities, enhancing joint operational structures, and further integrating space and cyber domains into IAF operations.

- **Advanced Technological Integration**.
  - Integrate 5th generation fighter jets, advanced drones, and unmanned systems for surveillance, reconnaissance, and precision strikes.

- Deploy space-based early warning and missile defence systems.

- **Cyber and Space Infrastructure Development**.
  - Strengthen cyber warfare capabilities with offensive and defensive cyber operations units designed to target adversaries' C2, Communications, Computers, and ISR systems.
  - Expand the space surveillance and reconnaissance network to ensure 24/7 operational capability for tracking threats and gathering intelligence.

- **Enhanced Multi-Domain Operations**.
  - Develop multi-domain operations centres to coordinate and control operations across air, space, cyber, and land domains.
  - Implement real-time data sharing and communication protocols.
  - Begin the development of AI-driven C2 systems.

- **Human Capital Growth**.
  - Expand specialised training in emerging areas like AI, space, and cyber.
  - Collaboration with international defence organisations.

Phase 3: Full-Scale Integration and Force Modernisation (Long-Term Goals—7 to 15 Years). Focus on achieving full operational integration, and complete modernisation.

- **Achieving Full Technological Integration**.
  - With the indigenous development of fighter jets like Ligh Combat Aircraft and its advanced versions.
  - Integration of AI, machine learning, and data analytics into mission planning, targeting, and operational decision-making processes.
  - Integration of space assets, including high-resolution surveillance satellites and communication relays, for round-the-clock operational support.

- **Strengthening Jointness and Multi-Domain Warfare**.
  - Ensure that all IAF units are capable of operating in joint, multi-domain scenarios by regularly participating in joint force exercises.
  - Operationalise multi-domain battle networks that integrate all assets into a unified operational structure that can rapidly adapt to evolving threats.
  - Establishment of permanent joint headquarters.
- **Cyber Resilience and Space Security**.
  - Implement cyber resilience across all critical operational systems.
  - Strengthen space security measures, including the development of anti-satellite capabilities, to deter adversaries from targeting India's space assets.
- **Sustainment and Innovation in Human Capital**.
  - Establish a continuous learning culture within the IAF, ensuring that personnel are always updated on the latest developments in technology and tactics.
  - Create a robust talent retention strategy that ensures the IAF retains its top performers and maintains a high level of expertise in emerging domains.
- **Global Collaboration and Strategic Partnerships**.
  - Strengthen strategic defence partnerships with key global powers, enhancing interoperability, and knowledge exchange.
  - Expand participation in international defence initiatives and peacekeeping missions to showcase IAF capabilities in real-world scenarios.

Phase 4: Review and Adaptation (Ongoing—15+ Years). As the transformation reaches its full scale, the IAF will enter a phase of continuous evaluation, adaptation, and innovation to stay ahead of emerging threats and technological advancements.

- **Continuous Technological Refreshment**.
  - Regularly update the IAF's technological assets, including aircraft, drones, cyber-infrastructure, and space

systems, to keep pace with rapidly evolving technology and tactics.

- Constantly reassess national security threats and adjust the IAF's operational strategies and capabilities accordingly.

- Invest in future technologies, such as quantum computing, directed energy weapons, and autonomous systems, to ensure that the IAF remains technologically superior.

- **Feedback and Lessons Learned**. Implement a feedback loop that gathers insights from joint exercises, combat missions, and peacekeeping deployments to refine operational concepts, training programs, and organisational structures.

Conclusion

The transformation of the IAF into a future-ready, multi-domain, joint force is crucial for maintaining national security and strategic dominance in an increasingly complex and dynamic global environment. As threats evolve and the nature of warfare shifts towards integrated, technology-driven, multi-domain operations, the IAF must adapt by embracing new technologies, enhancing joint operational capabilities, and fostering synergy between the air, space, cyber, and land domains. However, this transformation journey is not without its challenges. Overcoming technological integration hurdles, addressing resource constraints, fostering a culture of jointness, and adapting to rapidly changing geopolitical dynamics require sustained efforts and strategic foresight. The IAF will need to navigate these challenges through strong leadership, continuous innovation, and effective policy and defence strategies.

Endnotes

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[3] The IAF's participation in multinational exercises, such as Exercise Tarang Shakti, underscores its commitment to fostering interoperability and strengthening partnerships with allied nations. These efforts position

the IAF as a formidable force capable of executing complex joint operations in an increasingly dynamic and challenging security environment, accessed 28 Mar 2025, https://en.wikipedia.org/wiki/Exercise_Tarang_Shakti

[5] The IAF's participation in multinational exercises, such as Exercise Tarang Shakti, underscores its commitment to fostering interoperability and strengthening partnerships with allied nations. These efforts position the IAF as a formidable force capable of executing complex joint operations in an increasingly dynamic and challenging security environment, , accessed 28 Mar 2025, 2025.https://en.wikipedia.org/wiki/Akashteer

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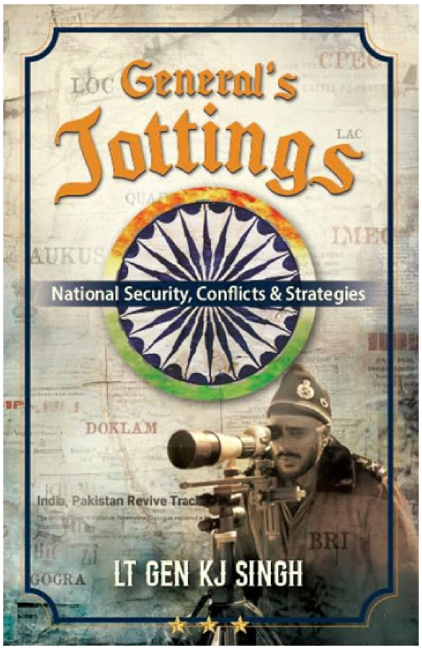
Review Articles

Review Article 1



Introduction

General's Jottings by Lieutenant General KJ Singh, PVSM, AVSM** (Retd), former Western Army Commander, is an updated and distilled collection of his columns and articles published in various newspapers and journals addressing contemporary issues. The columns bear all the hallmarks: they are direct, sharp, and incisive, while remaining brief yet comprehensive in covering all important aspects of the subject.

This compilation includes longer articles published in Year Books of the United Service Institution of India, Centre for Land Warfare Studies, and Gyanchakra, amongst others. This book weaves the articles thematically. Important issues have been highlighted, and key takeaway points have been duly flagged. Necessary updates to the articles have been made, along with the inclusion of the time of writing for better referencing. Most importantly, these articles have been compiled with rare commitment.

General's Jottings by Lieutenant General KJ Singh, PVSM, AVSM ** (Retd), Pages: 400, Price: ₹ 417, Publisher: The Browser, ISBN-10: 9392210914, ISBN-13: 978-9392210914

Journal of the United Service Institution of India, Vol. CLV, No. 641, July-September 2025.

About the Author

Lieutenant General KJ Singh, PVSM, AVSM** (Retd), was commissioned into 63 Cavalry, a regiment he subsequently commanded. He also commanded an armoured brigade, an armoured division, and an operationally committed corps in the northeastern region.

During his three-decade long career, he has served in several counter-insurgency areas such as Nagaland, Manipur, and Punjab, and was also with the United Nations in Angola. His staff appointments include Brigade Major of an Armoured Brigade, Assistant Military Secretary (Policy), Military Assistant to Deputy Chief of Army Staff, Colonel General Staff of an Assam Rifles Range, Brigadier General Staff of a Strike Corps, and Additional Director General (Perspective Planning). He has also served as an instructor at the School of Armoured Warfare, and also at the Higher Command Wing of the Army War College.

Post retirement, he was conferred with Maharaja Ranjit Singh Chair of Excellence in Punjab University and was appointed as Advisor to Chief Minister of Haryana in Nov 2018. In 2019, he was appointed as State Information Commissioner and was inducted into Chandigarh Advisory Council. He was nominated as Chairman of Education Standing Committee of Union Territory Advisory Council in 2022.

He is a prolific writer and his articles have appeared in various newspapers and journals. He has been speaking at multiple platforms on issues of national security, military history, and leadership.

About the Book

The book has been divided into 19 sections each, self-contained yet inter-connected, which helps the reader dive into any of the sections and navigate these subjects independently. A potpourri of themes includes analyses of India's borders and neighbourhood; military threats such as the two-front challenge and issues on the Western border; details about the Pakistani Army and the Afghanistan–Pakistan region; and, of course, the Indus Water Treaty. The author has also covered China in detail to include a brilliant piece on the significance of the Siliguri Corridor. In addition, issues such as the proxy war in Jammu and Kashmir (J&K) and the insurgency in the Northeast have all been covered in detail.

While carrying out an 'Analytical Mapping of Trends in Unending Conflicts', General Singh has stated that it will be pragmatic for nations to avoid belligerence and application of kinetic force. Even if forced into it, it will be prudent to stipulate realistic goals with a clearly defined end-state. It is also axiomatic to build interim exit options for conflict termination. He states, "Long, drawn-out conflicts with indeterminate objectives are more likely to be the new normal in future. In addition, conflicts are likely to degenerate into extended hybrid wars or insurgencies".

While giving out the agenda for Modi 3.0, the author has stated, "Funding for defence modernisation should be liberated from the self-defeating two per cent gross domestic product ceiling". He elaborates that each border is unique, and it will be pragmatic to group all forces, including Central Armed Police Forces and agencies in the theatre, under a designated theatre commander. The unique eco-system of the services needs to be respected and tinkering the name of transformation is best avoided.

He states that taking heed from emerging trends, India has embarked on multiple measures to cope up with multi-spectral challenges. The major initiatives include rebalancing deployment to boost force level on the Northern Front opposite China, accelerating the push towards theatrisation and transformation, expediting the building of border infrastructure, pushing for *Atmanirbharata* (Self-reliance) and modernisation, revising ammunition stocking levels, and opening armament and ammunition manufacturing to private entities.

Regarding China, General Singh has stated, "Unresolved borders between two powerful neighbours, both armed with nuclear weapons and in aspirational trajectory, have the potential for conflict, given their acrimonious history. It is axiomatic that both sides must settle the boundary dispute on priority. The Confidence-Building Measures (CBMs) and protocols have become meaningless due to the unilateral actions of the People's Liberation Army".

He goes on to state that "The coping strategy in dealing with China must factor in existing asymmetry and should be confined within the bounds of realism. We have viable options, though limited, yet we must signal resolve. To deter the Red Dragon, we must discard myths, accept new realities, and reduce asymmetries.

China is indeed the biggest adversary, and the only antidote is capability-building".

Clearly bringing out the fact that "We must be cognizant that heavy lifting is our burden and external assistance from groupings like Quadrilateral Security Dialogue (QUAD) would be limited. QUAD, itself is creating complementary groupings like the trilateral security partnership between Australia, the United Kingdom, and the United States, and the five key littoral states of the Indian Ocean—India, Indonesia, Australia, South Africa. There is growing parallel engagement with Japan and South Korea with India being pushed to the periphery".

The author while discussing the 'Two-Front Threat' has stated that the China-Pakistan Economic Corridor represents a new collusive paradigm. Collusion has been accepted as a corollary and a reality. It now extends across multiple domains—intelligence, information operations, cyber, surveillance, manufacturing, preparation, and other disciplines—acquiring abiding permanency and resulting in a seamless fusion between the two nations. He then states that in a scenario where all three players are armed with nuclear weapons, the need is to build genuine CBMs, more transparency, and reduce collusion.

Writing about Pakistan, he clearly brings out the primacy of the army and how it chose to make the anti-India bias its *raison d'être*. He then presents an interesting survey of the Pakistani tri-services chiefs, noting that three of them—Mohammad Zia-ul-Haq from Jalandhar, Mirza Aslam Beg from Azamgarh, and Pervez Musharraf from Delhi—who owed their origins to India, sought to appear more Punjabi than the Punjabis.

As a result, Zia led Pakistan to the path of Islamisation and its army to new ideological frontiers, while under Aslam Beg, the proxy war in Kashmir started and, of course, the Kargil War was initiated by Musharraf. Today, General Asim Munir, a Shia, is also seen as a minority.

He states that Pakistan has tried to offset its asymmetry by cultivating a nuanced irrationality, wherein, it threatens to transition from hybrid war to the tactical nuclear domain with a declaratory policy, as described by C Christine Fair, "Pakistan's nuclear weapons are India-specific". And that the "Pakistan Army,

specifically at the higher echelons, is not a pushover but has a considerable professional framework".

While analysing Pakistan's National Security Policy (NSP) the author states that "India should also finalise its NSP. The current reliance on ambiguity makes defence planning difficult. Without clear-cut goals, we deny ourselves the benefits of accountability and net assessment, which contribute to strategic deterrence".

He also observes that Pakistan's geostrategic location ensures its continued relevance for the major powers, who are likely to bail it out in pursuit of their own great game. But its fancy notion of strategic depth through subservient Afghanistan under the Taliban now lies in tatters. He brings out that in this uneasy triad of Pakistan, Taliban, and Tehrik-i-Taliban Pakistan, dangers of consolidation of the Pashtuns on both sides of the Durand line, with fatal consequences for Pakistan, are imminent.

Regarding the surgical strikes at Balakot, General Singh has clearly brought out that "The aerial capability has existed and been considered but, unfortunately, never exercised. It is to the credit of the government that they displayed political will with attendant risks—political and operational".

He states that despite the Northern Front being designated as the primary one, challenges on the Western Front persist in both proxy-war and conventional domains. He also highlights that given India's current state of equipment and ammunition inventory, it seems to lack the decisive edge and the requisite force asymmetry for a full-scale conventional war.

The proxy-war has created two distinct response paradigms against Pakistan. The Northern Command is engaged in tackling challenges of terrorism, while the other forces on the Western Front, and even Northern Command, to an extent, are geared up for conventional warfare. The way forward is speedy conflict termination in J&K, backed up by effective punitive surgical strike capability.

In the long run, he states "We have to further refine our surgical strike capability to make it more lethal, precise, and remote. There is also an inescapable requirement to address 'Hollowness' to regain a punitive edge in conventional forces to resuscitate the

proactive (cold start) strategy. A full spectrum approach with concurrent options is indeed long overdue in J&K".

Regarding the Indus Water Treaty (IWT), he says that "The threat of the revocation of the IWT really amounts to playing to the gallery, as we must first create reservoirs to store water".

Conclusion

Undoubtedly, a treasure trove of articles and essays backed by wonderful maps in *General's Jottings* helps the reader understand the essence of national security and defence studies. While many may question the relevance of entering this domain, the truth is that today national security is all encompassing. The revised paradigm is that national security entails a 'Whole-of-nation' approach. The line between a civilian and combatant is increasingly blurred, making it imperative to understand both the drivers and nuances of the issues that are driving India's challenges in this domain.

What stands out is the clarity and simplicity with which General Singh has written this outstanding book on a complex subject, covering contemporary aspects of India's national security and its neighbourhood. He also has the knack of connecting with his readership in an unintimidating manner. Incidentally, the first part starts with an acronym on how to navigate national security.

Having held coveted appointments at the highest level in the Indian Armed Forces, General Singh has had a ring-side view of national security and the insights offered by him are backed by his scholarship, professionalism, and experience. Hence, this book is strongly recommended to be read by academicians, students, scholars, and practitioners. The book offers rare insights into the problems currently confronting the country, combining originality with prescriptive analysis that provokes thoughtful reflection. It is without doubt an invaluable companion.

Major General Jagatbir Singh, VSM (Retd)

Review Article 2

About the Author

Dr Amlesh Kumar Mishra, born in 1971 in Palamu, Jharkhand, is a distinguished scholar and administrator currently serving as the Director of the History Division and the Armed Forces Film and Photo Division under the Ministry of Defence, Government of India. An alumnus of Ranchi University, he holds master's degrees in both History and Sanskrit, both completed with distinction—which sow the seeds for academic rigour and multidisciplinary depth that would mark his career.

Dr Mishra's scholarship is characterised by a deep engagement with India's military and administrative history, underpinned by a nuanced understanding of classical Indian knowledge systems. His previous work, *Pracheen Bharatiya Rajnaya Me Guptacharo Ka Mahatva* (The Importance of Spies in Ancient Indian Polity), stands out as a meticulous study of statecraft in ancient India and has been honoured with an award from the President of India—testament to both its scholarly merit and national significance.

Beyond his contributions to classical historical research, Dr Mishra has played a key role in documenting modern Indian military history. He is the editor of the widely read *Deeds of Gallantry: Fifty Years of 1971 Victory*, published by the National Book Trust, which brings to the public domain a curated account of bravery from one of India's most defining military campaigns. Additionally, he has authored the sections on naval and aerial warfare—War at Sea and War in the Sky—in the volume The 1971 War: An Illustrated History, compiled by the Ministry of Defence. These contributions reflect not only his command over archival material and military historiography but also his ability to present complex events in a manner accessible to both academic and general audiences.

Books authored by Dr Mishra embody a rare balance of scholarly inquiry, institutional responsibility, and public engagement, making him a significant voice in the contemporary Indian military history.

Honours and Awards of the Indian Armed Forces, by Dr Amlesh Kumar Mishra, Pages Price ₹ 1995/-, Pentagon Press LLP, New Delhi), ISBN 978-81-980002-2-0, Rs 1995/-.

Introduction

Dr Amlesh Kumar Mishra's book, *Honours and Awards of the Indian Armed Forces* stands as a monumental work in the domain of Indian military historiography. At once encyclopaedic and interpretive, the book is a rare synthesis of archival precision and narrative sensitivity. Through this comprehensive compendium of military decorations, campaign medals, commemorative honours, and the institutional frameworks governing them, Dr Mishra not only offers an authoritative reference guide but also elevates these seemingly procedural instruments into a profound cultural and historical narrative.The book is further enriched by the inclusion of photographs of nearly all the medals discussed, offering readers valuable visual references that complement the detailed textual descriptions. The book's credibility is underscored by the endorsements on its back cover from four eminent military historians: Dr UP Thapliyal, Shiv Kunal Verma, Air Vice Marshal (Dr) Arjun Subramaniam, and Commodore (Dr) Srikant B Kesnur. Supported by the United Service Institution of India and published by Pentagon Press, this monumental volume is available on leading e-commerce platforms at a price of ₹ 1,995.

About the book

The volume is remarkable in both scale and scope, traversing millennia in its exploration of honouring traditions. It opens with a deeply contextualised survey of premodern India, tracing practices from the poetic encomiums of the Rigveda and the martial valorisation of the Mahabharata to the Sangam-era *vîrakkal* (hero stones) stones and the Mughal-era robes of honour. This opening chapter provides a rich historical background on how valour has been commemorated across Indic civilisations. Far from being an incidental prelude, this chapter is critical to the book's structural logic: it anchors the reader in a civilisational continuum of honour, recognition, and statecraft that culminates in the formalised awards system of post-Independence India. Dr Mishra's engagement with sources ranging from the *Arthashastra* (The Science of Politics and Statecraft) and royal epigraphy to medieval court rituals demonstrates a commendable interdisciplinarity, resisting the tendency to treat honours merely as colonial imports or modern innovations.

The subsections of the opening chapter trace the evolution of medals and ribbons in colonial India. Dr Mishra highlights the shift from personalised gifts and cash rewards under the East India Company to a more institutionalised system of honours under British rule. His detailed account of British-era decorations—from the Order of British India and the Indian Order of Merit to the Victoria Cross—illuminates the hierarchical and racially inflected frameworks that governed military recognition. Yet, the chapter does not remain tethered to colonial frameworks alone. The inclusion of Indian-initiated honours, such as those instituted by Maharaja Ranjit Singh and later by the *Azad Hind Fauj* (Indian National Army) under Subhas Chandra Bose, introduces a subversive counter-narrative. These sections exemplify Dr Mishra's capacity to read honours not merely as bureaucratic artefacts but as politically contested instruments of legitimacy and identity.

The detailed exposition of British campaign medals awarded between 1848 and 1946—the Punjab Medal, Africa General Service Medal, Tibet Medal, and numerous World War decorations—offers readers a panoramic view of India's entanglement in British imperial military enterprises. Dr Mishra adeptly demonstrates that these medals function as symbols of both loyalty and exercised agency within hierarchical structures. His analysis of the Punjab Medal's aesthetics and iconography is exemplary: the obverse depicts Queen Victoria, while the reverse shows Major General Gilbert receiving a surrender on horseback, creating a tableau that both represents and ritualises imperial authority.

Chapters 3, 4, and 5 comprise the heart of the book, detailing the evolution and classification of honours under the Republic of India. The narrative here is chronologically fluid yet thematically rigorous. Dr Mishra shows how the Indian state, in the wake of Independence and the 1947 Kashmir conflict, urgently sought to establish a national system of military recognition that would be both symbolically resonant and functionally autonomous. The introduction of the Param Vir Chakra, Maha Vir Chakra, and Vir Chakra—retrospectively effective from 15 Aug 1947—marked not just a break from the colonial legacy but a deliberate assertion of sovereign valorisation. The later establishment of peacetime gallantry awards—Ashoka Chakra, Kirti Chakra, and Shaurya Chakra in 1952—alongside distinguished service medals such as the Param Vishisht Seva Meda, Ati Vishisht Seva Meda and Vishisht

Seva Meda reflects a deliberate expansion of the honours system, meticulously codified by the state.

What distinguishes Dr Mishra's account is not simply his ability to catalogue, but his acute attention to symbolism, aesthetics, and procedural logic. His treatment of the medal designs, many of which were designed by Savitri Bai Khanolkar, brings forth the fusion of mythological motifs and nationalistic iconography. The use of the *vajra* (thunderbolt), *chakra* (wheel), and star are not incidental; they are carefully chosen symbols that reflect India's spiritual heritage and martial ethos. Ribbon colors, inscriptions, and shapes are analysed with a semiotic insight seldom seen in military scholarship.

The classification of awards—into gallantry, distinguished service, campaign, service, meritorious service, and commemorative medals—is presented with exhaustive detail. Campaign-specific medals such as the General Service Medal (1947), Samar Seva Star (1965), Sangram Medal (1971), and Operation Vijay Star (1999) are not only described in terms of design and eligibility but also contextualised within their respective military engagements. The book avoids abstract taxonomy by consistently anchoring each medal within historical operations, personnel narratives, and administrative frameworks.

One of the most impressive features of the book is its consistent focus on inclusivity and comprehensiveness. By covering medals such as the Videsh Seva Medal, *Uchch Tungata* (High Altitude) Medal, *Tatrakshak* (Coast Guard) Medal, and the Special Service Medal with its many clasps (Mizoram, Manipur, Tirap, etc.,) Dr Mishra makes a case for recognising all forms of military commitment—be it combat, border patrol, counterinsurgency, or international service. He extends this logic to include long service medals, Territorial Army recognitions, and commemorative awards like the 25th, 50th, and 75th Independence Anniversary Medals, arguing—implicitly yet powerfully—that the narrative of national service is incomplete without these markers of never-ending devotion.

Chapter 4 elevates the work from being merely descriptive to analytically robust. The description of the Honours and Awards Committee, the chain of recommendations and approvals, the Presidential role, and the investiture ceremonies provides crucial

insight into the institutional mechanisms behind decoration conferment. Of particular note is Dr Mishra's discussion of the symbolic geography of the awards—Republic Day for highest gallantry, Rashtrapati Bhawan for others—demonstrating how space and ceremony together perform the work of national remembrance.

The discussions in Chapter 5 on the continuities in rewards—cash awards, land grants, pensions—between British and post-colonial India is another moment of historiographical richness. The analysis is not merely economic; it points to the ways in which states incentivise loyalty and sacrifice, and how material compensation intersects with symbolic recognition. Further details on the same are provided in the Appendices. The provision of benefits to families and next of kin, coupled with state-specific variations in financial allowances (outlined in Appendix E), further underscores that honours celebrate not only individual achievement but also communal recognition.

Dr Mishra's analysis of the Ashoka Chakra and Param Vir Chakra in the Chapter 6 and accompanying appendices is particularly compelling.These lists—far from being mere annexures—become memorial archives, repositories of courage that embody both the brutality of conflict and the transcendence of individual spirit. The inclusion of civilians in gallantry awards, as in the cases of Neerja Mishra or Vijay Jagirdar, further expands the canvas of the nation's gratitude.

The book's appendices merit special attention, featuring illustrations of medal ribbons, comprehensive lists of Victoria Cross recipients, detailed information on monetary allowances, and comparative charts outlining awards conferred on personnel and their families. Rather than relegating this material to a purely referential function, Dr Mishra integrates these documents into the larger narrative, suggesting that the afterlife of an award—its remembrance, benefits, and ritual display—is as significant as its conferment.

One of the book's most notable strengths is its prose, which combines scholarly rigour with clear and accessible language. He navigates a vast terrain of technical detail without descending into jargon. Each decoration is treated with dignity; there is no hierarchy of attention, no bias toward the spectacular. Instead, the work

exudes a deep moral seriousness: an understanding that behind every medal lies a story of human fortitude, sacrifice, and national commitment. However, the book occasionally omits the historical context behind the nomenclature of certain medals—for instance, the text 'AVA' found in Burma War medal, which derives its name from 'Ava', the *Meiteilon* (Manipuri) name for present-day Myanmar.

Conclusion

In conclusion, *Honours and Awards of the Indian Armed Forces* transcends the role of a mere reference text—it is a work of homage. Seamlessly bridging military history, institutional policy, art history, and cultural studies, it documents the Indian awards system with exceptional thoroughness and insight. Dr Amlesh Kumar Mishra illuminates how nations commemorate, how states confer honour, and how individuals are enshrined through metal, ribbon, and ceremony. This volume is indispensable for military historians, defence scholars, students of political symbolism, and any reader seeking to grasp the significance and dignity of national service. It merits a place not only on reference shelves but also within the moral and cultural imagination of the nation.

Dr Navaneeth Krishnan S

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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.

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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 headquarters for encouraging 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 Apr 2022 and later rechristened as the CETANB on 01 Jan 2024 and includes 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 Studies (CUNS)

The centre was established as Centre for United Nations Peace Keeping (CUNPK) in 2000. It organises workshops, seminars, and training capsules for peacekeepers, observers and staff officers, both Indian and foreign. It also oversaw the practical training of the Indian contingents. In Aug 2014, CUNPK moved to the Integrated Headquarter (Army) of Ministry of Defence. The USI has now established CUNS, which is focusing on operational, strategic, and policy issues related to United Nations Peacekeeping. 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 armed forces officers in online and offline modes to help them prepare for promotion examinations and competitive examinations for entrance to the Defence Services Staff College, and the Technical Staff College. Over the years, this has been a significant and well-received activity.

Centre for Publications (CP)

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 of India, 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 opinion on matters that affect national security, in general, and the defence forces, in particular.

Lt Gen SL 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-disabled personnel of the Indian Armed Forces.

MacGregor Medal

This medal is awarded to armed forces personnel for valuable reconnaissance and adventure activity they may have undertaken.

Lecture, 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 holds over 68,000 books and journals, including some books from the 17th, 18th, and 19th Centuries, on an astonishing variety of subjects. While the principal emphasis is on strategy and defence, there are many works on different vistas of Indian life. There are memoirs, biographies, recollections, diaries, journals, and manuscripts for scholars and researchers. The reading room is air-conditioned, spacious, and well-stocked in terms of current reading material. The library was automated in 2002.

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