MOMENTOUS CHANGES
Defence Reforms, Military Transformation, and India's New Strategic Posture

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EDITORS

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Introduction: The New Indian Military

IN JUNE 2023 when Prime Minister Narendra Modi went on a state visit to the United States—his first since taking office in 2014—he was accorded the honour of the highest diplomatic protocol. Such honour had last been given to then Prime Minister Manmohan Singh in 2009, when the 'India' the world knew was very different from what it is today. Over these years, too, the country's security and strategic challenges have changed significantly. In 2009, India's most pressing concern was the terrorist threats posed by groups based in Pakistan. Today, while these threats remain, India is also confronting a belligerent China that is challenging the status quo along the Line of Actual Control (LAC) and expanding its footprint in India's immediate neighbourhood.

Modi's recent visit has been largely perceived as an effort to strengthen and add depth to the India-US bilateral relationship. The two countries signed new agreements on defence technology transfers and are attempting to forge stronger defence industrial cooperation, with PM Modi and US President Joseph Biden pushing their nations to break new ground. Writing on the outcome of the visit, C. Raja Mohan argued that both India and the US are "on a road not travelled before—towards a joint construction of a stable Asian balance of power."[1]

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[1]   C Raja Mohan, "Credit for India-US bonhomie goes to Xi Jinping," *The Indian Express,* June 24, 2023, https://indianexpress.com/article/opinion/columns/c-raja-mohan-india-us-bonhomie-xi-jinping-8682145/.

The India-US defence partnership is a fundamental element in a much larger effort by Modi to balance against China—both internally and externally. Domestically, the prime minister is aiming to transform India's defence structures and military posture. He has embarked on an ambitious agenda of reforms to bolster India's defence apparatus and military strength. The Indian defence establishment and military are engaging in a strategic reorientation, implementing institutional reforms and reinvigorating its technological wherewithal to confront China's belligerence along the LAC. The Indian military today is poised at the cusp of a radical transformation.[2]

What are the pillars of such a transformation, and what are the contours of the debates around it? How consequential is the military's shift, doctrinally and in force structures, towards the frontier with China? How does the military take advantage of emerging technologies to enhance its powers? This compendium engages with these questions. *Momentous Changes: Defence Reforms, Military Transformation, and India's New Strategic Posture*, examines some of the current changes in the Indian military through essays authored by former defence and military officials, and analysts who have a keen eye on India's defence posture. The articles seek to show how the Indian military, both in terms of its internal structures and its strategic posture, is undertaking its most significant shift in decades. Taken together, these changes have the potential to improve the various elements of Indian military power.

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[2] Anit Mukherjee, "In the Midst of a Transformation: Reforming Defence for Increased Military Effectiveness," in Ashley Tellis, C. Raja Mohan, and Bibek Debroy (eds.) *Grasping Greatness: Making India a Leading Power* (Penguin Press, 2022).

India's China Problem

India's relationship with China has deteriorated over the last decade, and military crises have escalated in scope and scale during this period. The 2020 Ladakh standoff and Galwan valley crises marked an "inflection point."[3] Since the Galwan valley clashes, it has become apparent that the existing mechanisms for maintaining peace and stability on the border—including the 1993 and 1996 border agreements and the 2012 border defence cooperation measures—have become insufficient to address the challenges at the border. The failure of these border agreements can be attributed to several reasons, at the core of which is the growing gap in power between India and China; as a result, India is at the receiving end of attempted Chinese coercion. A suitable military balance across the Himalaya is, therefore, necessary to uphold deterrence.

Redressing the unfavourable military balance requires that India undertake significant military reforms. Driven by double-digit economic growth, China's military power has increased substantially over the past two decades. India, meanwhile, has largely remained focused on its enduring adversary, Pakistan. To be sure, before 2020, there was already growing recognition about the challenges posed by China's rise, and the military had been gradually turning its attention to it.[4] However, the Ladakh crisis and the Galwan valley clashes marked a clear break from the past. These events accelerated the shift, and today the Indian military is attending to the threat posed by China with far sharper focus than ever before. The military has shifted its forces from the western to the northern border and is embarking on a modernisation drive that includes incorporating emerging technologies.

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[3] Vijay Gokhale, "The Road from Galwan: The Future of India-China Relations," Working Paper, *Carnegie India,* March 2021, https://carnegieindia.org/2021/03/10/road-from-galwan-future-of-india-china-relations-pub-84019

[4] Yogesh Joshi and Anit Mukherjee, "From Denial to Punishment: The Security Dilemma and Changes in India's Military Strategy towards China," *Asian Security*, Vol. 15, Issue 1, 2019.

Yet it is not only the direct conventional military threat at the border that is India's concern; there is also China's increasing geopolitical influence in South Asia and the broader Indo-Pacific region. Growing Chinese geopolitical influence is being buttressed by the increasing reach of the People's Liberation Army Navy (PLAN). This is particularly intense in the East and South China seas, but PLAN's reach and influence in the Indian Ocean is a reality that India has had to confront in recent years. The PLAN has been making regular forays into the Indian Ocean, with Beijing investing in several port facilities in the region which some analysts argue can serve as proxy military bases.[5] It has also established a permanent military base in Djibouti in the western Indian Ocean.[6]

Indeed, China's growing interests and capabilities are creating greater complications. For instance, China has expanded its Belt and Road Initiative (BRI) across the Indian Ocean littoral states, such as the Maldives and Sri Lanka.[7] It would do well for India to proactively engage the region given its ambition to serve as a net-security provider.[8] India's active participation in minilaterals such as the Quadrilateral Security Dialogue (Quad) illustrate its intention to proactively shape the regional

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[5]   Gurmeet Kanwal, "Pakistan's Gwadar Port: A New Naval Base in China's String of Pearls in the Indo-Pacific," *CSIS Briefs,* April 2, 2018, https://www.csis.org/analysis/pakistans-gwadar-port-new-naval-base-chinas-string-pearls-indo-pacific.

[6]   On the growing importance of the maritime domain and Chinese naval threat see, Darshana Baruah, "India in the Indo-Pacific: New Delhi's Theater of Opportunity," *Carnegie India,* June 30, 2020, https://carnegieendowment.org/2020/06/30/india-in-indo-pacific-new-delhi-s-theater-of-opportunity-pub-82205; Rajeswari Pillai Rajagopalan, "Countering Chinese assertiveness: India's changing posture in the Indian Ocean," Indo-Pacific Analysis Briefs Vol. 16, Perth USAsia Centre, 2020, https://perthusasia.edu.au/our-work/analysis-briefs-vol-16

[7]   Michael Kugelman, "The Maldives: An Island Battleground for India-China Competition," *Georgetown Journal of International Affairs,* July 16, 2021, https://gjia.georgetown.edu/2021/07/16/the-maldives-an-island-battleground-for-india-china-competition/;
Chulanee Attanyake, "China-India Competition: The Sri Lankan Perspective," China-India Brief #142, July – August, 2019, https://lkyspp.nus.edu.sg/cag/publications/center-publications/details/china-india-brief-142.

[8]   Anit Mukherjee, "India as a Net Security Provider: Concept And Impediments," *RSIS Policy Brief,* August 2014, https://www.rsis.edu.sg/wp-content/uploads/2014/09/PB_140903_India-Net-Security.pdf.

dynamics. While these minilateral coalitions have various objectives including the delivery of public goods, some of them have important security dimensions to their engagements.[9] A critical element in all of India's current efforts is to grow its defence and military capabilities.

Agenda for Defence Reform

For some time now, the Indian Government has recognised the need for institutional reforms within its higher defence organisation. In the aftermath of the Kargil War of 1999, the Government constituted a Group of Ministers (GoM) to review India's national security apparatus and tasked it to submit a report of their findings. Among other reforms, the GoM recommended restructuring the Ministry of Defence and service headquarters, promoting jointness,[10] and establishing the post of Chief of Defence Staff (CDS).[11] The government created an Integrated Defence Staff and accepted most other suggestions. However, it demurred from the most important one—appointing a CDS, mainly because of political apprehensions and resistance from different bureaucracies including the air force. Over the years, several of these recommendations have been reiterated by successive defence reform committees but remain largely unimplemented for various reasons.[12]

Thus, Prime Minister Modi's announcement on 15 August 2019, that the government would create a Chief of Defence Staff (CDS) post by the end of that year, was hailed as a positive development. According to former Chief of Naval Staff Admiral Arun Prakash, the appointment of

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9   Rajeswari Pillai Rajagopalan, "Hard Security Back in Focus at the Quad Foreign Ministers Meet," *The Diplomat,* March 08, 2023, https://thediplomat.com/2023/03/hard-security-back-in-focus-at-the-quad-foreign-ministers-meet/.

10   'Jointness' is defined as the ability of the army, air force, and navy to operate together.

11   Anit Mukherjee, "Failing to Deliver: Post Crisis Defence reforms in India, 1998-2010," *IDSA Occasional Paper No. 18, 2011*, https://www.idsa.in/occasionalpapers/PostCrisesDefenceReformsinIndia

12   For a useful overview, see Gurmeet Kanwal and Neha Kohli (eds.), *Defence Reforms: A National Imperative* (Institute for Defence Studies and Analyses, New Delhi, Pentagon Press, 2018).

the CDS was the "most significant development in the national security domain since Independence."[13] The appointment of a CDS came with a mandate to promote jointness within the military, and to establish joint theatre commands. This was an important directive since there are sharp disagreements between the services regarding the necessity and resultant model of jointness.[14] This is despite the fact that most modern militaries have already adopted some form of integrated theatre commands.

However, jointness was not the only focus of this reform initiative. The government was also keen to re-imagine relations between the ministry of defence and the services. This was because civil-military relations have for long been regarded as the "bane" of India's defence policymaking.[15] To address this, in a surprising move, the government announced that the CDS would head a newly created Department of Military Affairs (DMA) within the Ministry of Defence (MoD). As a result, certain civilian officials within the ministry would now work under the CDS. Entrusting the CDS to handle most military matters, in one stroke, promises to obviate many of the structural weaknesses in civil-military relations.[16]

Along with these measures, there has been increasing emphasis on incorporating emerging technologies in the military realm. These include technologies such as robotics, artificial intelligence, autonomous systems,

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[13] Arun Prakash, "The significance of the post of CDS lies in its potential for re-imagining national security," *The Indian Express,* January 10, 2020, https://indianexpress.com/article/opinion/columns/general-bipin-rawat-cds-chief-of-defence-staff-india-roles-responsibility-6208780/; also see Anit Mukherjee, "The Great Churning: Indian Military Transformation," *War on the Rocks*, May 05, 2021, https://warontherocks.com/2021/05/the-great-churning-modis-transformation-of-the-indian-military/

[14] Anit Mukherjee, "Fighting, separately: Jointness and Civil-Military Relations in India" *Journal of Strategic Studies*, Vol. 40, No. 1-2, 2017, pp. 6-34.

[15] Anit Mukherjee, *The Absent Dialogue: Politicians, Bureaucrats, and the Military in India* (New York: Oxford University Press, 2019).

[16] Sunil Srivastava, "Civil-Military Fusion in India: Promising Pathways," *Synergy*, Vol.2, Issue 1, February 2023, pp. 1-26, https://cenjows.in/wp-content/uploads/2023/03/1.-Civil-Military-Fusion-in-India-Promising-Pathways-By-Lt-Gen-Sunil-Srivastava-Retd.pdf

and new and critical domains such as space and cyber. These technologies have the potential to increase the speed, reach and lethality of one's forces, thereby upending previous assumptions about the conduct of warfare. The Modi Government has pushed the Indian armed forces to embrace emerging technologies and induct new capabilities.[17] The government raised defence cyber and space agencies as independent tri-service agencies in order to coordinate operations in these domains. Inducting new technologies and capabilities will allow the Indian armed forces to shift from a 'personnel-intensive' organisation to a 'technology-centric' one. For its part, the Indian military has been closely monitoring the efficacies of new and emerging technologies in modern battlefields. Translating capacity into capability is now the pertinent issue.

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The Indian defence establishment and military are engaging in a strategic reorientation, implementing institutional reforms, and reinvigorating its technological wherewithal.

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[17] Narendra Modi, "PM chairs Combined Commanders' Conference on board INS Vikramaditya at Sea," December 15, 2015, Prime Minister's Office, https://www.pmindia.gov.in/en/news_updates/pm-chairs-combined-commanders-conference-on-board-ins-vikramaditya-at-sea/.

Overview of the Volume

This report highlights some of the key contours of the strategic rebalancing and defence reforms being undertaken in India. It collates ten essays, grouped in three sections, that discuss various facets of the reforms and of the military's strategic reorientation—not just vis-à-vis China, but also in terms of US-India relations.

Strategic Reorientation

The first set of essays explore India's efforts to strategically reorient away from a long-held focus on the terrorism threat from Pakistan, and attend to the challenges of China's rise. They analyse the changes in India's foreign policy and military posture over the recent years. *Shruti Pandalai,* Fellow at the Manohar Parrikar Institute for Defence Studies and Analysis (IDSA), highlights the key changes in India's foreign policy in the aftermath of the June 2020 Galwan valley clashes and the larger Ladakh standoff. She notes, "New Delhi, which has been willing to defer to Beijing's sensitivities on certain critical issues in the past, is now seeking to redraw those red lines, insisting on reciprocity." India has now adopted a more assertive approach across the Indo-Pacific and is leveraging external balancing measures to address the China challenge.

In the succeeding article, *General M.M. Naravane,* former Chief Army of Staff (2019-2022), discusses the Indian Army's efforts to rebalance its forces from the western to the northern Front. He notes that the post-Galwan assessment highlighted a changed security environment and enabled the Indian Army to rebalance its forces to the Northern frontier. The Indian Army's rebalancing efforts have been undertaken under three pillars: reorientation, relocation, and re-orbatting. Under these pillars, the Indian Army has tasked formations to shift focus from Pakistan to China, moved units from the Pakistan border to the China border, and instituted new internal structures to keep them agile and responsive to threats. The result is a more even-handed posture that addresses threats from both of India's disputed frontiers.

Dr Amit Gupta, Senior Adviser at the Forum of Federations in Ottawa, outlines the force posture, modernisation efforts, and doctrines of the Indian Air Force (IAF) and Indian Navy (IN). Dr Gupta notes that the IAF doctrine is not aligned to its current capabilities and is largely speculative. Furthermore, as there are budgetary shortfalls in its modernisation ambitions, the IAF does not have the wherewithal to fulfill its stated doctrinal role against China or Pakistan. On the other hand, the Indian Navy's doctrine is better aligned with its objectives. The IN is well placed to carry out its doctrine of sea control against the Pakistani Navy, and will have to adopt a sea denial posture against China, especially considering the rapid growth of the PLA Navy. Ultimately, given their slow pace of modernisation, both services lack the clear-cut capabilities to decisively counter the Chinese military.

Institutional Reforms

Reforming higher defence management in India has been a long-standing demand of the Indian Armed Forces. The second set of essays in this volume focus on India's efforts to bring institutional reforms to its structures of higher defence management.

India's former defence secretary from 2017 to 2019, *Mr. Sanjay Mitra,* explores the implications of the creation of the Chief of Defence Staff post and the Department of Military Affairs. Both were part of key institutional changes seeking to make the military a formal part of defence decision-making. Crucial challenges remain in this goal. For one, while the Indian defence reforms have been modelled on those undertaken by the United States, the country needs to find a model of theatre command suitable to the Westminster style of governance. Furthermore, in a collegiate decision-making system, adequate civilian representation and perspectives must be ensured and given due weight. Otherwise, increasingly military voices may crowd out the views of the civilian bureaucracy, which could prove detrimental to both civilian control and defence policymaking.

In his essay, *Admiral Karambir Singh,* the Chief of Naval Staff of the Indian Navy from 2019 to 2021, discusses the emerging role of the Chief of Defence Staff and the need for joint theatre commands. While the reforms were certainly a step in the positive direction, there is an uneven distribution of responsibilities between the Defence Secretary and Chief of Defence Staff. Moreover, the CDS has been overburdened with "rudimentary matters" in the Department of Military Affairs. Both these shortcomings will likely continue to hamper effective policymaking. On the issue of jointness, Adm. Singh notes that regardless of the resulting structure of theatre commands in India, the principle of "unity of command" should be the guiding principle in institutionalising jointness. He argues that it is critical that when theatre commands are established, greater clarity should be brought to the chain of command vis-à-vis the role of the CDS, service chiefs and the theatre commander. This is an important point that deserves deliberations at the highest levels.

For his part, *Air Vice Marshal Anil Golani,* the Additional Director General for the Centre for Air Power Studies, elucidates the Indian Air Force's perspective on the ongoing defence reforms. AVM Golani highlights how the inherent service-specific biases of uniformed personnel can impede efforts in defence planning even within the DMA. Activities such as joint planning and operations continue to be carried out in service-specific silos. Such an approach is having a negative impact on the development of theatre commands. The unique attributes of air power are often neglected in India's debate on theatre commands, even as air power has emerged as a key determinant of the outcome of modern conflicts. Adopting a joint command structure that can adequately leverage the unique advantages of air power is crucial. In his view, the principle of "unity of effort" should guide the development of theatre commands in India.

Emerging Technologies
Modern conflicts have demonstrated the increasingly crucial role of emerging technologies in the battlefield. The essays in the final section examine the impacts of emerging technologies on India's defence and military calculus. They attempt to uncover how the Indian military is

looking to integrate these technologies into its doctrines and force structure.

Dr Sameer Patil, Senior Fellow at the Observer Research Foundation, explores the impact of cyber technologies on Indian defence planning. His essay opens by outlining the sources and multifaceted nature of India's cyber threats: apart from cyber-attacks by state actors like Pakistan and China and non-state actors like Pakistan-based terror groups, India is also targeted by disinformation from both countries. He then underlines the Indian military's cyber doctrine(s), highlighting cyber capabilities and warfare as part of the broader 'information warfare' concept. He analyses India's cyber capabilities and identifies the gaps in India's cyber strategy, and argues that despite operational and funding limitations, the military is moving to develop multifaceted cyber capabilities. However, fundamental questions elude India's broader cyber posture, which prevent optimal utilisation of those capabilities.

In his article, *Nishant Rajeev,* Senior Analyst at the South Asia Program of RSIS, ponders the Indian military's attempts to induct and expand its drone capabilities. For much of the past two decades, the Indian military has had modest drone capabilities and drone operations were limited to intelligence, surveillance and reconnaissance missions. Increasingly, however, modern conflicts are demonstrating the ability of drones to play an important role in determining the outcome of conflicts. Studying these conflicts, the Indian army, navy and air force have launched programs to harness the potential of drones. The Indian military is of the view that drones can give it an asymmetric advantage in a conflict with China. By analysing public speeches and writings of senior military officers as well as media reports on India's drone capabilities, Nishant traces Indian efforts to expand its drone capabilities and analyses the concepts behind their employment.

Shimona Mohan, Research Assistant at ORF's Centre for Security, Strategy and Technology, focuses her chapter on the implementation of Responsible use of Artificial Intelligence (RAI) in India's defence establishment. She provides a view of the current status of AI integration in the realm of

defence. She notes the disparity in Indian approaches to responsible AI adoption in the civilian and military domains. Led by the government think tank, NITI Aayog, India has released a two-part report on RAI adoption for the civilian space. However, in the military domain, the concept of 'responsible AI' has yet to gain traction. She characterises India's conception around RAI as one of "passive observation", and offers recommendations for facilitating the responsible use of AI in the Indian military.

Rounding off the volume is an essay co-written by *Lt Gen Raj Shukla,* the former Commander of the Indian Army's Training and Doctrine Command and *Dr Rudra Chaudhury,* Director of the Carnegie India Centre, which evaluates the emerging cooperation in defence technologies between India and the United States. While noting that India and the US have had several proposals and initiatives aimed at boosting defence cooperation, the authors point to the unique features of the recent one—the India-U.S. initiative on Critical and Emerging Technology (iCET). They note how the iCET focuses on encouraging partnerships between private players in both the Indian and US ecosystems rather than merely government-to-government engagements. Furthermore, the initiatives are run directly from executive branches rather than through the traditional bureaucratic route. Thus, iCET offers a unique approach for fostering India-US defence ties that appear both sustainable and pragmatic. The editors are including the subject of iCET in this volume to examine the feasibility of expanding similar collaborative activities on high technology between India and its strategic partners.

> *Reforming higher defence management in India has been a long–standing demand of the Indian Armed Forces.*

Conclusion

The contributors to this volume agree that India is in the midst of a strategic reorientation to grow its capabilities in confronting the China challenge, institutionalising reforms in higher defence organisation, and developing new operational concepts and structures to leverage emerging and critical technologies.

Unfortunately, however, this compendium is unable to cover other aspects of military reform and defence capabilities. For instance, the volume does not discuss the changes in the recruitment procedures resulting from the Agnipath scheme, nor the recent emphasis on strengthening the domestic defence industry through the *Aatmanirbhar Bharat* ('self-reliant India') initiative. Subjects like professional military education, the absence of declassification procedures, and the inexplicable neglect of the proposal to create a National Defence University (NDU)—are also not touched in these essays. These are topics that are ripe for further research.

Nonetheless, these essays demonstrate that the Modi government has taken up the mantle of defence reforms in a serious manner in recent years. The structural changes in India's neighbourhood and beyond have provided a critical imperative for the government to act quickly on both strategic reorientation and military reform. The successful implementation of such reforms can significantly transform its capabilities. Whether the government and the military succeed, remains to be seen. Moreover, as the vigorous public debates demonstrate, how to proceed with reforming the military is still an open question. Success in this endeavour could yet make this the most consequential defence reform in India's history.

~ Anit Mukherjee, Rajeswari Pillai Rajagopalan, Nishant Rajeev

I
CHANGING STRATEGIC POSTURE

Strategic Clarity After Galwan: Analysing India's Difficult Choices

Shruti Pandalai

THE 2020 LADAKH CRISIS is often described as an inflection point in India-China relations—both scholars and practitioners view it as a moment of 'strategic clarity' for New Delhi.[1] It was the first time in over 40 years that blood was spilt in a clash between India and China along the Himalaya. India lost over 20 soldiers in the incident, and China too, suffered casualties—it officially admitted to losing four soldiers (almost a year after the incident), although speculation is that the number could be higher. India called the clashes in Galwan valley "premeditated".[2] India's External Affairs Minister S Jaishankar argued that the issue was no longer simply about Sino-Indian competition; the issue

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1 Vijay Gokhale, "A Historical Evaluation of China's India Policy: Lessons for India-China Relations" *Carnegie India*, December 13, 2022, https://carnegieindia.org/2022/12/13/historical-evaluation-of-china-s-india-policy-lessons-for-india-china-relations-pub-88621.

2 "Phone call between External Affairs Minister, Dr. S. Jaishankar and Foreign Minister of China, H.E. Mr. Wang Yi June 17, 2020," mea.gov.in, https://www.cgisaopaulo.gov.in/pdf/Phone%20call%20between%20External%20Affairs%20Minister,%20Dr.%20S.%20Jaishankar%20and%20Foreign%20Minister%20of%20China,%20H.E.%20Mr.%20Wang%20Yi-.pdf

for India is "how does India manage a relationship if the basis of the relationship has been violated by one side."[3]

This article argues that this fundamental breakdown of trust has profoundly reversed New Delhi's strategic calculus towards Beijing. This trust deficit has consequences, manifesting itself in how India maps its outward orientation and evaluates the time frames it has set for bolstering its defence capabilities. As far as India is concerned, peace at the border is central to the resetting of ties; delinking or compartmentalising the relationship is no longer viable.[4] The demand for reciprocity from China on India's interests and sensitivities anchors New Delhi's thinking and efforts. India has taken decisive steps to this end. The mainstreaming of India's Indo-Pacific Strategy, and its willingness to cross redlines which it deemed sensitive to China in the past—is one such indicator. It has invested heavily in reinvigorating the contract with the West, most noticeably in its transformational relationship with the United States. A renewed emphasis on pushing for self-reliance in the defence sector and efforts to put India on the map in the global rewiring of supply chains, all moor this strategic purpose.

This essay, divided in three parts, explores why Galwan marked a watershed moment in India's strategic and public discourse. It looks at how India has recalibrated its response to the China challenge in the aftermath of the clashes of June 2020; and identifies the theatres which have seen the most visible shifts in approaches and policy. The article concludes by outlining the difficult choices ahead for India as it manages an uncertain neighbourhood and strives to achieve its ambition of becoming a leading power in the Indo-Pacific.

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[3] Rezaul H Laskar, "Jaishankar lists 8 principles to repair ties with China, stresses mutual respect," *Hindustan Times*, January 28, 2021, https://www.hindustantimes.com/india-news/jaishankar-lists-8-principles-to-repair-ties-with-china-stresses-mutual-respect-101611824109797.html

[4] External Affairs Minister Dr S Jaishankar reiterates this point in his latest press briefing available here: Transcript of Special Briefing by External Affairs Minister on 9 years of Modi Government (June 08, 2023), https://mea.gov.in/media-briefings.htm?dtl/36662/Transcript_of_Special_Briefing_by_External_Affairs_Minister_on_9_years_of_Modi_Government_June_08_2023

Why Galwan Matters

From the Indian perspective, Galwan brought home the harsh realities of its relationship with China and forced a rethinking of the approach adopted by New Delhi so far to manage this relationship. First, it became clear to India that Beijing was willing to violate decades' worth of painfully-built bilateral border management agreements in pursuit of unilateral action. While India may strive for mutual sensitivity, respect and interest, it became impossible to ignore the emergence of a belligerent China for whom nationalism and projecting military might had primacy over international laws and bilateral agreements. As India's political top brass have often pointed out, China has yet to offer an official reason for its aggression in Galwan.[5] For India, this means that it is no longer tenable to delink the border dispute from cooperation in other aspects of the bilateral relationship—a strategy that China has envisioned.

Two, this manifests in Beijing's framing of the Sino-Indian relationship, increasingly through the lens of the Sino-U.S. fallout, while tuning out Indian concerns; this does not sit well with New Delhi. For instance, before Galwan, India was already concerned about China's massive and rapid infrastructure build-up in Tibet and the pace of its upgrade of feeder roads to the border areas, giving it the edge in terms of quick and efficient troop deployments.[6] Deadlocked efforts on border negotiations also made New Delhi anxious about Beijing biding time to further solidify its claims, by amassing gains in border areas where Indian patrolling was limited or non-existent. This led to strategic thinking in Delhi

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[5] Shubhojit Roy, "Galwan clashes left India's relationship with China 'profoundly disturbed': Jaishankar," *The Indian Express,* October 17, 2020, https://indianexpress.com/article/india/galwan-clashes-left-indias-relationship-with-china-profoundly-disturbed-jaishankar-6757940/

[6] Official Spokesperson's response to media queries seeking comments on the statement issued on 19 June by the Chinese Spokesperson on the events in the Galwan valley area. See: mea.gov.in, June 20, 2020,
https://mea.gov.in/response-to-queries.htm?dtl/32770/official+spokespersons+response+to+media+queries+seeking+comments+on+the+statement+issued+on+19+june+by+the+chinese+spokesperson+on+the+events+in+the+galwan+valley+area

to update border infrastructure with a singular focus to improve last-mile connectivity. Practitioners also highlighted a high level of belligerence by the PLA over the last decade where disengagement after face-offs took time, and brawls and the use of batons were par for the course.[7] This led to New Delhi having to reimagine approaches to border patrolling and management in the border areas. This belligerence seems to have a parallel in the cementing of antagonistic views about India among China's top India watchers. Indian analysts who review internal discourse in China's strategic community often find refrains of Beijing being "fed up of India's actions along the LAC" and dim prospects for India-China ties since "India is already a 'quasi-ally' of the U.S. with no scope for reversal."[8]

Three, this framing by China of India and the bilateral relationship from a third-country prism has been interpreted as a denial of India's agency in the conduct of diplomacy and a disdain for any parity with India in the global governance discourse. Scholarship on the subject argues that "China views India as an asymmetric ('lesser') rival that has the ability to obstruct China's grand strategic goals."[9] This often translates

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[7]   Shruti Pandalai, "Lessons for India After the Galwan Valley Clash," *The Diplomat*, July 31, 2020, https://thediplomat.com/2020/07/lessons-for-india-after-the-galwan-valley-clash/3

[8]   Antara Ghosal Singh, "The standoff and China's India policy dilemma," *The Hindu,* July 15, 2020, https://www.thehindu.com/opinion/lead/the-stand-off-and-chinas-india-policy-dilemma/article32083539.ece. Singh outlines how the arguments from China's top India watchers from Fudan University and the Shanghai Institutes for International Studies (SIIS), among others, reflect a growing perception in their strategic community that the conflict is not an "accident" but an "inevitable result" of what they perceive as "India's long-standing speculative strategy on the China-India border." From Doklam to implementation of article 370 in Jammu and Kashmir and India's "unending infrastructure arms race" at the LAC, they say, Beijing was "fed up" and "had to teach India a lesson". There is also a section of analysts emphasising that there is "No great future for India-China ties," because India is already a "quasi-ally" of the U.S. with no scope for reversal. This was interpreted as worrisome since opportunities for cooperation at the global level were diminishing and regional competition intensifying— thereby periodic violent conflicts, they predict, are the "new normal" in China-India ties.

[9]   Manjeet S. Pardesi, "Explaining the asymmetry in the Sino-Indian Strategic Rivalry," *Australian Journal of International Affairs*, February 24, 2021, https://www.tandfonline.com/doi/abs/10.1080/10357718.2021.1893267

to imposing reputational costs on India.[10] On the military front, People's Liberation Army (PLA) observers have often written about the dichotomy in Chinese thinking toward India. There is heightened sensitivity over Indian military modernisation and attention to Chinese abilities to deter any Indian advantage, yet at the same time public dismissals of India's military capability, citing poor quality and time lags, are also regular.[11] In the wider context of India's great-power relationships as well as contribution to emerging Indo-Pacific security frameworks, China has repeatedly framed Indian attempts as bandwagoning with the US and denying its agency. This behaviour has played out in South Asia several times as well—whether it is Doklam, Nepal, Sri Lanka or China's adventurism in the Indian Ocean Region or on disputed borders. China is keen to play on the narrative that an India that is overstretched or incapable of managing its own borders or neighbourhood cannot aspire for a leading role in the Indo-Pacific, much less on the global high table.

Four, this has meant that for India the aspiration and articulation of a so-called 'Asian Century' has to be made with a caveat among its key players, especially India and China, and requires "effective management of the continent's contradictions."[12] India now openly calls out any attempt by China of denial of India's strategic aspirations by labelling it as "expansionist" while Beijing continues to act unilaterally both in the bilateral and multilateral spheres. China's long-term goals of domination in East Asia, followed by Asia-wide domination, and finally global pre-eminence, always paint India as an obstacle. Similarly, New Delhi calls Beijing's ambitions as untenable to its vision of a multipolar Asia and an equitable global order.

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[10] Shruti Pandalai, "Lessons for India After the Galwan Valley Clash,", *The Diplomat,* July 31, 2020, available on URL: https://thediplomat.com/2020/07/lessons-for-india-after-the-galwan-valley-clash/

[11] Lora Saalman, "Divergence, Similarity And Symmetry In Sino-Indian Threat Perceptions," *Journal of International Affairs* 64, no. 2 (2011), *169- 194* (2011), http://www.jstor.org/stable/24385541

[12] Dr. S. Jaishankar, "Remarks by External Affairs Minister, Dr. S. Jaishankar at the launch of Asia Society Policy Institute", (speech, New Delhi, August 29, 2022), Ministry of External Affairs,
https://mea.gov.in/Speeches-Statements.htm?dtl/35662/Remarks_by_External_Affairs_Minister_Dr_S_Jaishankar_at_the_launch_of_Asia_Society_Policy_Institute

Five, this led to cementing antagonistic perceptions on both sides which have now been mainstreamed in their respective domestic discourses. For New Delhi, Galwan became the symbolic manifestation of growing antagonism in Chinese perceptions towards India, in general, and in particular, a pessimistic outlook regarding the future contours of Sino–Indian bilateral dynamics. Scholars frame the Chinese perceptions of India in an intricate interplay of four basic perceptual sinews—recognition of India's strategic potential as a future threat; an innate sense of China's civilisational superiority over India; India's propensity to align with the West; and India's hegemonic aspirations—which have cumulatively shaped an enduring stereotypical mental and emotional image of India as a potential rival to China.[13] In times of bilateral tensions, Chinese discourse on India sharply focuses on the above perceptual imagery and the Galwan crisis was no different.

On 19 February 2021, China admitted, for the first time in eight months following the incident—that it had lost four soldiers in the clash. This provoked an outpouring of nationalist sentiment in China, fueled by state media and resulting in the surge of populist anti-India views. Given its initial denial of any casualties and consistent portrayal of India as an aggressor, this attempt by China to rewrite the narrative on the border crisis has left many questions unanswered. Not only was the timing of the announcement suspect, it also caught social media attention when sections within China's highly controlled media space questioned Beijing's claims. Qiu Ziming, a blogger with over 2.5 million on Weibo (China's Twitter) was sentenced to eight months in jail for "defaming" Chinese soldiers after suggesting that casualty figures would be much higher than those made public.[14]

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[13] Abhay Kumar Singh, *India–China Rivalry: Asymmetric No Longer—An Assessment of China's Evolving Perceptions of India* (New Delhi: KW Publishers, 2021).

[14] Ananth Krishnan, "China jails blogger for Galwan comments," *The Hindu,* June 1, 2021, https://www.thehindu.com/news/international/china-jails-blogger-for-defaming-martyrs-of-galwan-valley-clash/article34695542.ece

Finally, the value of summit diplomacy as a resolution mechanism has also lost sheen for New Delhi. As China watchers have argued, despite high-profile visits by senior leaders, China continues to remain suspicious of India's strategic ambition and intentions.[15] Such duality—formal rapprochement on the surface versus distrust and hedging in private—will continue into the foreseeable future with crucial implications for the region's peace and stability.

This has necessitated that India take a hard look at the widening power differential with Beijing in the political, economic and military realm and accelerate cross-sectoral reforms which were already underway, given the understanding that it no longer had the luxury of time.

In sum, the impact of the Galwan valley crisis on India's official and public psyche is such that India and China today are struggling to rebuild mutual trust. New Delhi, which has been willing to defer to Beijing's sensitivities on certain critical issues in the past, is now seeking to redraw those red lines, insisting on reciprocity. When asked about India's re-evaluation of its relationship with China after 70 years of engagement, Foreign Minister Jaishankar reflected on the notion and argued, "Indeed, Indian policy in the past has exhibited a remarkable degree of self-restraint that led to the expectation that others can have a veto over its choices. That period, however, is now behind us. The 'new era' is apparently not just for China."[16]

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[15] Yun Sun, "China's Strategic Assessment Of India," *War on The Rocks,* March 25, 2020, https://warontherocks.com/2020/03/chinas-strategic-assessment-of-india/

[16] "S Jaishankar Explains 'New Normal' Of Posture vs Response With China," *NDTV,* October 19, 2022, https://www.ndtv.com/india-news/s-jaishankar-explains-new-normal-of-posture-vs-response-with-china-3443779

The China Challenge After Galwan: India's Responses

The most visible shift in India's approach to managing the China challenge after Galwan would arguably be in the momentum of the US-India ties and the doubling down of the transformation in the relationship with a wide range of issues—from contentious trade and economic differences to more cooperative sectors in defence, tech and even space. However, internally, India has re-evaluated baselines for its management of the relationship with Beijing and adopted a manifold response.

The need for reciprocity: One could argue that even before Galwan, for India, managing the China challenge had three basic components—internal balancing (economic and military reforms); external balancing which involved building like-minded coalitions, all sharing concerns about Chinese unilateralism; and an attempted engagement with China to keep channels of communication open.[17] What has changed after Galwan is India's insistence that engagement with China cannot continue as 'business as usual' and peace and tranquility along the border areas remain the basis for normal ties.[18] After 17 rounds of border talks—punctuated by withdrawal by both sides on certain flashpoints—New Delhi continues to insist on further disengagement, i.e. standing down of troops from more flash points. It also insists on de-escalation—withdrawal and retreat of all the military and infrastructure build-up that has been consolidated on both sides of the border since the clash.

China has not shown any willingness to de-escalate and India too, has mirrored deployments across the Line of Actual Control (LAC). The clashes in Tawang towards the end of 2022 reiterated the uncomfortable reality

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[17] Kanti Bajpai, "India's Emerging Grand Strategy after Galwan: Bridging the Power Gap with China," in Asia-Pacific Regional Security Assessment 2021, ed. The International Institute for Strategic Studies (IISS) (London: Routledge, London, 2021.

[18] "S Jaishankar Explains 'New Normal' Of Posture vs Response With China," *NDTV*, October 19, 2022, https://www.ndtv.com/india-news/s-jaishankar-explains-new-normal-of-posture-vs-response-with-china-3443779

that unpredictable escalation is the 'new normal' along the LAC. Beijing is clearly seeking to keep the whole of the LAC alive. India's official reading of this scenario has been that "new normals of posture" will inevitably lead to "new normals of responses."[19]

A Renewed Compact with the West and Reducing Economic Exposure to China: After Galwan, India undertook actions specifically across political, economic and military realms with an aim to convey to China that the relationship is unequivocally altered. These actions relayed with clarity that the clashes had triggered a decisive rethinking in India on its China policy. As argued earlier in this essay, it is clear that Galwan had removed any hesitations in New Delhi's mind on binding ties with the United States and reinvograting its relationship with the West, especially on managing the rise of China. This has manifested in India's closer alignment with the US and its partners and allies in the region across platforms by the mainstreaming of India's Indo-Pacific Strategy.

Two, it has also made India conscious of the need to reduce its economic exposure to China. According to data released by the General Administration of Customs (GAC) of China in 2022, the trade deficit with China breached the US$100-billion mark for the first time that year.[20] Meanwhile, even as India's share in China's imports shrunk from 7 percent in 2020 to 3.4 percent in 2022, its trade with the US in terms of exports rose by 2.81 percent to US$78.31 billion in 2022-23 from US$76.18 billion in 2021-22, while imports grew by about 16 percent to US$50.24 billion. This made the US India's biggest trading partner, followed by China and Singapore.

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[19] "S Jaishankar Explains 'New Normal' Of Posture vs Response With China"

[20] Ananth Krishnan, "India's imports from China reach record high in 2022, trade deficit surges beyond $100 billion," *The Hindu,* January 13, 2023, "https://www.thehindu.com/news/international/indias-imports-from-china-reach-record-high-in-2022-trade-deficit-surges-beyond-100-billion/article66372861.ece"

To be sure, the jury is still out on the success of India's diversification of trading partners and reduction of dependence on China.[21] However, India has come to understand that complete economic decoupling with China is neither practical nor in its interest. It has been taking substantial steps to initiate the rewiring of global supply chains, maintaining access to global commons, keeping in check tech nationalism with specific actions against Huawei and banning of Chinese apps like TikTok as well as screening of Chinese investments in strategic sectors. India has also positioned itself as the hub for vaccine manufacturing and distribution in the post-pandemic global order, with help from other like-minded countries. Today India is on a spree of signing mini trade agreements with a range of partners including Australia, the UK, and the EU, and is looking to reduce its overdependence on imports from China. One could argue that India's partaking and push for the coalition of the willing against perceived Chinese bullying would not have happened at the scale and speed that it has in the absence of Galwan and the perceived destruction of guardrails in the India-China relationship.

Mainstreaming the Indo-Pacific: As discussed earlier, India has accelerated and diversified its external balancing by mainstreaming its Indo-Pacific strategy. From New Delhi's perspective, the long view on these tectonic shifts in the Indo-Pacific is sobering. China looms large on India's land and maritime borders, not to mention its West Asian neighbourhood with the Taliban's return to Afghanistan. India has actively participated in efforts to anchor capacity building and capability enhancement in the Indo Pacific. It has embraced issue-based groupings or minilaterals across varying geographies and purposes, including tech and supply chains; it has used the opportunity of overlapping, bilateral,

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[21] For both sides of the debate, see: Rajeev Jayaswal, "Despite Galwan, India's trade with China has grown. But there is a shift," *Hindustan Times,* October 19, 2021, https://www.hindustantimes.com/analysis/despite-galwan-india-s-trade-with-china-has-grown-but-there-is-a-shift-101634624617348.html; and Partha Pratim Pal And Partha Ray, "The puzzle. India's intriguing trade ties with China," *The Hindu Business Line,* May 01, 2023, https://www.thehindubusinessline.com/opinion/indias-intriguing-trade-ties-with-china/article66800675.ece

minilateral and plurilateral agendas to bolster India-led multilateral platforms like the Indo-Pacific Oceans Initiative. Most importantly, it has sought to carve a niche for itself as a development partner for countries looking at alternatives beyond binary choices.

In terms of defence cooperation, this has meant India's investments in partnerships with the intention of improving interoperability, facilitating intelligence sharing and assessments, and boosting each other's economic and defence capabilities. India has doubled down in facilitating logistics support, increasing maritime awareness, upgrading military exercises, and regularising strategic dialogues including in 2+2 formats with the US, Japan, Australia, Russia and investing in strategic dialogues with France, South Korea, Southeast Asia, among others.

If one were to look at specific actions immediately after the clashes, India took ownership of its participation in the Quad and has been vocal about it being one of the anchors of cooperation in the Indo-Pacific. India had earlier refused to spotlight the Quad in deference to Beijing's description of the platform as 'Asia's NATO' (North Atlantic Treaty Organisation). India also expanded the Malabar naval exercises to include Australia. India has also strengthened its relations not only with Quad countries but also doing more with long-term partners like France in the Indo-Pacific, and combined efforts with the US to prioritise West Asia with the I2U2 format. Dubbed the West Asian or Middle East Quad, the grouping's first-ever meeting between the foreign ministers of India, Israel, the United Arab Emirates, and the United States marked an important phase in India's engagement with West Asia. The new minilateral is seen as an effort to create an integrated regional policy where coalitions of the willing help sustain dialogue and presence.

India has notably supported new mechanisms like AUKUS—a military technological collaboration among Australia, the United Kingdom and the United States and helped block Chinese attempts to put a roadblock on the planned supply of nuclear submarines to Australia at the International

Atomic Energy Agency (IAEA).[22] India's openness to the involvement of resident powers in the Indo-Pacific especially in its maritime periphery initiated by the Modi government in 2014, is now seeing an increase in military cooperation. New Delhi has welcomed with great pragmatism, not only its partners in the Quad but also UK's most recent tilt to the Indo-Pacific and return to the Indian Ocean. India after Galwan has also become more vocal on the South China Sea disputes, with the Indian External Affairs Minister at the 15th East Asia Summit in November 2020 highlighting that "Chinese actions and incidents in the South China Sea had eroded trust in the ongoing negotiations on the proposed code of conduct in the region."[23] In May 2023, the maiden India-ASEAN maritime exercise concluded in the South China Sea. The exercise was significant for while India has sent warships to the South China Sea in the past, this was the first such naval exercise with the ASEAN as a bloc.[24]

Willingness to cross red lines: India has been willing to cross other red lines vis-à-vis China. For example, India referred to the 'militarisation' of Taiwan Strait by China in August 2022, which came amidst a spat with China over the visit of a Chinese military tracking vessel Yuan Wang 5 to Hambantota in Sri Lanka.[25] Right after US House Speaker Nancy Pelosi's visit to Taiwan at that time, when asked if India would, as Beijing had requested, reiterate its commitment to a "One China policy", India's Ministry of External Affairs (MEA) said "India's relevant policies are

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[22] "Brazil Help Stop Chinese Roadblock to AUKUS Supply of N-Powered Submarines to Australia," *The Wire*, October 1, 2022, https://thewire.in/diplomacy/at-iaea-india-helps-to-stop-chinese-roadblock-to-aukus.

[23] Shubhojit Roy, "At 15th East Asia Summit, Jaishankar brings up territorial integrity & sovereignty again," *The Indian Express,* November 15, 2020, https://indianexpress.com/article/india/at-15th-east-asia-summit-jaishankar-brings-up-territorial-integrity-sovereignty-again7051812/.

[24] Dinakar Peri, "Inaugural Asean-India Maritime Exercise In South China Sea From May 2-8," *The Hindu,* May 01, 2023, https://www.thehindu.com/news/national/inaugural-asean-india-maritime-exercise-in-south-china-sea-from-may-2-8/article66800942.ece.

[25] Ananth Krishnan, "In a first, India refers to 'militarisation' of Taiwan Strait by China," *The Hindu,* August 28, 2022, https://www.thehindu.com/news/international/in-a-first-india-refers-to-militarisation-of-taiwan-strait-by-china/article65821313.ece.

well-known and consistent" and "do not require reiteration."[26] From Prime Minister Modi's now public acknowledgement and felicitation of Tibetan Spiritual leader HH Dalai Lama to openly being the venue of meetings between the Tibetan government-in-exile and Western governments, especially the United States, New Delhi is no longer playing it cautious.

In other firsts, India-Australia undertook a maritime surveillance operation in the Indian Ocean region to build operational maritime domain awareness, practise anti-submarine warfare manoeuvres and bolster military interoperability, apart from the bilateral exercises AusHind and Indian participation in US-Aus-led Talisman Sabre. India and Japan recently held their maiden air exercise with collaboration between Indian Air Force and Japanese Air Self Defense Forces, Veer Guardian 2023, at the Hyakuri Air Base, Japan. Similarly, India and the US undertook high-altitude exercises 'Yudh Abhyas' with the U.S. Army near the India-China border. They also signed a significant initiative on Critical and Emerging Technology which paves the way for a new road map for deeper military and technology cooperation with the hope that this bolsters "India's use of technology for both economic growth and social inclusion."[27] The agreement fundamentally aims to help India reduce its dependence on Russian weapons and military technology and build capacities to manage China. While this list is not exhaustive, most of these developments have been embraced by New Delhi with a greater intensity—which it could be argued, is with a clear strategic intent to deter China after Galwan.

Accelerating Defence Reforms: As explained in greater detail in the essay in this volume by General MM Naravane, Galwan triggered a rebalancing of the Indian Army and compelled the three services to collaborate in a way that had not been done in the recent past. It reinforced the necessity of adapting to the shifting external environment, and pushed for stronger cohesion, while bringing back into focus, the

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[26] Krishnan, "In a first, India refers to 'militarisation' of Taiwan Strait by China".

[27] Prashant Jha, "ICET much more than tech cooperation; platform to enhance strategic and policy alignment, says Jake Sullivan," *The Hindustan Times,* Jan 31, 2023.

urgency of reforms. Effectively, the reorientation of a combined-arms attack corps to focus on the LAC was the most striking manifestation of this rebalancing.[28] The crisis also highlighted the value of cutting-edge technologies to the Indian military, particularly drones and cyber means. It put the spotlight back on a wide range of key issues—ranging from revamping and reorganisation of India's intelligence gathering and assessment capability, pursuit of technological synergy and preparedness for hybrid warfare to defence acquisition mechanisms—for New Delhi to disentangle.[29]

The Union government has, in the past three years, spent over INR 1,300 crore in Ladakh on infrastructure and habitat requirements of more than 55,000 troops deployed at the icy heights.[30] India has also taken concrete measures to boost self-reliance in defence. The criticism that India cannot provide its military with the weapons they need indigenously, as long as it protects its traditional military-industrial complex under the guise of self-sufficiency, has hit home. While there has been fine-tuning of the defence procurement policy, thriving competition among start-ups since the private sector has entered the fray and investment in R&D, India is aware that for its defence sector to really take off, collaboration with external partners is key.

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[28] Arzan Tarapore, "The Crisis after the Crisis: How Ladakh will Shape India's Competition with China," *Lowy Institute,* May 5, 2021, https://www.lowyinstitute.org/publications/crisis-after-crisis-how-ladakh-will-shape-india-s-competition-china

[29] "Transformation Imperatives for the Indian Army in the coming decades," *The Kootneeti*, September 15, 2022, https://thekootneeti.in/2022/09/15/transformation-imperatives-for-the-indian-army-in-the-coming-decades/

[30] Pradip R Sagar, "How the Indian Army is responding to the Chinese troop build-up in the eastern sector," *India Today,* January 15, 2023, https://www.indiatoday.in/india-today-insight/story/how-the-indian-army-is-responding-to-the-chinese-troop-build-up-in-the-eastern-sector-2321897-2023-01-15

Even today, India's indigenisation efforts are hampered by the fact that ideal objectives of quality, cost, and timeframes cannot be achieved simultaneously.[31] Apart from defence budgets cuts, getting the balance right between revenues for personnel and those required for modernisation remains a massive challenge.[32] Thus, PM Modi's visit to the United States in June 2023, which led to the signing of a number of defence and technology deals is considered a vital step towards India realising its ambitions of defence modernisation.[33] Modi's speech at the joint session of the US Congress emphasised this: "We were strangers in defense cooperation at the turn of the century, but now the United States has become one of our most important defense partners."[34]

Conclusion: India's Difficult Choices

From the above discussion, it is clear that in the absence of strategic trust, a new modus vivendi between China and India at the moment seems elusive. Strategic thinkers in India have pointed out that China's choice of framing the Galwan crisis as a sovereignty question is a departure from the past.[35] It makes the issue more intractable. For when the boundary question was framed as a dispute, there existed space for discussion on whether a give-and-take on both sides would help resolve the crisis. Sovereignty, on the other hand, experts explain, "is inflexible and sacred

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[31] Dhruva Jaishankar, "The indigenisation of India's defence industry," *Brookings,* August 8, 2019, https://www.brookings.edu/research/the-indigenisation-of-indias-defence-industry/

[32] Jaishankar, "The indigenisation of India's defence industry"

[33] FACT SHEET: Republic of India Official State Visit to the United States, June 22, 2023, https://www.whitehouse.gov/briefing-room/statements-releases/2023/06/22/fact-sheet-republic-of-india-official-state-visit-to-the-united-states/

[34] Address by Prime Minister, Shri Narendra Modi to the Joint Session of the US Congress , June 23, 2023, https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1934649

[35] Shivshankar Menon, "Are India-China relations crisis-prone?," India Seminar, https://www.india-seminar.com/2021/737/737_shivshankar_menon.htm

and must be defended with the use of force."[36] A dispute was seen as a situation left over by history and the root of the problem was assigned to "imperialism" and not the governments of India or China.[37] Framing it as a sovereignty issue has reduced any room for concessions. Thus, with the LAC now live, India will have to adjust and plan for this new reality. While India is now firm on pushing back against China for its low-intensity coercions, its ability to maintain this new state of cold peace will put to test both its resolve and the pace of its military and socio-economic transformation.

It is evident that China continues to look at India from the prism of a third-party lens, denying New Delhi both parity and agency. The cost of India making its strategic choices not deferring to the red lines laid by China manifests in Beijing attempting to impose reputational cost on India and raising questions on it being a competent partner to countries in the Indo-Pacific. The CCP's intent of dragging the border dispute with India out, even as it engages Bhutan in border negotiations, is symptomatic of this play. In a year where India sits as President at the G20 and SCO, embarrassing India—a key partner in the Indo-Pacific and Quad, by keeping the LAC alive—is not farfetched. Thus, the constant testing of waters by China along the border should worry not just India but friends and partners in the Indo-Pacific.

However, while the US and India are aligned in their assessment of the Chinese threat, experts have warned that there is not always complete agreement on how far and fast to compete with China.[38] This is because India's calculus in exercising the range of options comes from its geographical proximity to Beijing. Often, fringe debates in both

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[36] Shivshankar Menon, "Internal Drivers of China's External Behaviour", *CESP Working Paper,* January 12, 2022, https://csep.org/working-paper/internal-drivers-of-chinas-external-behaviour/

[37] Menon, "Internal Drivers of China's External Behaviour"

[38] Tanvi Madan, "Hearing on China's Influence in South and Central Asia" (Testimony before the U.S.-China Economic and Security Review Commission, Washington DC, May 2022).

Washington and New Delhi get mainstreamed in the media on either side speculating of grand bargains with Beijing at the cost of the other's interests. Even in the Indo-Pacific, prioritisation of different geographies, different interpretations of FONOPS, US dalliance with Pakistan and India's need to reassure Russia have all played to these anxieties. Insulating the partnership from misperceptions will be a difficult task.

Finally, India's position on the Ukraine crisis has provoked public debate in its Quad peers and partners in the West. As India mainstreams its Indo-Pacific strategy and undertakes a series of capacity-building exercises to improve interoperability and combat readiness, it has to be prepared for defining its response in terms of what its closest partners have been preparing for, including a Taiwan contingency. How will India manage these expectations? Practitioners have cautioned that while New Delhi was able to convince its partners in the West on the Ukraine war, it may not have the same flexibility on Taiwan since the geopolitical stakes in that case will be different.[39]

Meeting the twin challenges of what has been described by the Indian leadership as the "cumulative Border Balance," and the "Comprehensive National Power," vis-à-vis China will require a whole-of-government approach.[40] What Galwan has done for India is that it helped New Delhi shed the shibboleths of the past and embrace and prepare for, as Ambassador Vijay Gokhale put it, "an armed co-existence."[41]

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[39] Vijay Gokhale, "What Should India Do Before the Next Taiwan Strait Crisis?" *Carnegie India Paper,* April 17, 2023, https://carnegieindia.org/2023/04/17/what-should-india-do-before-next-taiwan-strait-crisis-pub-89515

[40] "S Jaishankar Explains 'New Normal' Of Posture vs Response With China"

[41] Vijay Gokhale , "A Historical Evaluation of China's India Policy: Lessons for India-China Relations," *Carnegie India Working Paper,* December 2022, https://carnegieendowment.org/files/Gokhale_-_Chinas_India_Policy3.pdf

Rising to the Challenge: Rebalancing the Indian Army

M.M. Naravane

INDIA CONFRONTS A UNIQUE SET of security challenges. It is perhaps the only country in the world with two belligerent neighbours, both of whom are also nuclear powers. The unsettled nature of the border with Pakistan, and the unresolved border question with the entire Tibet region of China, imposes on India a two-front threat. Pakistan's continued support to various terror groups and its undeclared proxy war only exacerbates the problem. Furthermore, India also bears the responsibility of safeguarding vital sea lines of communication (SLOCs) passing through the Indian Ocean, which account for 80 percent of world trade. Thus, India has multifarious roles to play in ensuring peace and tranquillity and being a net security provider in South Asia and the Indian Ocean Region.

This essay addresses the question of how India has adapted to the changing contours of the security threats it faces. The Galwan Valley clashes of June 2020 and the larger standoff between the Indian Army and China's People's Liberation Army (PLA) in Ladakh forced India to rethink its strategic posture. It became apparent that the threat from Pakistan had receded while the threat from China had grown. As a result,

the Indian Army has undertaken a rebalancing of its force posture to deal with the new dynamics of this threat scenario. This rebalancing has three key pillars—reorientation, relocation, and reorbatting. Under the aegis of these pillars, the Indian Army has worked to bolster deterrence along the Line of Actual Control (LAC). Furthermore, the Indian military is working to integrate new and disruptive technologies into its force structure, and leverage international partnerships to develop interoperability between India and its key international partners for the future.

Emerging Threat Scenario

Over the past two decades, the balance of power between India and Pakistan has decisively shifted in India's favour. Reforms required to catapult Pakistan forward are unlikely to manifest, as it is unwilling to shift from an anti-India stance and refocus its efforts on internal changes. Reforms will also be blocked by the powerful Pakistani Army, lest it lose its relevance within the state. Pakistan's strategy of 'bleed India by a thousand cuts' (as envisaged by General Zia-ul-Haq in the late 1970s) has obviously not achieved any of its intended objectives. The younger generation of Kashmiris has different priorities, "far less weighed by emotive persuasion".[1] Yet Pakistan continues along the same path, expecting different results. In 1980, Pakistan and India were almost at par as far as economic indices were concerned. Today, India with a GDP of US$3.17 trillion is far ahead of Pakistan's US$0.34 trillion. Considering these developments, notwithstanding Pakistan's continued anti-India stance, it is possible to say that the Pakistan threat has receded somewhat to the background. The February 2021 ceasefire understanding between the two countries' Director Generals of Military Operations revived the ceasefire agreement of 2003, which was being honoured only in the breach. This has brought succour to the civilian population on both sides of the Line of Control, contributing to a sense of peace and harmony. These factors have enabled the Indian armed

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[1] Shahzad Chaudhry, "On India," *The Express Tribune,* January 13, 2023, https://tribune.com.pk/story/2395510/on-india-1

forces, especially the army, to recalibrate their responses and review the manner in which the forces are arrayed.

The simultaneous emergence of China and India as two large economies and trading rivals has implications at the regional and global level. While there is enough strategic space for both countries to grow, bilateral relations have been strained due to the prominence of the boundary dispute. The unprovoked military action by the PLA along the LAC, in an attempt to unilaterally change the status-quo, is the cause of impasse today. The biggest concern is the continued transgressions in various disputed areas along the LAC, in violation of all agreements and protocols signed over the years. China has thus taken advantage of India's approach of keeping the boundary issue separate from all other aspects of bilateral relations. This has now changed, and India will synchronise its relations, such that the security of the borders is not separated from economic, diplomatic, and cultural equations. Indeed, in November 2022, Indian External Affairs Minister S. Jaishankar reiterated that, "…unless there is peace and tranquillity in the border areas, unless there is observance of agreements and no unilateral attempt made to change status quo, the relationship cannot be normal and is not normal".[2]

In addressing all the threats and challenges that confront India, a whole-of-nation approach has been adopted. The entire DIME construct—diplomatic (including military diplomacy), information, military, and economic—has been leveraged at appropriate levels and forums in pursuit of national interest. The ongoing military rebalancing and restructuring is only a subset of the entire national effort. In the aftermath of the clashes in Eastern Ladakh in May and June 2020, it was the whole-of-nation approach that paid dividends. Apart from the talks at the military level between the corps commanders, there were numerous meetings

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[2]   Aniruddha Dhar, "'What happened in 2020 was…': S Jaishankar on India-China ties," *Hindustan Times,* November 10, 2022,
https://www.hindustantimes.com/india-news/present-state-of-affairs-not-even-in-china-s-interest-s-jaishankar-at-htls-101668096125732.html.

of the Working Mechanism for Consultation and Coordination steered by the Indian Ministry of External Affairs, as well as meetings between the respective defence and foreign ministers. In a departure from the past, it was for the first time that boundary issues were being discussed, minutes agreed upon and signed by the military (army), that too at the level of the corps and not by the foreign ministry. This only reflects the growing maturity of various institutions.

The threats and challenges facing India are continuously evolving, as are the responses to them. The prevalent mood that conventional wars are passé or that they will be short and swift affairs mainly in the non-kinetic domain have been rudely shattered. A review of threat perceptions was warranted based on the changing dynamics in the region. It was evident that the priority of threats had shifted from the western front with Pakistan to the northern front with China. The challenge was to be able to address both these threats through a carefully calibrated rebalancing of available forces. Apart from the external threat, there is also an internal threat emanating from terrorism in Kashmir to various low-level insurgencies in the Northeast, which also need to be addressed. Still, in view of the decreasing levels of violence, a certain amount of rebalancing on this account was judged to be possible.

The Indian Army's Rebalancing Efforts

The Indian Army has 14 corps, each comprising between two to six division equivalents. With anywhere between 30,000 to 50,000 personnel of all ranks, it is the highest level of command that controls combat operations. The divisions are primarily structured for conventional operations, although there are some exclusively meant for counterinsurgency and counterterrorism (CI/CT) operations, such as the Counter Insurgency Force-Uniform [CIF(U)]. The conventional divisions have their complement of supporting arms (armour, artillery, air defence), while those in the CI/CT role are more personnel-intensive. There are also a number of independent brigades, some operating under their respective corps headquarters, and others directly under the command headquarters. There are also three division equivalent formations known as the

Inspectorate General Assam Rifles (IGAR)-North, South, and East, that are under the Ministry of Home Affairs. These are, however, officered by and under the operational control of the Indian Army.

Of the Indian Army's 14 corps, only four corps face the China border while the remaining were oriented towards Pakistan. Of the Indian Army's 38 divisions, only 12 divisions faced China while 25 divisions were responsible for the Pakistan threat. The situation was especially precarious in Eastern Ladakh. Here, just a single division (3rd Infantry Division) was responsible for defending an 800-km border with no units in reserve.[3]

In view of the new threat perception, the changes that were carried out can broadly be considered under three overlapping heads—relocation or redeployment, reorientation, and reorbatting. Relocation involved minor adjustments within the sector, whereas redeployment involved shifting of individual units and formations from one sector to another. For example, some armoured regiments, earmarked for the Western front, were sent to Ladakh. Reorientation, on the other hand, did not involve any changes in location, but only fresh tasking. As a result of these two activities, the command-and-control structure had to be reviewed and streamlined, thus necessitating reorbatting.

Given the increased threat along the LAC, one division was grossly inadequate to defend this area. Moreover, with the accretion of forces that happened post-June 2020, it was practically impossible for one divisional headquarters to exercise command and control over more than twice its usual strength. The immediate need was to identify a divisional headquarters that could be relocated. For this, the CIF(U) and two of its sectors (brigades) were chosen, in view of the relative normalcy in the Jammu region and relocated to Eastern Ladakh. Here, it took under command other accretional units/formations, and the area of responsibility (800 km) shared between the two formations.

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[3] Ajai Shukla, "Army's Pivot North," *Broadsword,* January 7, 2021, https://www.ajaishukla.com/2021/01/armys-pivot-to-north.html.

As per the overall strategy to deal with a two-front threat, several divisions are dual tasked formations (DTF), meaning they have a primary role on one front, but can be moved should that front be dormant, or the need arises. These DTF, accordingly, are also trained for their secondary role. Earlier, since the threat on the western front was the priority, the majority of the DTF were earmarked from the north to the west. This has now changed. As part of this reorientation, the primary role of one of the Strike Corps was changed from the western to the northern front, but without any change in location, and placed on the Order of Battle (ORBAT) of the Northern Command. It is now dual tasked for the West, with a primary focus on the North. Its two divisions (one infantry and one mountain division) have been tasked as a reserve force for the northern Ladakh region. Its armoured division (33 division) has been placed as a reserve force under the army headquarters.[4] The erstwhile Mountain Strike Corps, kept as reserve and which earlier had to look after the entire northern front and coordinate with three different command headquarters, is now exclusively on the ORBAT of the Eastern Command. It has also been bolstered with an additional division along with a reserve artillery brigade.[5]

These moves have put two strike corps facing China as opposed to the previous 17 mountain strike corps that were only partially raised. In the central sector, the area was being managed by independent brigades reporting directly to the command headquarters. This sector has been reinforced by another division (14 RAPID Division). This division, meant for operations against Pakistan, is being converted into a mountain division to address any Chinese aggression in the middle sector.[6]

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[4] Pradip Sagar, "Indian Army rebalances command structure on China border," *The Week,* October 12, 2021, https://www.theweek.in/news/india/2021/10/12/indian-army-rebalances-command-structure-on-china-border.html.

[5] Manjit Negi, "6 Indian Army Divisions assigned to China border from Pakistan front," *India Today,* May 15, 2022, https://www.indiatoday.in/defence/story/indian-army-divisions-china-border-pakistan-ladakh-gen-manoj-pande-1949788-2022-05-15; https://theprint.in/defence/these-are-the-key-changes-army-has-made-in-ladakh-to-counter-china-in-summer/638253/.

[6] Nitin A. Gokhale, "India to Allocate Three More Divisions to China Border," *Bharatshakti,* January 15, 2021, https://bharatshakti.in/india-to-allocate-three-more-divisions-to-china-border/.

These continue to function under the command headquarters, but there are plans to have an intermediary corps headquarters for ease of command and control.

There has been a continuous improvement in India's internal security situation, particularly in the Northeast. Most of the militant groups have either suspended operations or have signed ceasefire agreements with the government. Under these circumstances and in consultation with the respective states, a planned drawdown of forces that were engaged in their secondary role of CI/CT operations was carried out. This enabled these units and formations to concentrate exclusively on their primary role of conventional operations on the northern front. The areas from which this drawdown has been carried out have been taken over by the IGAR or by the local state administration. However, since no physical relocation has taken place, these forces are readily available for CI/CT operations should the internal security situation deteriorate.

Along with rebalancing, it is equally important to revamp the internal structures of the army. One of the major changes that is underway is the transformation and amalgamation of the brigade and the division to create a new entity called the Integrated Battle Group (IBG). In earlier times, when the means of communication (both surface and electronic) were poor, it was an operational necessity to have several intermediate headquarters to exercise command and control. That is no longer the case, with, in theory, the battalion commander in direct communication with the army headquarters. As such, one of the intermediary headquarters in the battalion-brigade-division-corps chain needed to be optimised to shorten the observe-orient-decide-act loop. These IBGs will be raised and equipped with respect to the terrain they will operate in (location), the task they will perform, and the threat they will face (enemy forces). The IBGs are expected to have the complete suite of capabilities required to carry out their objectives. IBGs are meant to be leaner and more agile than previous formations so that they can be mobilised quickly in developing situations.[7]

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[7] Sandeep Unnithan, "The New Strike Strategy," *India Today,* September 16, 2019, https://www.indiatoday.in/magazine/the-big-story/story/20190916-the-new-strike-strategy-1595666-2019-09-06.

The combat and logistics support elements were part of the division in peacetime and sub-allotted to the brigades during operations. They have now been permanently put on the ORBAT of the brigades, thus making them a more potent force. This is similar to the structure of existing independent brigades that report directly to the corps headquarters. Besides the operational dividend, it also results in considerable savings in personnel, as each headquarter has its own support staff that has also been optimised in the process, along with associated infrastructure and equipment.

At the heart of any defensive strategy are the four D's—delay, disrupt, discern, and destroy ingressing enemy forces. One must be able to project combat power to achieve each of these ends. The employment of long-range vectors and airpower will play a key role in delaying mobilisation and disrupting the concentration of forces in the desired sector, thus enabling a defender to discern likely thrust lines. Thereafter, all available combat power will be brought to destroy the enemy. Nevertheless, a determined enemy is likely to make some gains. Defences, therefore, must be in tiers to absorb the initial assault, stabilise the situation, and then evict the enemy. The relative strength of these tiers will depend on the terrain and overall strategy. The first tier could be lightly held to act as a tripwire or held in strength to stop an offensive in its tracks.

Other initiatives

Within each vertical of the army, there is further scope to reduce the 'tooth-to-tail' ratio through a dispassionate analysis of each unit and sub-unit by leveraging modern technology. Animal transport (AT), such as mules, is one example. There are a number of AT battalions to supply forward areas where surface connectivity is poor or non-existent. But ATs may no longer be needed with the advent of drones, including logistic drones. Moreover, all-terrain vehicles (ATVs) can now go almost anywhere that an AT can go, with minor improvements to the track. Still, the army has about 10,000 mules and as many handlers, with a considerable maintenance cost (even when not in use). Although the breeding of mules has been stopped, at normal depletion rates, the mules will still be around for at least another two decades. Another

case in point is the technical arms where personnel-intensive tasks have been taken over by technology. For example, signal exchanges had to be manned round the clock by personnel working in shifts. But with the advent of automatic exchanges, all that is needed is a supervisor to monitor the working of the exchange. Small decrements in each unit can easily result in large savings in personnel, provided the exercise is carried out without any emotional attachment. Through this, the army can evolve from being personnel-intensive to a technology-empowered and future-ready force.

Diplomacy, including military diplomacy, is an important component of the overall security architecture. All three services are engaged with several countries worldwide to broaden international defence cooperation. The Indian Navy and Air Force lead on this front on account of their greater reach, commonality of platforms, and their medium of operation. For instance, any number of navies can carry out an exercise on the high seas without raising any hackles, as the open waters are part of the global commons. The army cannot conduct such exercises in sensitive border areas as it may look like a military grouping against a specific threat.

Through bilateral and multilateral exercises—such as the Malabar naval exercise between India, the US, and Japan, and the Veer Guardian 2023 exercise between the Indian and Japanese air forces—the Indian armed forces are building capabilities for interoperability and also building relationships for the future, without being part of any military alliance.

Technology has always played a major part in the conduct and outcome of various battles and conflicts. In earlier times, battlefield needs spurred innovation; the necessity of breaking the stalemate of trench warfare led to the development of the tank and the doctrines of mechanised warfare. The enhanced firepower, mobility, and protection afforded to tanks, combined with the third dimension of air power, resulted in the 'blitzkrieg' that scythed through Europe in the Second World War. That has changed now. The advent and proliferation of drones have made armies worldwide scramble to change their tactics, techniques, and procedures. If the 'tank versus anti-tank' battle was the rivalry of the last century, the

'drone versus counter-drone systems' rivalry will be the contest of the present. As such, a number of systems, developed by the Defence Research and Development Organisation and private players have been evaluated and inducted, or are on the threshold of induction, including weaponised drones. The Indian Army is keenly following technological developments, including quantum technologies, blockchain, artificial intelligence, and machine learning, to see how to incorporate these into the overall warfighting matrix. The army is also carrying out its own independent military-oriented research and development, in partnership with leading academic institutions and industry partners. Some of these initiatives have already borne fruit, with a private firm securing the first order under the defence ministry's Innovations for Defence Excellence programme to create an integrated mobile camouflage system for the armed forces.[8]

Still, importantly, even as the army attempts to transform from personnel-intensive to technology-empowered, 'boots on ground' will always be a requirement due to the unsettled borders. Ultimately, the efforts of the three services need to be synergised for maximum operational efficiency. The Indian Army's collaboration with the Air Force allowed it to significantly reduce the amount of time required to build up forces in Eastern Ladakh. Furthermore, the Air Force's strategic airlift capabilities allowed ground forces to maintain a sustained presence in Ladakh during the standoff.[9] Likewise, the Indian Navy was able to step up its patrolling in the Indian Ocean and deployed several warships into the area. This conveyed India's intent to asymmetrically pressure China through its vulnerable SLOCs, a message that registered.[10]

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[8] Ajai Shukla, "Defence start-up Hyper Stealth Technologies bags first order under iDEX," *Business Standard,* March 15, 2023, https://www.business-standard.com/article/companies/defence-start-up-hyper-stealth-technologies-bags-first-order-under-idex-123031501141_1.html.

[9] Rahul Singh, "India displays logistics capabilities to support forces in Ladakh," *Hindustan Times,* November 17, 2021, https://www.hindustantimes.com/india-news/india-displays-logistics-capabilities-to-support-forces-in-ladakh-101637157594700.html.

[10] "Navy significantly expands deployment in Indian Ocean following border row with China: Sources," *The Times of India,* July 29, 2020, https://timesofindia.indiatimes.com/india/navy-significantly-expands-deployment-in-indian-ocean-following-border-row-with-china-sources/articleshow/77246175.cms.

Conclusion

India's strategic posture is in keeping with its desire for peace and prosperity, which is only possible when there is amity and tranquillity. This sentiment was most aptly articulated by Prime Minister Narendra Modi in 2018 as SAGAR (security and growth for all in the region).[11] The changes carried out by the Indian Army are in furtherance of the overall national aim for maintaining stability in the region. To that end, lowering the force levels on the western front should reassure Pakistan that India has no extraterritorial ambitions, and pave the way for a more meaningful dialogue at the diplomatic and political level. The greater military capability on the northern front should serve as a deterrent to any kind of adventurism, underscore the futility of seeking military solutions, and be a catalyst for genuine and time-bound deliberations on solving the border question. Resolving this long-standing border dispute is perhaps the most momentous legacy that the current leaderships in India and China can leave for future generations.

> *India's review of threat perceptions made it clear that the priority of threats had shifted from the western front with Pakistan, to the northern front with China.*

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[11] "Text of Prime Minister's Keynote Address at Shangri La Dialogue," *Press Information Bureau,* June 01, 2018, https://pib.gov.in/newsite/PrintRelease.aspx?relid=179711

Preparing for a Two-Front Conflict: The Role of the Indian Air Force and the Indian Navy

Amit Gupta

Introduction

RECENT TENSIONS WITH CHINA have raised concerns about India having to face a two-front conflict against both China and Pakistan. These concerns are complicated by the political and economic challenges that the Narendra Modi government faces, as well as a lackadaisical procurement process that has plagued Indian weapons acquisition. The clashes at Doklam and Galwan (with China), and Balakot (with Pakistan), all underlined the need to rapidly modernise India's armed forces or, at the very least, to acquire adequate weaponry to face the two-front threat.

The weapons acquisition and military planning processes are moving at a snail's pace with the possible assumption that any conflict may happen in the medium to long term—10-20 years—rather than, as some strategists have argued, within a shorter time frame of two to

five years.[1] If the latter happens, India's slow-paced weaponisation will place it at a disadvantage against China, since many of the required weapons systems will not be in place with the military. Coupled with this problem is that while the armed forces are trying, the bureaucratic politics of the different services may make moving towards integrated commands a slow and difficult process.

This article dissects some of these issues, with reference to the Indian Air Force (IAF) and Indian Navy (IN). Specifically, it analyses the role of the two services in India's attempts to deter a two-front conflict. It argues that the current doctrines of the IAF and the IN cannot be made fully operational unless India reforms its acquisitions and production processes to give both services the weaponry and systems needed to bring about doctrinal effectiveness.[2] Without such changes, the doctrines of the two services remain a wish list for the future rather than a comprehensive and well-thought blueprint to harness capabilities to achieve grand strategic objectives. It further argues that military modernisation programmes currently in place are insufficient to meet the emerging two-front threat.

The article proceeds as follows. First, it analyses India's strategic objectives and the role of military doctrine in securing these objectives. It then looks at the doctrines of the IAF and IN, in two consecutive sections that outline the role that each service plays in India's defence strategy and how the services plan to operationalise those roles. The subsequent sections conduct a critical analysis of the doctrines, noting their various shortcomings. It underlines how India's current military modernisation programmes are insufficient to meet the needs laid out in the doctrines. It concludes with some thoughts on the future of India's defence strategy.

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[1] John Pollock and Damien Symons, "Are China and India Headed for Another Deadly Border Clash?" *Chatham House,* June 2, 2023.

[2] Doctrine of the Indian Air Force: indianairforce.nic.in/wp-content/uploads/2023/01/2MB.pdf; Doctrine of the Indian Navy: Indian Maritime Doctrine, indiannavy.nic.in/sites/default/files/Indian-Maritime-Doctrine-2009-Updated-12Feb16.pdf

India's Strategic Goals

Since the time of Jawaharlal Nehru, India has sought to balance two conflicting objectives in its national policies. On the one hand, there was recognition that India requires rapid economic development to pull the most vulnerable sections of society out of poverty as well as promote scientific and technological advancement; on the other, there was also the belief that India was a great nation that could play an influential role in international affairs.[3] Seventy-five years after independence, the strategic goals remain the same even though India's economic stature has grown substantially. The country is now a significant player on the international scene, but at the same time, its developmental agenda remains paramount.

From Nehruvian times, the developmental agenda has led to India facing a 'guns vs. butter' dilemma and, except in the aftermath of a national crisis like the war of 1962, the quest for butter has always won. In recent times, despite the security challenges faced by the country, the defence budget has stayed around 2 percent of the gross domestic product (GDP) (if one takes out pensions, the percentage for 2020-2021 was 1.63 percent of GDP).[4] Thus, if the imperative for butter (i.e., national development), drives the country's political leadership, it has consequences for the military's development as a modern, 21st century, technologically advanced force. Essentially, the government can be expected to prioritise funding for development-friendly initiatives and social welfare programmes which will reduce the amount that can be spent on defence.

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[3] For the best discussion of the early assumptions of Indian foreign policy see Sisir Gupta, *India and Regional Integration of Asia,* (Bombay: Asia Publishing House, 1964), pp. 1-27.

[4] Anil Ahuja and Arun Sahgal, Indian Defence Budget: Beyond the Numbers, *Delhi Policy Group Brief,* February 10, 2021, https://www.delhipolicygroup.org/publication/policy-briefs/indias-defence-budget-beyond-the-numbers.html.

The Indian armed forces operate within a global military system and are consequently aware of the technological and doctrinal changes taking place in others. They are also shaping doctrine to respond to military developments in the armed forces of India's two principal rivals—China and Pakistan. Yet one must realise that any doctrine is just a piece of paper unless a country has the resources to successfully implement it. Also, a successful doctrine requires political will and, in the case of a middle power like India, a willingness for its neighbours and the great powers to accept the power projection component of the doctrine. In India's case, the armed forces are constrained by the country's developmental imperative which dictates that national resources be primarily directed towards social welfare. As a consequence, some of the more ambitious doctrinal aspirations of the armed forces are more of a wish list and less of missions that can be actually operationalised.

India's security challenges range from the traditional to the unconventional, and countering them requires different tactics and weaponry. Most prominently, there is the two-front conventional threat posed by Pakistan and China. Both the IAF and IN have tried to articulate a strategy to address this threat through service-specific doctrinal statements.[5] Unfortunately, these are not fully matched by commitment of resources and political will.

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[5] Apart from conventional war fighting, the Indian Air Force and Navy have the responsibility of maintaining two legs of the nuclear triad that serves as the India's nuclear deterrent. This task consumes resources allocated to the two services and their resultant force postures. In addition, the IAF assists in counter-terrorism operations and combatting the proxy war emerging from Pakistan. For a greater discussion on these tasks see Amit Gupta, "India's Third Tier Nuclear State Dilemma: N plus 20?," *Asian Survey* 46, No. 1 (2001), pp. 1053-1055.; Amit Gupta, "The Versatility of Drones (Sorry UAVs)," *Geopolitics India,* August 2021, pp. 10-15; and Amit Gupta, "Building up the Indian Air Force: Can the US Help?," in *Enduring and Emerging Issues in South Asian Security, eds.* Dinshaw Mistry and Sumit Ganguly (Washington D.C.: Brookings Institution Press, 2022), pp. 133-147.

The Indian Air Force: Role and Limits of Doctrine

The IAF's doctrine is based on countering the threats posed by China and Pakistan in both the conventional and nuclear realms and more recently, carrying out operations in the sub-conventional realm. Along with these missions, the IAF has successfully carried out Military Operations Other than War (MOOW) by evacuating civilians from conflict-ridden zones like Iraq and Ukraine. Additionally, as an air force operating in a global environment, the 2022 doctrine of the IAF now declares that the service is an aerospace power since it has one dedicated satellite and is expected to get more space-based assets to fulfil its ambitions.[6] As discussed in the succeeding paragraphs, however, the service is a long way away from being an aerospace power.

Doctrine has also been shaped by the organisational culture of the IAF which has historically sought manned combat aircraft to carry out traditional roles such as strategic interdiction, air combat, and to a lesser degree, close air support. In that sense, the IAF is not different from other air forces which also favour manned aircraft engaging in air superiority missions rather than providing close air support to land forces. Air forces are not enthusiastic about supporting the acquisition of unmanned aircraft for combat missions.[7] Thus, the IAF doctrine handbook predictably suggests that on a sliding scale, an air force should seek air supremacy, air superiority, and favourable air situations with the preference being for supremacy.[8]

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[7] The United States Air Force, for instance was not in favor of building up a drone force and, instead, wanted to purchase more F-22 Raptors and F-35 Lightnings. The USAF also argued that people joined the air force to fly planes and drones had no pilot. For a discussion of USAF resistance to drones see, Robert M. Gates, Duty: Memoir of a Secretary at War (New York: Alfred A. Knopf, 2014), p. 128. The CIA, on the other hand, bought off-the-shelf drones and used them successfully to carry out surveillance and the targeting of terrorists in Iraq, Afghanistan, and along the Af-Pak border, see Amit Gupta, "The Versatility of Drones (Sorry UAVs)," *Geopolitics India,* August 2021, pp. 10-15.

[8] Doctrine of the Indian Air Force, IAP 2000-2022, pp. 46-50

The second tier of missions lie around providing close air support to the Navy and the Army while recognising that the two other services have organic air capabilities to defend their assets. While the Air Force places these missions as a lower priority, they are actually the ones that would enhance India's warfighting capability and help achieve the country's strategic objectives. India is not a revisionist state seeking to conquer territory, and despite the country's claims to Aksai Chin and Pakistan Occupied Kashmir, New Delhi seeks a diplomatic solution to these disputes (unlike China which has shown willingness to use force to resolve the Taiwan dispute). If India is not an irredentist state, its military objective is deterrence. In that case, providing close air support to the Army is the most important mission for the IAF. It can also be argued that strategic bombing of Sargodha or Chinese positions deep in Tibet could lead to a high casualty rate that would hurt the overall military effort.

Further, in recent years, Indian officers have been attending War College and Command and Staff College in the United States and their studies there have reflected the way doctrine has been written by both the IN and the IAF. The IAF doctrine of 2022 is not a doctrine like those of Western nations because it does not talk about what forces to employ, in what situations, and how to employ them. Instead, it is a treatise that essentially puts together a 'laundry list' of what can be done with air power, but it does not explain how that will enhance grand strategy.

Thus, the doctrine speaks of using air power to secure the country's grand strategic objectives although it does not convincingly show the link between the two. It also talks about how air power can be broken down into Air Supremacy, Air Superiority, and Favourable Air Situations. While all this is impressive, in reality, they are not backed by the needed force modernisation or the political will to fulfil these tasks.

In terms of force modernisation, the IAF has a sanctioned strength of 42 squadrons but it is currently around 31 squadrons and, therefore, unable to commit to a full coverage of a two-front war or to acquire air superiority or air supremacy. Further, of these 31 squadrons, two are meant for nuclear strikes, leaving 29 combat squadrons to conduct air

superiority, counter-air missions, and battlefield air strike missions—and this would certainly stretch its capabilities thin.

In the short to medium term, neither indigenous arms production efforts nor the import of aircraft will alleviate this problem for the IAF. At present, the IAF's requirement for 114 fighters has not led to the selection of an aircraft, let alone initiating the long, tortuous negotiations that are the hallmark of Indian arms procurement efforts.[9] It is unlikely that any deal will be signed before the 2024 elections because of the government's fear that the opposition could raise charges of corruption (as was the case with the Rafale deal in 2019[10]). A purchase may happen only in late 2024, with aircraft entering service in 2025 at the earliest.

Nor is domestic production going to meet all the requirements of the IAF. Till 2023, Hindustan Aeronautics Limited (HAL) was manufacturing eight aircraft a year even though claims were made that it could easily ramp up to build 16.[11] Such a claim will have to be borne out by evidence that HAL can meet the demand to provide 123 Tejas to the IAF by 2029 (with Tejas Mark 2 coming into production in 2030). HAL has stated that it will deliver the first three Tejas Mark 1a by March 2024 and the remaining 80 by 2029. It has opened up a third production line for the aircraft, which is likely to see an increase in the number of planes delivered annually, although by how much is still a matter of conjecture.[12]

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[9] For a discussion of the lengthy delays in arms acquisition and the pathologies of the Indian weapons production process see, Amit Gupta, "Techno-nationalism vs. techno globalization: India's military acquisitions and arms production dilemma," *Comparative Strategy 41,* No. 2 (2022), pp. 212–228.

[10] Manasi Gopalakrihnan, "India's Controversial Rafale Deal," *DW,* February 13, 2019, India's controversial Rafale deal with France – DW – 02/13/2019.

[11] Rajat Pandit, "India can scale up production of Tejas fighters for operational needs and exports," *The Times of India,* September 26, 2022, https://timesofindia.indiatimes. com/india/can-scale-up-output-of-tejas-fighters-for-exports-operational-needs-say-officials/ articleshow/94440646.cms

[12] Ujjwal Shrotryia, "LCA Tejas Mk-1A Production Set to Increase From 16 To 24 Every Year, As HAL Unveils New Assembly Line," *Swarajya,* April 7, 2023, https://swarajyamag. com/defence/lca-tejas-mk-1a-production-set-to-increase-from-16-to-24-every-year-as-hal- unveils-new-assembly-line#:~:text=Hindustan%20Aeronautics%20Limited%20(HAL)%20 has,of%20HAL%20CMD%2C%20B%20AnanthaKrishnan.

The Parliament's Standing Committee on Defence has raised the alarm about falling squadron numbers and recommended that "the government should consider buying state-of-the-art fifth-generation fighter aircraft over the counter without losing time to keep the force in a comfortable position."[13] While such a recommendation is welcome, it would require a change in the mindset of the government to go about a rapid procurement of aircraft. In the meantime, temporary measures can be taken to alleviate the shortage of operational squadrons.

Such a shortage could be offset by weaponising the 123 Hawk jet trainers to be used for close air support, especially in the Himalayas where fast-moving jets are at a disadvantage. The Hawk, being sub-sonic, is more manoeuvrable and better able to pick up targets in the mountains. If 80-odd planes are weaponised, they would add to the lethality of the IAF and, more importantly, provide a cheaper and quicker alternative to acquiring new dedicated strike aircraft through a tender (which as seen below can take over a decade to come to fruition).

Not only is the shortage in numbers a problem, but the IAF has also worked at a slow pace to build up the electronic warfare and precision guided capabilities of the force. The service has only five Airborne Warning and Control Systems (AWACS) and while more have been ordered, it will take a few years to bring the systems into service. Till then, China and Pakistan are likely to have an advantage in the realm of airborne early warning. Pakistan has seven SAAB airborne early warning systems along with four Chinese supplied AWACS, giving it sufficient coverage along the Indian border, while India will have to divide its AWACS force along both borders with Pakistan and China. In the aftermath of Balakot, the IAF sought two additional Israeli Phalcon AWACS along with the more indigenously produced Netra, but there has been no movement as yet on the acquisition.

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[13] Manish Kumar Jha, "Why delay fighter jets for IAF, says the Parliamentary Committee on Defence," *Financial Express,* March 22, 2023, https://www.financialexpress.com/business/defence-why-delay-the-fighter-jets-for-the-iaf-says-the-parliamentary-committee-on-defence-3019056/.

The other problem for the IAF lies in whether it has enough precision air-to-air and air-to-surface munitions to successfully take on the two air forces. Balakot and its aftermath showed several problems with the weapons inventory of the IAF. The IAF was 'out-missiled' by the Pakistani Air Force (PAF) which possessed the Advanced Medium Range Air to Air Missile (AMRAAM) that had greater range than anything in the Indian inventory. It has also been reported that the imprecise calibration of the SPICE-2000 bombs led to some missing their targets in the Balakot strike.[14] More worryingly, the PAF was able to jam radio communications between IAF planes and their ground controllers while also forcing them to take preventive manoeuvres against PAF missiles and not launch their own weaponry.

Since Balakot, the IAF has acquired the Scalp air-to-surface cruise missile giving it a better ability to hit ground targets. It has also purchased the Meteor missile which has a greater range than Pakistan's American-supplied AMRAAMs and allow better beyond visual range targeting for the IAF.

In the case of China, the IAF needs to be reconfigured to deal with the evolution of the People's Liberation Army Air Force (PLAAF). The PLAAF, over the past two decades, has undertaken a broad-based modernisation programme that has led to the induction of new fighters, airborne early warning aircraft, electronic jamming planes, surface-to-air missiles, space-based assets, and aerial refuelling aircraft. More importantly, the PLAAF has now acquired a new generation of air-to-land cruise missiles, as well as longer range air-to-air missiles that have substantially upgraded its capabilities.

China has focused on the development of precision guided and standoff weapons, as can be seen with the growth in the country's bomber force. The H-6K bomber armed with six Land Attack Cruise Missiles

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[14] Marcus Hellyer, Nathan Ruser and Aakriti Bachhawat, "India's Strike on Balakot: A Very Precise Miss?," *The Strategist,* ASPI Canberra, March 27, 2019, https://www.aspistrategist.org.au/indias-strike-on-balakot-a-very-precise-miss/.

(LACM) can precision-attack targets in the second island chains from the home airfields.[15] These developments go against the assumptions that the IAF has made about Chinese capabilities in Tibet, most notably that operations from high altitudes would limit the weapon-carrying capacity of Chinese combat aircraft. Chinese aircraft now have a standoff capability coupled with air-to-air refuelling that allows them to operate from airfields at lower altitudes with full weapons loads.

Apart from its growing offensive capabilities, China has also fielded an impressive defensive network of air defences, guided artillery, rockets, and missiles. The integrated and mobile nature of China's defences pose a significant challenge for the IAF. The IAF lacks accurate targeting information required to locate and destroy these defensive platforms. To acquire this information, the IAF would need to field a network of sensors by linking drones, satellites and other communication and surveillance systems. However, India is yet to fully develop such a networked system.

To sum up, the IAF, since Balakot, is building its stores of weaponry to be able to provide support to the Army and undertake some missions in the realm of air superiority and interdiction. The more ambitious plans, however, remain on paper because the systems required for them have yet to be inducted. The fact that the plans have not fructified brings out the hollowness of the IAF's 2022 doctrine.

Developments Post-Balakot

As mentioned earlier, the IAF doctrine is essentially about what forces to use, and how, in the pursuit of its grand strategy. For doctrine to be effective, it must be backed by political will and allocation of sufficient resources to build the necessary force structure. There is a crucial difference between a declared policy and the actual action policy of a force. In the case of the IAF, there is a gap between the two.

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[15] US Department of Defense, *Military and Security Developments Involving the People's Republic of China 2022,* p. 80.

The 2022 doctrine states that the IAF is an "aerospace power", suggesting that the service has the ability to avail of space-based assets. Events post-Balakot would suggest, however, that the IAF is making an overly optimistic assertion.

After Balakot, India was unable to convince the international community that it had successfully destroyed a terrorist facility.[16] As an aerospace power, the IAF should have been able to provide the satellite imagery to augment the claim. Further, reports have now emerged that the United States (US) has been providing satellite imagery to India to help monitor the Sino-Indian border.[17] Depending on the US for satellite imagery does not make the IAF an aerospace power and, more importantly, it leaves India at the mercy of American goodwill in future crises. To become a true aerospace power, India will have to invest in a much broader space-based capability of both satellites and a credible anti-satellite capability. Again, while India has successfully conducted an anti-satellite test, it has a long way to go to have a space-based force that can destroy Chinese assets. Like much of Indian security planning, building space capabilities is not a pressing necessity but rather another case of tardy weaponisation.

The Indian Navy

As the smallest of the three services, the Navy has for long had a coherent strategic vision of what kind of force structure it would like and how it would employ it. In the 1960s, for example, Admiral A.K. Chatterjee wrote about India's need for four aircraft carriers, so that it could effectively patrol its extensive maritime domain, but the

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[16] Hellyer, Ruser and Bachhawat, "India's Strike on Balakot: A Very Precise Miss?"

[17] "Pentagon provided real-time intelligence to Indian Army on India-China 2022 border clash, White House says "Can't confirm that"," *The Economic Times,* March 21, 2023, https://economictimes.indiatimes.com/news/defence/cant-confirm-that-white-house-on-report-that-us-provided-intelligence-to-indian-military-to-repel-chinese-incursion/articleshow/98854862.cms.

government struck down the proposal, deeming it as having imperialist connotations.[18] Since then, however, the Navy has acquired a carrier fleet, built surface vessels indigenously, and is now slowly constructing a nuclear submarine fleet. It has stated that on the western maritime flank, its Area of Responsibility (AOR) stretches from the western Arabian Sea to the Cape of Good Hope. On the eastern flank, the AOR primarily extends up to the Strait of Malacca.

While Indian naval doctrine discusses sea control, in reality, it is the US Navy that has sea control in the Indian Ocean. Where the IN has successfully projected power, it has been in operations conducted in a cooperative context. It has performed well in the anti-piracy coalition in the Western Indian Ocean and has forged a good working relationship with the navies of East and South Africa—in 2004, the IN provided maritime security for the African Union meeting in Mozambique.

Sea control is possible against Pakistan since India's current fleet of carriers, submarines, and anti-ship and land attack weapons would be a formidable challenge to the Pakistan Navy. This would also be important to India in terms of a two-front war where blocking Pakistani shipping and oil supplies could significantly hamper Islamabad's war efforts. The strike capability of the IN will also be useful to carry out sub-conventional operations against sensitive coastal targets.

While the IN can maintain sea control against Pakistan, China is a different matter altogether. China's navy has rapidly inducted a new generation of cruise and anti-shipping missiles which, when guided by Chinese satellites, become formidable weapons in the hands of the People's Liberation Army Navy. Indeed, this growth in Chinese naval capability has pushed the US armed forces to the second island chain in the Western Pacific. For the IN, therefore, the emphasis must be on sea-denial which comes from its submarine force, acquisition of anti-

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18 Amit Gupta, *Building an Arsenal: The Evolution of Regional Power Force Structures* (Westport CT. and London, Praeger, 1997), p. 184.

shipping and cruise missiles, as well as the Reaper drones, with which it has been seeking to increase maritime surveillance and strike capability.

Submarines, both nuclear and conventional, are key to maintaining sea-denial against China, and that will require the timely induction of a new submarine under the P75 (I) programme as well as the building of follow-on boats to the Arighat nuclear vessel. The problem with developing the submarine force is much the same as that for the rest of India's military acquisition efforts – the glacial pace of the Indian arms acquisition process.

Only two vendors are now left bidding for the P75 (I) deal—Germany and South Korea—as the Swedish, Russian, and French companies have all withdrawn, blaming the unrealistic expectations cited in the Indian tender.[19] The government will likely have to either rewrite the tender or, as in the case of the Rafale, go in for a direct purchase from a foreign vendor. Similarly, the indigenous nuclear submarine programme progresses slowly, with the third ship now launched but a long way from being commissioned.[20] There are also reports that the government, due to escalating costs, will scrap the plan to build six nuclear subs and cap the programme at three vessels.[21] If that happens, the Navy will not have a two-sea blue water (Arabian Sea and Bay of Bengal) nuclear fleet that can be put to sea for long periods. The rule of thumb about submarines on patrol is that one is in the dock undergoing maintenance, one is getting ready to be deployed, while one is at sea. The IN would thus generally have only one nuclear submarine at sea at any given point, making its claim of being a blue water navy a farfetched one.

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[19] "Germany's Scholz arrives in India to 'deepen' ties," *DW.com,* February 25, 2023, https://www.dw.com/en/germanys-scholz-arrives-in-india-to-deepen-ties/a-64817778.

[20] Rahul Bedi, "India Quietly Launches Third Arihant-Class Nuclear-Powered Submarine: Report," *The Wire,* December 30, 2021, https://thewire.in/security/india-quietly-launches-its-third-arihant-class-nuclear-powered-submarine-report.

[21] Ajeyo Basu, "Not 6, now India to buy only 3 nuclear submarines as cost escalates," *Firstpost,* March 17, 2023, https://www.firstpost.com/world/not-6-now-india-to-buy-only-3-nuclear-submarines-as-cost-escalates-12308242.html.

The naval missile programme also continues to move slowly towards developing the missiles needed to ensure a second-strike capability against China. To arm three vessels with a full complement of strategic nuclear missiles, given the Defence and Research Development Organisation's (DRDO) slow progress in developing strategic missiles, may take until the next decade. Nor is it clear what the accuracy levels of the indigenously produced missiles will be. There will be incremental progress towards the development of a credible naval nuclear deterrent, but as things stand this segment of the naval force is a long way from being used operationally.[22]

Lastly, the power projection required for a blue water force comes from aircraft carriers. Here, the IN's ambitions have been curtailed by budgetary realities. Rather than getting a supercarrier that can be used for expeditionary purposes, the Navy has agreed to a smaller carrier fitting into the same tonnage as the *INS Vikrant.* ORF analyst, Abhijit Singh, has pointed out the IN's compulsion for agreeing to a smaller and less capable carrier, due to budgetary constraints, and the military constraints it imposes:

"The problem with a light carrier is that it isn't fit for purpose in today's complex and contested maritime environment. In wartime conditions, a small carrier is constrained in its operations, particularly when faced with the adversary's anti-access, anti-denial systems."[23]

A fleet of smaller aircraft carriers, therefore, while giving greater firepower against Pakistan, is less useful for power projection over long distances against China. Indeed, such a carrier fleet would be vulnerable to Chinese anti-shipping missile attacks.

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[22] For a discussion of the capabilities and limitations of India's nuclear force and the constraints on the development of the naval missile force see, Hans M. Kristensen and Matt Korda, "Indian nuclear weapons," *Bulletin of the Atomic Scientists* 78, NO. 4 (2022), 224–236.

[23] Abhijit Singh, "The Indian Navy's aircraft carrier dilemma," *The Interpreter,* March 13, 2023.

The Navy is, however, strengthening its sea-denial capabilities by building frigates and getting ships to carry out shallow water anti-submarine warfare. To summarise, the Navy can project power in distant parts of the Indian Ocean in cooperation (or with the permission) of friendly nations; it will be able to maintain Sea Control in a conflict with Pakistan and, despite doctrinal statement of Maritime Domain Awareness and sea control, in the case of China, it has the force structure to provide sea denial against Chinese naval forces.

In conclusion, the Navy can deter realistic threats that it is likely to face but broader operations in the Indian Ocean region would require the blessing of the littoral states and that of the most powerful navy in the region, the US Navy. Similarly, the IAF works best when it is focused on the need to support forces in battlefield air superiority situations and in carrying out close air support missions. Given the drawdown of the Air Force over the past decade, overall air supremacy and air superiority will not be clear-cut against Pakistan and unlikely to happen against China. This brings up the issue of whether the military can effectively force-multiply by putting together integrated commands.

Integrated Commands and 'Jointness': A Footnote

'Jointness' and integrated commands save costs and lead to a more effective force structure and combat capability. Achieving jointness, however, takes time because it requires military forces to move away from their organisational cultures and to limit the imperatives of bureaucratic politics, since the latter require promoting institutional interests over those of a unified force structure. In the US, it took nearly two decades after the decision to attempt jointness to get the kind of integrated capability that was witnessed in the first Gulf War. By the time of the terrorist attacks of September 11, 2001, jointness in the US armed forces had grown exponentially. In India, the Integrated Defence Staff was set up only in 2001 and it has naturally taken time to do the necessary planning for integrated commands.

Getting the commands through will take time since the IAF views the creation of these commands as relegating it to a supporting role rather than an independent service.[24] It will also require a joint plan for weapons acquisition for each theatre – only this will allow for a synergy of effort between the three services. Given the glacial pace of Indian decision-making, it may well take up to a decade for effective theatre commands to emerge.

The other problem lies in creating the right mindset for jointness among the three services. The senior leadership of the services has made the argument that since all three services send their officer cadets to the National Defence Academy, they have the informal connections that permit jointness. This sort of hubris is belied by the actual functioning of the three services: during the Kargil war, it took the Army 20 days to ask the IAF to intervene in the conflict. Weapons procurement is only now being thought of in joint terms, as can be seen by the initiative to acquire Reaper drones for the three services. The Navy and the Air Force could have, but have not, agreed to the procurement of a common combat aircraft. Despite the indications post-Galwan, none of the three services have changed their doctrines to coordinate with the other two.

Much has been made of how, post-Galwan, Indian Navy P-8s were brought inland, since their sensors permitted the surveillance of the Himalayan region.[25] This sort of tactical use is carried out by militaries around the world in conflicts, but it does not mean that there has been an evolution of doctrine.

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[25] "Indian Air Force Not Opposed to Theaterisation, Wants to Ensure Its Doctrine Isn't Compromised: IAF Chief," *Outlook India,* October 4. 2022, https://www.outlookindia.com/national/indian-air-force-not-opposed-to-theaterisation-wants-to-ensure-its-doctrine-is-not-compromised-iaf-chief-news-227632.

[26] Prakhar Gupta, "Explained: Why A P-8I Aircraft of The Indian Navy Was Seen Flying Towards Ladakh Amid India-China Standoff," *Swarajya,* June 18, 2020, https://swarajyamag.com/defence/explained-why-a-p-8i-aircraft-of-the-indian-navy-was-seen-flying-towards-ladakh-amid-india-china-standoff.

In conflict, militaries will temporarily use the weapons and capabilities of other services, but that does not mean integration has taken place. In 1942, the US Air Force (USAF) launched B-25 bombers off aircraft carriers to bomb Tokyo. However, since then, no USAF aircraft has been launched from a carrier to carry out combat missions. In the Falklands conflict of 1982, Royal Air Force Harriers were launched off British flat-decks, but this did not lead to the RAF and Royal Navy building an integrated force structure. Similarly, following the attacks of September 11, 2001, the US Chief of Naval Operations offered up every asset of the Navy including SEAL Team 6 to fight the war on terror, and Navy electronic warfare officers were used to disarm improvised explosive devices (IEDs) in Iraq (leading the Navy to suffer more casualties in a land war than the USAF). This does not mean that the US Navy has become a land-oriented force with the planning and force structure to reflect such a change.

In the Indian case, using the Navy P-8s along the border in the aftermath of Galwan was a temporary fix for meeting a specific challenge. The IAF has no plans to use naval aircraft to increase its Intelligence, Surveillance and Reconnaissance (ISR) capability along the northern border. Except in a crisis or in a full-blown conflict, these assets would be needed by the Navy to carry out its own war plans. Instead, the IAF wants more Phalcon and Netra AWACS to augment its airborne early warning capability. What then would be the best way in the short to medium term, to deal with a two-front war?

Conclusion

The answer lies in timely procurement, a steady move towards jointness, and a clear statement of missions and objectives that eschews a fantasy list of missions and weapons. The IAF should be buying weapons, spares, and ammunition to fulfil its supporting role to the Army while the long-term plan to build an aerospace force can proceed incrementally. For all three services, the first step to jointness is a commonality in weapons procurement. As for the Navy, it should concentrate on sea denial and cooperative security, since these are the areas where in the first case it can inflict damage and in the second, successfully engage in maritime diplomacy and influence. If the country has to prepare for a crisis in the short term, it can ill afford to build its forces incrementally.

For doctrine to be effective, it must be backed by political will and allocation of sufficient resources to build the necessary force structure.

II
INSTITUTIONAL REFORMS

Deepening Defence Reforms in India

Sanjay Mitra

Introduction

THE APPOINTMENT OF THE CHIEF OF DEFENCE STAFF (CDS) and the creation of the Department of Military Affairs (DMA) in 2019, followed by the corporatisation of the ordnance factories and an explicit emphasis on indigenous defence equipment in 2021, are significant reforms and have rightly attracted the attention of scholars.

Starting with the evolution of the DMA and the principles guiding the appointment of the CDS and the formation of theatre commands, India's strategic community is currently debating issues such as the emerging role of the CDS, the DMA and that of civilians within the new structures; the possibility of further reforms and whether the reforms of 2019 fully addressed the tensions that previously characterised civil-military relations in India. This essay explores some of these current debates and identifies certain issues that require further examination and action.

Recent Defence Reforms

CDS and DMA

The recent reforms may appear to go far beyond any other reform measure proposed or even contemplated in the past decades. Closer scrutiny, however, reveals that they evolved from the basic political decision to appoint a CDS and to move away from an import-dependent regime. In the absence of any official inputs, there have been several attempts to second-guess the sources of these reform measures. Perhaps the best account is by Col. Vivek Chadha of the Institute for Defence Studies and Analysis, who notes that the CDS was necessary to "provide single-point military advice in consultation with the Service Chiefs…[to]administer the strategic forces…[and] bring greater efficiency and effectiveness by ensuring inter-service prioritisation of the defence planning process….the CDS was [also] required to ensure the necessary inter-services jointness amongst the services."[1]

Thus, the critical political decision to go beyond the Permanent Chairman of the Chiefs of Staff Committee and appoint a CDS instead was the key element of reform. This was in response to a demand from the armed forces that goes back a long way, to the days immediately following the abolition of the position post-1947. To be effective and hit the ground running, a reform measure should also find resonance among the wider audience. Seen in this context, a crisp, clear designation like the CDS would make far more sense than the somewhat less inspiring PCCSC (Permanent Chairman of the Chiefs of Staff Committee).

Having done so, it would then have been logical to assign a wider role to the position. The sustained demand to make the armed forces a formal, direct part of the decision-making process would have been provided as the basis for the creation of the DMA, where the armed forces would interact directly with the political executive. The Indian

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[1] Vivek Chadha, *CDS and Beyond: Integration of the Indian Armed Forces* (New Delhi: Knowledge World, 2021), p. 13.

governance structure provides for two entities—the Minister and the Secretary. Any entity other than these would remain on the periphery and run the risk of being marginalised. Thus, the DMA would have to be headed by an officer of the armed forces. It would have to be the CDS. Protocol-oriented ideas like a Vice CDS to act as Secretary would have left the CDS out of the formal decision loop, unless of course, the rules of business were creatively re-engineered to bring in a category other than the Minister and the Secretary.

Precedents exist for such change. For instance, Chairpersons of the Railway Board are ex-officio Principal Secretaries (instead of simply Secretary). In the 1970s, India even had a Principal Defence Secretary. Done more to assuage egos and address protocol issues, these appellations added little in terms of substance. Similarly, in the late 1980s, the Telecom department, Minister Sam Pitroda, chose to assume the formal powers of the Chairman, Telecom Commission, exercised earlier by the Secretary of the department. In India, the assumption of formal ministerial powers by an officer, uniformed or otherwise, would clearly be unacceptable. Therefore, for the CDS to be a Secretary to the Government was the obvious and logical choice.

While the appointment of a CDS has been critical to reform India's higher defence organisation, it is necessary to strengthen the position. Under the current system, the CDS draws their powers from the allocation of business rules by the government and not through legislation. The Supreme Court order of March 2023, setting out a collegium consisting of the Prime Minister, the Leader of Opposition and the Chief Justice of the Supreme Court to select the Chief Election Commissioner, one of India's most important constitutional functionaries—could suggest a similar mechanism for the CDS.[2] Going forward, the CDS is likely to become one of India's most important constitutional functionaries, on

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[2] "Supreme Court Directs Appointment Of Election Commissioners On Advise Of Committee Comprising Prime Minister, Leader Of Opposition And CJI," *Livelaw,* March 2, 2023, https://www.livelaw.in/top-stories/supreme-court-election-commissioner-prime-minister-leader-of-opposition-and-cji-222872.

a par with the Election Commissioner or the Comptroller and Auditor General. Even though the CDS is supposed to be the *primus inter pares* among the four-star officers, unlike them, his appointment and terms of service are presently determined through subordinate legislation.[3] On the other hand, the service chiefs draw sustenance from their respective service laws. For example, Section 3 (iv) of the Army Act specifically states that "Chief of the Army Staff" means the officer commanding the regular Army; Section 3(2) of the Navy Act provides that "Chief of the Naval Staff" means the flag officer appointed by the President as Chief of the Naval Staff, while "Chief of the Air Staff" means the officer commanding the Air Force in terms of Section 4 (xiv) of the Air Force Act.

One way forward could be a separate enactment on the lines of the Comptroller and Auditor General (Duties, Powers, and Conditions of Service) Act, 1971 that among other things, lays down the requirements of a similar collegium designed to ensure bipartisan political support for the selection of the CDS.

Jointness

It was felt, quite rightly, that reforms should organically emerge from within the services and thereafter also be driven by them. Thus the mandate of the DMA that includes the "facilitation of restructuring of Military Commands for optimal utilisation of resources by bringing about jointness in operations, including through establishment of joint/theatre commands."[4] The principle of jointness imbibed within the armed forces would allow the services, through the CDS, to more effectively plan for wartime and military contingencies by integrating their efforts better towards a common cause.

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[3] "Gazette Notification - Chief of Defence Staff - Office, Tenure, Retirement Age etc.," *StaffNews,* January 10, 2023, https://www.staffnews.in/2020/01/gazette-notification-chief-of-defence-staff-office-tenure-retirement-age-etc.html.

[4] "Creation of New Department of Military Affairs," *Press Information Bureau,* February 3, 2020, https://pib.gov.in/PressReleasePage.aspx?PRID=1601813.

In India, the question of final operational control over the theatre commands in a conflict situation is yet to be appropriately framed. As things stand, the CDS is not expected to exercise operational control. However, the range of powers and responsibilities formally conferred upon the CDS will, in time, likely tend to concentrate effective powers and reduce the roles of the service chiefs. This structure is similar to the one already adopted in the US in the 1980s. Despite years of experience, issues continue to persist in the US system and is causing concern. Indeed, the late Senator John McCain, a distinguished former soldier, had initiated a review as far back as 2015, covering the implementation of the Goldwater-Nichols Act.[5] In the US, questions remain over how much power is to be given to the Chairman of the Joint Chiefs of Staff and whether the Chairman is able to adequately conduct inter-service planning. Ultimately, as in any democracy, civilian control of the military is paramount.[6]

For now, India's reforms are broadly modelled on the reforms in the US and China, where theatre commanders report to the President through the Secretary of Defense (or the Central Military Commission, in the case of China). However, there is no model yet more suited to India's Westminster system, keeping in view the need to ensure overall civilian operational control. As noted in a background brief to the Parliament, "the option that deserves greater deliberation is either a de-facto delegation of command responsibility by the CCS to the Chairman COSC along with other members of the COSC, or a de jure delegation of command authority over theatre commands."[7] Given that the discourse

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[5] Colin Clark, "McCain Launches Goldwater-Nichols Review; How Far Will He Go?," *Breaking Defense,* March 26, 2015, https://breakingdefense.com/2015/03/mccain-launches-goldwater-nichols-review-how-far-will-he-go/.

[6] See Mark F. Cancian, "Goldwater-Nichols 2.0," CSIS, March 4, 2016, https://www.csis.org/analysis/goldwater-nichols-20; "Reflections: Keep America's Top Military Officer Out of the Chain of Command," *CSIS,* March 21, 2016, https://www.csis.org/analysis/reflections-keep-americas-top-military-officer-out-chain-command-0.

[7] Vivek Chadha, "Integration of the Armed Forces: Background and Current Status," Background Note, LARRDIS NO.MP-IDSA/8/2022, Research and Information Division, Lok Sabha Secretariat, July 2022, https://parliamentlibraryindia.nic.in/lcwing/Integration%20of%20the%20Armed%20forces.pdf.

on such aspects of theatre commands has largely remained out of the public eye, it is difficult to clearly foresee the issues that could arise and spell out civilian concerns. One can only hope that the contours, purpose, and benefits of theaterisation are appropriately placed in the public domain and discussed in the Cabinet and the Parliament.

New Initiatives

While these issues continue to be deliberated at the highest levels of government, the Ministry of Defence and the military have initiated several reforms to further jointness and integration between the services. In the absence of public information from the MoD, one could rely on the reports of the Parliamentary Standing Committees. Unfortunately, these tend to focus, quite rightly so, on the financial and budgetary aspects and cover other policy matters to a much lesser extent. The year-end review of the activities of the MoD, which in some ways is an abridged version of the Ministry's annual report, does provide some important insights on certain initiatives. These include efforts to implement jointness at least in some areas of the Indian military, formulation of joint training procedures, and improving the tooth-to-tail ratio of the Indian military.[8]

The defence establishment has initiated studies on the creation of Theatre Commands as well as formulation of three Joint Doctrines and commencement of work on four new joint doctrines—namely, Capstone, Space, Cyber, and Intelligence Surveillance and Reconnaissance (ISR). The Indian Army has also moved ahead with restructuring of all units on the Integrated Battle Groups (IBG) concept. Progress thus far has been made in the establishment of a Joint Services Study Groups (JSSG) to develop common logistic policies and establishment of Joint Logistic Nodes (JLN) each at Mumbai, Guwahati, and Port Blair. The closure and scaling down of more than 270 logistic installations of the Indian Army

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8   "Year End Review – 2021 of Ministry of Defence," *Press Information Bureau,* December 31, 2021, https://pib.gov.in/PressReleasePage.aspx?PRID=1786640. ; "Ministry Of Defence - Year End Review 2022," *Press Information Bureau,* December 17, 2022, https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1884353#:~:text=Defence%20exports%3A%20Due%20 to%20the,equipment%20to%20over%2075%20countries.

to ensure savings and increase the tooth-to-tail ratio. A review of the training methodology has been undertaken and ten subjects have been fixed for conducting joint training among the three services. Of these, joint training has already started in five areas.

The Government of India also launched the Agnipath scheme for recruitment of youth (Agniveers) in the Armed Forces for a four-year term. This was done to enable a youthful profile of the Armed Forces and make the military more tech-savvy. To this end, the Indian military and Ministry of Defence have moved ahead with the preparation and promulgation of Basic Military Training Policy governing the lower training requirements of Agniveers.

The Focus on Indigenisation

The DMA is specifically charged with "promoting use of indigenous equipment by the services."[9] This emphasis on indigenous capabilities makes it imperative to consider defence procurement as one crucial area where further reforms could be considered. The foremost critique of the civilian bureaucracy has been its management of a tardy procurement process and the deleterious impact this has had on Indian military capabilities and preparedness. The bureaucracy's lack of expertise in military affairs and its pusillanimity in expediting equipment purchases are the thrust of this criticism. This situation will continue in the post-DMA era since procurement continues to remain with the Department of Defence (DOD).

In brief, initial steps in the acquisition process, starting with the Expression of Interest (EOI), preparation of the specifications (called 'qualitative requirements') and testing and trials at a later date, were (are) with the military. The actual price negotiations and the contracting are done by the Acquisitions Directorate headed by a senior civilian and

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[9] "Creation of New Department of Military Affairs," *Press Information Bureau,* February 3, 2020, https://pib.gov.in/PressReleasePage.aspx?PRID=1601813.

assisted by multi-disciplinary teams with officers of the rank of major general. Post-contract matters once again go back to the relevant arm of the military. By its nature, military procurement tends to be quite different from the usual government procurement process.That there is a separate government Standard Operating Procedure (SOP) governing defence acquisitions is proof enough. Though this SOP claims descent from the overarching government procurement regulations, the link is rather tenuous.

Military procurement is often single-source. In India, unlike almost all the major military powers, it has been import-intensive and of great commercial and political interest to the countries of origin. The latter often serves to drive a particular narrative that sadly seems to even spill over into academia and think tanks. The technology is largely proprietary, with little relevant material in the public domain. The inclusion of certain features specific to Indian conditions, probably arising out of military concerns on the capability front in most cases, further serves to narrow the field of prospective bidders and increase the chances of single-source procurement. It also makes it difficult to establish benchmarks with the purchase of similar equipment by other countries. Extensive trials and tough-testing requirements, over several seasons and across varying terrains, also tend to lengthen the timeframe for acquisitions. While this itself adds to delays, it also spaces out the final decision across multiple rotations of the procurement staff, leading to further delays as the new set grapples afresh with the details.

Civilians are more familiar with usual government procurement, which emphasises open bidding and common, comparable specifications based on open-source material that favours a wider pool of bidders. They find it difficult to come to terms with these differences, most of which tend to date back to the initial framing of the requirements.

The lack of expertise is not limited to the civilians. Top military appointments dealing with acquisition, except those seconded to the Acquisition Directorate, tended to see very rapid turnovers (except for the Navy which has had a definite placement policy), because of the

promotion and tenancy requirements. The military (again barring the Navy) do not have specialised organisations with cutting-edge expertise in procurement techniques. Even for a relatively simple item like an infantry assault rifle, it took a decisive Chief of Army Staff (COAS) to finally terminate the decade-long search for an elusive infantry weapon with "interchangeable barrels" in 2018.

Though the DMA's charter requires it to promote self-reliance and the use of indigenous equipment, absent direct procurement powers, this may then become dependent on inter-departmental coordination between the DMA, the department of defence production, and the department of defence. Under these circumstances, it would be logical to assign procurement powers to the DMA. The problem with this redistribution of functions is that absent a holistic re-look at the departmental responsibilities, it would leave precious little work for the Department of Defence and render it redundant.

Ongoing Challenges in Reforms

Civil-Military Relations and Dialogue

Traditionally, civil-military relations in India have been more about the relationship between the civil and military bureaucracies. The 2019 reforms have decisively accorded primacy to the uniformed forces, so the issue is no longer relevant. Insofar as relations of the military with the political executive is concerned, it is clear that between a subordinate and a superior, perhaps rendering irrelevant the entire issue of civil-military dialogue. The initial moves are all in this direction. The induction of women is a good example of reforms driven by the political executive, so is the "decolonisation" of ceremonies and simplification of protocol.[10] How the political executive will directly exercise control over the military in other matters, including those hitherto out of civilian

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[10] Sanju Verma, "Decolonising Bharat: The Modi Factor," *The Daily Guardian,* September 19, 2022, https://thedailyguardian.com/decolonising-bharat-the-modi-factor/.

bureaucratic purview, is yet to be firmed up. There has been some talk of strengthening the office of the minister. Unfortunately, under the present system, this office, being the final decision point, may find it difficult to formally record its views while participating in collegiate decision-making. There is also a limit on the size of a ministerial office. One can only wait and see.

It might have been easier for the late General Bipin Rawat, who had the added advantage of prolonged exposure to the senior civilian bureaucracy as Vice Chief and Chief of Army Staff, to chart out significant roles for the civilian bureaucracy at decision-making levels (Joint Secretary and above) in the immediate aftermath of the creation of the DMA. In government, contentious matters are best handled at the beginning, before departmental loyalties take root and harden. Such an effort will be much harder now. In case procurement does move to the DMA, the role of the civilian bureaucracy in the defence ministry will be peripheral at best and all civilian control over the armed forces will have to come from the political executive, whether from the defence minister or through the CCS. There is some talk of a committee to advise the defence minister where the civilian bureaucracy could be included. It is not likely to add much value since the civilians would have not had the benefit of participating in the deliberative process within the DMA before matters are put up to this committee for decision. There will likely be little progress in this matter, particularly when the utility of such a step is itself open to doubt.

There has been some talk about civil-military fusion.[11] To start with, the models, mostly based on non-democratic polities and emerging theocracies could be seen as inappropriate. It will also depend upon the appetite of the political class to move beyond the CDS and the DMA and accommodate further engagements. For example, it would be interesting to see how the politicians respond to the demands for more four-star positions to accommodate theatre commanders or a five-star

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[11] Cheung, T.M., *Innovate To Dominate, (Cornell University Press 2022).*

CDS,[12] a defence minister with a military background,[13] or for a role in governance outside the wider defence ministry, such as in foreign policy,[14] internal security or disaster management. The recent pullback on "fusion" discourse in China, where it seems to have been toned down in response to pressure and possible sanctions on "dual" entities, needs closer study.[15]

There has been a growing demand for a formal National Security Strategy by several perceptive commentators, including former army chiefs. Indeed, the emphasis on indigenisation and import restrictions could affect the capabilities of the armed forces and it would only be appropriate for the political executive to build it into the overall national vision. The transformative defence reforms also call for a fresh operational directive by the minister to the armed forces. The institutional mechanisms are now in place, namely the Defence Planning Committee (DPC) and the DMA. The DMA would be a natural launching platform for both. The DPC could bring in the "whole of government" perspective. However, in a quest for a "comprehensive strategy," commentators tend to ask for too much from strategy documents.

Well-meaning drafts proposed for the national security strategy tend to go beyond directly related fields into broader issues like economic security, energy security, food security, environment security and the like. In government, the wider the scope of a document, the higher the requirements of inter-ministerial consultations and with it the chances of

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[12] Raja Menon, "Why India's Theatre Commanders Will Have to Be Four-Star Officers," *The Wire,* March 12, 2023, https://thewire.in/security/why-indias-theatre-commander-will-have-to-be-a-four-star-officer.

[13] Prakash Menon, "A defence minister with military background — a risk India needs to take," *The Print,* May 4, 2021, https://theprint.in/opinion/a-defence-minister-with-military-background-a-risk-india-needs-to-take/651599/.

[14] Kamal Davar, "Military Diplomacy: A Vital Tool for Furthering National Interests," *Indian Defence Review,* April 17, 2018, http://www.indiandefencereview.com/news/military-diplomacy-a-vital-tool-for-furthering-national-interests/.

[15] Cheung, T.M. pp 140, 307

roadblocks. Police reforms are a great example. The fate of the draft police law, designed to replace the 1860 law, prepared by an eminent jurist, could provide a clue. Starting from the basic requirements of reforms like the bipartisan State Security Commission and the appointment of senior police officers, the draft then veers off over 150 sections into esoteric issues more relevant to the 19th century—bathing in public, defiling public sources of water, management of domestic animals like horses and ferocious dogs, cattle trespass and the regulation of kite-flying. A bare-bones type of law could perhaps work better. The lesson is that starting with a simple, clear, focused security strategy flowing out of the immediate challenges in the neighbourhood would do.

The emphasis on indigenisation and import restrictions could affect the capabilities of the armed forces and it would only be appropriate for the political executive to build it into the overall national vision and global positioning, based on inputs from the DMA.

Professional Military Education

Military Education and officers' training need immediate recasting. The Navy could provide some useful pointers given its long history of close association with the academia. Recent publications based on interviews with foreign trainees on the Wellington-based Defence Services and Staff College criticising the emphasis on "prior course knowledge," and pressure to conform ought to cause concern.[16] It does not really help that Pakistan's Quetta academy has also been tarred with the same brush.

There has been a strong emphasis on civil-military relations in the training material for cadets and mid-level officers. Now that the civil bureaucratic paradigm has changed and there is a direct connect to the political executive, this segment needs to be comprehensively reworked under civilian (political) oversight. Unless this is done quickly, cadets and

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[16] David O. Smith, *"The Wellington Experience: A study of attitudes and values within the Indian army,"* September 2020, https://www.stimson.org/wp-content/uploads/2020/09/TheWellingtonExperience-SA-100820-WEB.pdf

officers slated for leadership will continue to be exposed to fairly harsh assessments of the civilian sphere, that could be quite counterproductive.

The Diversity Challenge

There are other issues pertaining to military sociology that require reform. Starting in 2017, the elevation of two successive eminent public persons from hitherto disadvantaged communities to the position of the Supreme Commander of the Armed Forces calls for deeper introspection and sustained thinking from the armed forces about diversity in leadership. Women are starting to take more positions, though this development is due more to the courts and to determined efforts by a former minister than to any organic reforms push from within. In addition, there has not been enough discussion on leadership and poor representation from certain groups.

On the issue of composition of armed forces and underrepresentation of some groups, senior officers routinely ascribe it to a lack of interest. This may be partly true, but the overall response to the diversity issue is quite interesting. The current conversation rightly emphasises the open, merit-based recruitment and strongly secular character of the army on one hand, but on the other, seems to suggest that the data collection process may by itself be detrimental to the ethos and morale of soldiers.[17] Notwithstanding all this, it could do India well to pay closer attention to the issues highlighted in an unusually frank and perceptive piece by an eminent former soldier.[18] Since there can be no issues concerning competence, suitability, motivation and patriotic fervor, it might be difficult to disagree with the view that "the question

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[17] Shekhar Gupta, "Kitney Mussalman hain: Why I thought Sachar Committee asking Army this was an abomination," *The Print,* October 6, 2018, https://theprint.in/opinion/nobody-has-accused-an-indian-muslim-soldier-of-deserting-or-showing-cowardice/130417/; Sandeep Unnithan and Neeraj Mishra, "Sachar Committee: Congress minority agenda comes under scrutiny," *India Today,* February 27, 2006, https://www.indiatoday.in/magazine/nation/story/20060227-sachar-committee-congress-minority-agenda-comes-under-scrutiny-785928-2006-02-26.

[18] Ata Hasnain, "Joining the Indian Army won't make you a bad Muslim," *The Print,* October 6, 2018, https://theprint.in/opinion/joining-indian-army-will-make-you-a-better-muslim/130369/

is about motivating the less-aware youth with lower education levels to equip themselves to compete for the officer cadre. Entry in even slightly enhanced numbers will have an exponential social empowerment effect on the ground, that is most desirable. All of this can be achieved without any dilution of standards whatsoever."[19] A thorough review of the working and composition of the services selection boards and a stronger outreach programme with the clear objective of enhancing diversity could be a welcome step forward.

Conclusion

Defence reforms are long-term in nature. They take time to take root. The reforms process initiated in 2019 needs more time to yield the desired results. Occasionally, reforms need to be objectively assessed for efficacy and appropriately calibrated in line with the emerging requirements. Given their possible impact on India's security and democratic institutions, one can only hope that the process will involve extensive public debate and discussion.

" *India's reforms are broadly modelled on those in the US and China; there is no model yet more suited to India's Westminster system.*

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[19] Hasnain, "Joining the Indian Army won't make you a bad Muslim."

Perspectives on Recent Institutional Military Reforms and the Way Ahead

Karambir Singh

Introduction

INDIA'S HIGHER DEFENCE ORGANISATION has been a subject of debate, arousing concern, and at times even consternation, because of the deeply entrenched—and often incongruous—interests of the politicians, the bureaucracy, and the military. Many authors have written about the civil-military relations in India, highlighting the strong bureaucratic control over the armed forces despite a lack of civilian expertise on military issues. At the same time, experts have also pointed out that the Indian military has enjoyed a fair degree of autonomy in operational matters. The primary cause for this discord has been identified as the exclusion of the armed forces from apex-level decision-making where, usually, it is the bureaucracy which has a direct interface with ministers on a day-to-day basis.

The Impact of the Kargil War on Higher Defence Management

The Kargil Conflict of 1999 was a watershed event in India's military history not only because of the swift and effective military response to Pakistan's aggression, but also because it brought out significant shortcomings in India's defence set-up, which consequently resulted in extensive debate on these issues. Post-Kargil, various measures were implemented by the government to reform India's defence management. These included the creation of the Tri-Services Andaman and Nicobar Command (ANC), the Strategic Forces Command (SFC), Defence Intelligence Agency (DIA), and Headquarters Integrated Defence Staff (HQ IDS). Some reforms, such as the re-designation of Service Headquarters (SHQs) as "Integrated Headquarters of the Ministry of Defence (Army/ Navy/ Air Force)" were superficial because they had little impact on the organisation and functioning of SHQs in practice, and they continued to function as 'attached offices' of the Ministry of Defence (MoD) instead of being integrated with the MoD.

In addition to the management of defence, another lacuna in the Indian armed forces that has been extensively written about is the apparent lack of jointness among the army, the navy, and the air force. Some experts have lamented that jointmanship in the Indian context is merely cosmetic.[1] Others have highlighted inter-service rivalries and 'turf issues' when it comes to Tri-Service integration, especially in defence procurements and even in operations. At the same time, other experts, including senior military officers, point to the past record of the Indian armed forces to illustrate the synergy among the three services.

Although there are other important issues such as the defence budget human resource management, and capital acquisitions, which also invite

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[1] Arun Prakash, *From the Crow's Nest* (New Delhi: Lancer Publishers, 2007), pp. 20.

wide academic interest, the two issues of Higher Defence Management, and Tri-Service Integration or Jointness, form the bulk of contemporary discourse about India's defence preparedness. These core issues remained unaddressed, or at best partially addressed, till 2019.

Defence Reforms in 2019

Towards the end of 2019, the Government of India introduced two major reforms in Higher Defence Management:
- Creation of the post of the Chief of Defence Staff (CDS);[2] and,
- Creation of the Department of Military Affairs (DMA) in the Ministry of Defence.[3]

These reforms, perhaps the most impactful in the recent history of India's armed forces, are inter-linked because the CDS has also been made head of the DMA, in his capacity as Secretary of this newly created department. The CDS has also been nominated as Permanent Chairman of the Chiefs of Staff Committee (COSC), a post that was hitherto held 'temporarily', on a rotational basis, by the longest serving Service Chief in the COSC.[4] Therefore, essentially, the CDS is required to perform three distinct, but inter-related roles. As the CDS, his charter,[5] inter alia, relates to his functions as head of the HQIDS. As the Secretary in the DMA, he is responsible for effective functioning of his department.[6] As the Permanent Chairman of the COSC, the CDS is responsible for inter-Service coordination.

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[2] "Cabinet approves creation of the post of Chief of Defence Staff in the rank of four-star General," Cabinet, Government of India, https://pib.gov.in/PressReleseDetail.aspx?PRID=1597425

[3] The Gazette of India, Number 4208, December 30, 2019, https://cabsec.gov.in/writereaddata/allocationbusinessrule/amendment/english/1_Upload_2224.pdf

[4] "Cabinet approves creation of the post of Chief of Defence Staff in the rank of four-star General,".

[5] "Functions of the Chief of Defence Staff (CDS)," Ministry of Defence, Government of India, https://pib.gov.in/newsite/PrintRelease.aspx?relid=198899

[6] "The Government of India (Allocation of Business) Rules, 1961," Cabinet Secretariat, Government of India, pp 48, https://cabsec.gov.in/allocationofbusinessrules/completeaobrules/

The foundational concept that led to the creation of the CDS was the need "to provide single point military advice to the government, and resolve substantive inter-Service doctrinal, planning, policy and operational issues." This was observed in the Report of the Group of Ministers on National Security and the need for all three Services to "work in unison", as mentioned by Prime Minister Modi in his speech on 15 August 2019.[7] The purpose of these reforms was to "facilitate inter-service integration and better civilian-military coordination in the Nation's Higher Defence Organisation."[8]

Civil-Military Coordination

The creation of DMA, with a military officer at its helm and four other officers at the level of Additional Secretary/ Joint Secretary, is evidently a crucial step towards the reorganisation of the structure of MoD and improving the interface between the MoD and the Armed Forces Headquarters, as recommended by the Kargil Review Committee (KRC) and the Group of Ministers (GoM) Report on National Security. The fact that the armed forces, including the headquarters of the three services, which were hitherto under the Department of Defence (DoD),[9] have now been directly brought under the charter of the DMA also indicates the intention to include the military in decision-making at the apex level.

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[7] Group of Ministers Report on Reforming the National Security System, *Report of the Group of Minister on National Security* (New Delhi: Government of India, 2001), pp. 97. Also see, "Cabinet approves creation of the post of Chief of Defence Staff in the rank of four-star General."

[8] "Chief of Defence Staff," Fact Sheet, Ministry of Defence, Government of India, https://pib.gov.in/FactsheetDetails.aspx?Id=148566

[9] The Department of Defence here refers to a department within the Ministry of Defence that oversees defence policy formulation and manages defence procurement in India. It is one of the five constituent departments within the Indian MoD, the others being the Department of Military Affairs, the Department of Ex-Servicemen Welfare, Department of Defence Production and the Department of Defence Research and Development. It is not to be confused with the US's Department of Defence that functions as an equivalent to the Indian Ministry of Defence. For reference see, "About Us," Ministry of Defence, Government of India, https://mod.gov.in/node/92338.

There are, however, two important aspects that need further deliberation. The first is the responsibility for the defence of the country. This responsibility has been retained by the Defence Secretary in the Allocation of Business (AoB) rules, according to which the "Defence of India and every part thereof including defence policy and preparation for defence and all such acts as may be conducive in times of war to its prosecution and after its termination to effective demobilisation"[10] is the purview of the DoD. It is obvious that in times of conflict, it would perhaps be the Service Chiefs and the CDS who would have the clearest grasp of the operational situation and would therefore be the most suitable to advise and act on these matters. Therefore, it is intriguing that the Defence Secretary be charged with this responsibility.

The second aspect is the charter for capital acquisition, which too, has been retained with the DoD. If the armed forces are under the DMA, then there is little logic in placing capital acquisition for the defence services under the DoD. The CDS is required to implement the Five-Year Defence Capital Acquisition Plan and Two-Year roll-on Annual Acquisition Plans, as part of the Integrated Capability Development Plan (ICDP), and yet the subject of capital acquisition has been allotted to the DoD.

Inter-Service Integration and Theaterisation

The functions of the CDS largely focus on jointness and integration among the three services. However, the CDS does not exercise any military command, including over the three Service Chiefs, and therefore, most of his functions are aspirational, which means that although he has been tasked to promote jointness, the Services themselves must step forward in order to achieve the required outcomes. He is the Principal Military Advisor to Hon'ble Raksha Mantri (RM) on all Tri-Service matters, but the Service Chiefs continue to advise the RM on matters exclusively concerning their respective Services.

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[10] "The Government of India (Allocation of Business) Rules, 1961," Cabinet Secretariat, Government of India, p 46, https://cabsec.gov.in/allocationofbusinessrules/completeaobrules/

The mandate of the DMA inter-alia includes "Facilitation of restructuring of Military Commands for optimal utilisation of resources by bringing about jointness in operations, including through establishment of joint/theatre commands."[11] In the three years since the creation of the DMA, there has been little information on how this mandate would be executed. In October 2022, the CDS, General Anil Chauhan, had communicated to the defence forces to "move ahead on creating theatre commands which would be his priority area."[12]

Despite the many pronouncements on theaterisation, no definitive model has yet been promulgated by the Ministry of Defence. On the other hand, varying models of theaterisation have been suggested in the recent past—some through statements by serving officers, and others through reports emerging in the media. In 2021, the late General Bipin Rawat had outlined the four commands: (1) A 'Western Theatre Command' responsible for the border with Pakistan; (2) A 'Northern Theatre Command' responsible for the border with China; (3) A navy-heavy 'Maritime Theatre Command' responsible for the security of the Indian Ocean Region (IOR); and, (4) an island command, already functional and called the Andaman & Nicobar Command (ANC). He also spoke about the need for an Aerospace Command and a Cyber Command.[13] A report carried by *The Times of India* in September 2021 stated that four integrated commands—the Maritime Theatre Command, the Air Defence Command, the Eastern Theatre Command and the Western Theatre Command—would take "concrete shape in the next two to three years."[14] A discussion document published by Takshashila Institution outlines a framework for four theatre commands—the Northern Theatre Command (responsible for the land border with China), the Western

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[11] "Functions of the Chief of Defence Staff (CDS)," Ministry of Defence, Government of India,   https://pib.gov.in/newsite/PrintRelease.aspx?relid=198899.

[12] "New CDS Asks 3 Services to Work on Creation of Theatre Commands," *Hindustan Times,* October 3, 2022, https://www.hindustantimes.com/india-news/new-cds-asks-3 services-to-work-on-creation-of-theatre-commands-101664734157590.html

[13] Ajai Shukla, "CDS General Bipin Rawat Reveals Shape of India's 'Joint Theatre Commands," *Business Standard,* September 15, 2021, https://www.business-standard. com/article/current-affairs/cds-general-bipin-rawat-reveals-shape-of-india-s-joint-theatre-commands-121091501662_1.html.

[14] Rajat Pandit, "India Kicks Off Groundwork for Four Integrated Theatre Commands," *The Times of India,* September 8, 2021, https://timesofindia.indiatimes.com/india/india-kicks-off-groundwork-for-four-integrated-theatre-commands/articleshow/86047288.cms.

Theatre Command (for the Pakistan border), the South Western Theatre Command and the South Eastern Command for the Western part and Eastern part of the Indian Ocean, respectively.[15]

While an official announcement on the shape and size of theatre commands is awaited, it would most likely be a mix of 'geographical' and 'functional' commands, adapted to India-specific needs. Geographically, it might be prudent to look at 'One Front – One Theatre', implying that the apparent contiguity along the Eastern and Northern border (with China), and the Western border (with Pakistan) could result in two geographically oriented theatre commands. Similarly, the 'maritime theatre' could also translate into a 'Maritime Theatre Command'. Functionally, it would make sense to create joint commands for 'Air Defence', 'Aerospace', 'Cyber', 'Logistics' and 'Special Forces'.

It must be noted, however, that whichever model of theatre commands is adopted, it must be a bespoke framework suited to India's specific geography. The argument that India has several commands responsible for the border with Pakistan and China[16] boils down to the need for 'unity of command', implying that, in a given theatre, combat forces from different services must act under directions of a single commander. Evidently, a potential conflict against China (or Pakistan) cannot be addressed by only one geographical theatre. Any large-scale military operation would necessarily involve forces from other theatres. It is hard to imagine a scenario where a single theatre commander is left on his own to deal with external threats, while assets allocated to other theatres are unutilised. Therefore, India must also restructure its forces at the operational level with adequate flexibility to deal with a multitude of potential threat scenarios, based on the principles of 'joint planning' and 'joint force application'.

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[15] Prakash Menon, India's Theatre Command System: A Proposal, *Takshashila Institution,* June 2020, https://static1.squarespace.com/static/618a55c4cb03246776b68559/t/62384c15d525d273b1bf4e5d/1647856669793/India-Theatre-Command-System-Prakash-Menon-Mar21-Takshashila.pdf.

[16] Ajai Shukla, "CDS General Bipin Rawat Reveals Shape of India's 'Joint Theatre Commands,".

Experience with the DMA and the CDS

It has only been three years since the CDS and the DMA were created in the Ministry of Defence. Therefore, it would be premature to judge, with any degree of certitude or finality, the impact of these reforms because they are still in their formative stages. What can be said, however, is that the experience with these reforms has been mixed. For instance, in the wake of the Ladakh stand-off, following the Galwan incident, the office of the CDS was instrumental in facilitating emergency procurements for the armed forces. Also, the decisions on matters including training and staffing arrived at during COSC meetings, were quickly translated into policies through the DMA. This indicates that the institution of the CDS accelerated and streamlined the decision-making process in the armed forces.

Uniformed personnel, in their capacity as secretaries, additional secretaries and joint secretaries have been entrusted with decision-making in the MoD for the first time. This has allowed a greater say to the armed forces in matters pertaining to military affairs. The nomination of the CDS as the Principal Military Advisor to the Defence Minister on all Tri-Service matters reinforces his position as *primus inter pares* among the service chiefs as far as the functioning of the armed forces as a cohesive entity is concerned.

On the other hand, defence policy matters are still under the purview of the Defence Secretary, which effectively excludes the senior leadership of the armed forces from decision-making on policy matters. There are other subjects such as capital acquisitions, hydrography and the Indian Coast Guard that have been allocated to the DoD, but which must be re-assigned to the DMA.

Another aspect is that, as the Secretary of the DMA, the CDS has been overburdened with rudimentary matters in the DMA. This responsibility should have been assigned to the Chief of Integrated Defence Staff to the Chairman Chiefs of Staff Committee (CISC), thus allowing the CDS

to focus on larger policy issues. Eventually, there would be a need to appoint a Vice Chief of Defence Staff (VCDS), who would lead the DMA, because the CISC is already at the helm of the HQIDS which has a wide charter of its own.[17] The separation of Secretary, DMA and the CDS would also resolve an administrative anomaly wherein, a four-star General (or an officer of equivalent rank) who is at serial 12 in the Table of Precedence, also officiates as a secretary, who is at serial 23.[18]

Further, the reforms that led to the creation of the CDS and the DMA, appear to have overlooked an important aspect. One of the demands of the armed forces was their inclusion in the MoD, instead of being referred to merely as 'attached offices'.[19] Even after the implementation of the reforms in 2019, the status of the Service Chiefs (and the Services themselves) continues to remain inadequately defined because, in the MoD's organogram, neither the three Services nor the Service Chiefs find appropriate mention. Therefore, while the intention behind the reform was to have the Services designated as wings or departments of MoD, what came out was a replication of DoD structure in the DMA, which has kept the Services outside of the ministry.

Capital acquisitions, which determine the operational preparedness and modernisation of a fighting force have been retained with the Acquisition Wing in the DoD. Therefore, the Acquisition Wing has become the de facto secretariat for the Defence Acquisition Council (DAC) by default, whereas it is the HQ IDS which is "responsible for various issues pertaining to defence policies and planning of force structure of the Services".[20]

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[17] For details, see "Organisation," Headquarters Integrated Defence Staff, https://ids.nic.in/organisation.php.

[18] "Table of Precedence," Ministry of Home Affairs, Government of India, https://www.mha.gov.in/sites/default/files/table_of_precedence.pdf

[19] Arun Prakash. "Roots of Civil-Military Schism in India," in *Core Concerns in Indian Defence and Imperatives for Reforms,* ed. Vinod Misra (New Delhi: IDSA/ Pentagon Press, 2015) pp 26-28.

[20] "Defence Acquisition," Headquarters Integrated Defence Staff, https://ids.nic.in/content/defence-acquisition.

Outlook and Recommendations

Backed by strong political will, India has embarked on a venture to reform and review its higher defence organisation and management with the aim of bringing about better effectiveness in decision-making and greater synergy in warfighting. The defence reforms of 2019 provide a solid foundation for this endeavour. It is obvious that other reforms will be needed to bring this effort to its logical conclusion. Some of the measures have been suggested earlier in the article, and other reforms that might additionally be required, are enumerated in succeeding paragraphs.

Further Re-organisation in MoD. As brought out earlier, the following measures must be implemented within the MoD:

i.   Rationalisation of Distribution of Subjects. The distribution of subjects among the various departments of the MoD should be rationalised so that policy matters within the MoD, especially policies pertaining to defence, must be allocated to the DMA. Other policy matters such as foreign cooperation and those of administrative nature such as cantonments, land, canteen services, National Cadet Corps, defence civilians and defence accounts could be retained with the DoD. Capital acquisition must also be brought within the purview of the DMA and, consequently, the Acquisition Wing must be migrated to this department. In addition, aspects such as hydrography and Coast Guard matters must also be allocated to the DMA.

ii.   Appointment of Military Officers in Other Departments. There remains adequate opportunity for appointment of military officers at the Additional Secretary, Joint Secretary and Director levels in other departments of the MoD such as JS (Land/ Aerospace/ Naval) systems in Department of Defence Production, JS (Border Roads), JS (Medical) and Acquisition Manager (Army/ Air/ Maritime) in Department of Defence, and such other appointments in the

Department of Ex-servicemen Welfare. It is logical that military officers, by virtue of their greater expertise and experience in these matters, must be appointed to these positions.

iii. Appointment of Vice Chief of Defence Staff as Secretary, DMA. The CDS presently has three roles—the Secretary, DMA, the Permanent Chairman Chiefs of Staff Committee, and the CDS. It is recommended that a VCDS be appointed as the Secretary, DMA, which would relieve the CDS from mundane departmental functions and allow him to focus on larger matters of defence policy.

Implications of Theatre Commands. Creation of theatre commands would require not only reorganisation of combat and combat-support forces at the operational level, but also a slew of reforms in human resource management, administration, and in the command-and-control organisation at the apex level. Some of these changes are suggested below:

i. Chain of Command. As and when the theatre commands are constituted, it will be apparent that their operational control would no longer rest with any single service, as is presently the case with single-service commands. There will be a need for a separate chain of command that would run from the theatre commander up to the defence minister. It is obvious that in his present charter, the CDS is not envisaged as the officer through whom such chain of command would be exercised. Therefore, there would be a need to define a suitable hierarchy for theatre commands.

ii. Relationship Between SHQs and Theatre Commands. The relationship between SHQs and theatre commands would be somewhat akin to the model that exists in the US armed forces. The SHQs would be responsible for the 'raise, train and sustain' functions while the theatre commands would be responsible for warfighting.

iii.   Administration and Human Resource Management.   With theaterisation across the three Services, there would be a need to evolve a suitable HR policy by the SHQs to manage the large number of joint billets. In addition, there would also be a need to harmonise the Army, the Navy and the Air Force Acts and the appurtenant regulations of the three Services in order to ensure a uniform standard and benchmark for administration. It may, at some stage in future, be necessary to legislate a common 'Armed Forces Act'.

iv.   Joint Training.   Although the extant training philosophy and methodology is significantly joint – the officers of the armed forces undergo joint training as cadets, at the mid-career level and, thereafter, in senior ranks – but most of these joint courses are conducted for a select group of officers, excluding a large proportion from joint grooming. New methods, such as leveraging online courses, would need to be explored in order to ensure a wider dissemination of joint curriculum. It is also important that the joint curriculum itself be reviewed to include enhanced joint content. It would also be no longer sufficient to only train the officer cadre jointly.   The enlisted or non-commissioned personnel would also need to be exposed to joint operations, and this would require a review of the training curriculum for personnel below officer rank.

v.   Joint Experience. Institution of theatre commands would require positioning of personnel, trained and experienced in joint operations, at various levels. The Services' HR departments must identify joint billets at every level – from theatre headquarters to tactical formations – that must be tenanted by officers from each Service.   In this context, it is pertinent to mention that a policy for according joint exposure to Flag Officers is already in place.

Conclusion

The institutional military reforms introduced by the Government of India in 2019 have ushered in a new paradigm in India's defence management. They have not only facilitated greater participation of the armed forces in apex-level decision-making in the MoD, but have also set the military on-track for enhanced synergy and integration. Importantly, by creating the DMA and the office of the CDS, the Government has demonstrated its commitment for military reforms that had been languishing due to bureaucratic inertia and indifference.

However, as this essay has argued, while these reforms are potentially impactful, there is a need to follow up the momentum that they have provided in achievement of civil-military coordination and inter-service integration. As far as civil-military integration is concerned, there are adequate opportunities—including the re-distribution of subjects within the DMA, as brought out earlier—to cement the inchoate organisational set-up that has been established with the creation of the DMA. The role of the Service Chiefs must also be defined within the MoD. Further, there are areas where the MoD needs to institutionalise inter-ministerial consultative processes in order to reinforce and bolster a whole-of-government approach to national defence. It would, therefore, be useful to embed military personnel in these ministries and departments such as the Ministries of Home Affairs, External Affairs, Shipping, Earth Sciences and Civil Aviation, and Departments of Space, Telecommunications and Fisheries.

Another related recommendation, which is beyond the remit of this article, is to articulate a National Security Strategy, which among other things, must appropriately place higher defence organisation within the apex national-level security architecture, and specify the relationships between its various constituents such as the NSA/ NSCS, the CDS/ COSC, the MoD, and the Cabinet Committee on Security (CCS). It must also provide guidance on external security situation, the threat perceptions, defence preparedness in peace and in a state of heightened tensions, escalation management, and on civil-military fusion.

The offices of the CDS, the Secretary DMA, and the Permanent Chairman of Chiefs of Staff Committee, which are currently conflated, make an ungainly higher defence organisation within the military, and must be streamlined. Insofar as synergy among the armed forces is concerned, this article has argued that 'theaterisation' is one—but not the only—way of achieving 'jointness'. The concepts of 'Unity of Effort' and 'Unity of Command' are germane to promoting jointmanship, and each must be applied appropriately in operational and administrative contexts. As such, there is a need to first identify India-specific needs for theaterisation and only then adopt a model of jointness that will be most suitable to do that.

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India must restructure its forces at the operational level with adequate flexibility to deal with a multitude of potential threat scenarios.

A Cautious Embrace: IAF Perspective on Institutional Reforms

Anil Golani

Introduction

THE ORGANISATIONAL STRUCTURE OF THE Indian Armed Forces and its functioning between the services, and with the government, has been a subject of much debate and discussion over the last two decades. A number of committees have studied the issue in detail and given their recommendations for necessary reforms—these include the Kargil Review Committee, Group of Ministers, Naresh Chandra Task Force, and the Shekatkar Committee. Many of these recommendations—accepted by the incumbent government—led to some changes in the structure and functioning of the armed forces in the last two decades.

The present government, for its part, made some far-reaching changes that were announced by Prime Minister Narendra Modi on 15 August 2019 during his Independence Day address to the nation. These included the creation of the Chief of Defence Staff (CDS) and the Department of Military Affairs (DMA) within the Ministry of Defence (MoD). A committee was formed under the National Security Adviser (NSA) that defined the

charter and responsibilities of the CDS and the DMA and the changes required in the Allocation of Business Rules and the functioning of the new organisation. Gen. Bipin Rawat, now deceased, was appointed as the first CDS with effect from 1 January 2020.

This article analyses the reforms undertaken by the government in recent years and examines the functioning of newly formed organisations. It argues that despite some positive early steps, the current understanding and proposed direction of reforms poses serious limitations on the use of airpower. It outlines a future roadmap to increase synergy within the armed forces.

The Creation of CDS and the DMA

From around 2015 onwards, a consensus began to emerge within the military that there was a requirement for a permanent Chief of Integrated Defence Staff to the Chairman, Chiefs of Staff Committee (CISC) as a four-star to head the HQ Integrated Defence Staff (HQ IDS). Under the previous system, the senior-most service chief served as the Chairman, Chiefs of Staff Committee (COSC). This arrangement led to short tenures for the Chairman and the preoccupation of the incumbents with service-specific requirements that hindered integration efforts. The creation of the CDS and DMA was a landmark in many respects. Historically, secretarial powers in all Indian Government ministries have been held by officers from the Indian Administrative Service cadre. The notable exceptions to this general rule are the Departments of Space, Atomic Energy, and the Defence Research and Development Organisation where scientific officers hold key decision-making positions. The issue in this regard is that IAS officers, being generalists by training, tend to lack specific domain expertise on issues like defence. This can, and has indeed impeded decision-making on issues of national security.

This was the first occasion when the powers of a secretary had been given to an officer in uniform. The creation of the DMA apparently did

not figure in the various notings on file when the case was being built on the creation of the CDS as the bureaucracy was unwilling to give secretarial powers to uniformed personnel. It was the astute and visionary leadership of PM Modi that ensured its implementation. The contrarian view could also be that the decision emerged out of frustration of the prime minister on seeing no discernible movement by the top leadership to increase jointness between the services. In his address during the 2014 Combined Commanders Conference, he urged the three wings of the services to work as a team across all vertical rungs.[1]

While many areas of work were transferred from the DoD to the newly created DMA, what caused unprecedented debate and acrimony amongst the services were the new areas that came under the charter of the CDS. These included:

(a)   Promoting jointness in procurement, training and staffing of the services through joint planning and integration of their requirements.

(b)   Facilitation of restructuring of military commands for optimal utilisation of resources by bringing about jointness in operations, including through establishment of joint / theatre commands.

(c)   Promoting use of indigenous equipment by the services.

A number of steps have been taken to promote jointness in procurement. Not only has the CDS been made a part of the Defence Acquisition Council, but the Integrated Capability Development Plan has become a charter that looks at the requirement of the three services jointly and prioritises procurement. Capability development is still, to a large extent, service-driven with little thought being given as to how the lack of a particular capability with a service could impact overall objectives.

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[1]   "PM's address at the Combined Commanders Conference," News Updates, Prime Minister of India, https://www.pmindia.gov.in/en/news_updates/pms-address-at-the-combined-commanders-conference/#:~:text=Prime%20 Minister%2C%20 Shri%20 Narendra%20Modi,%2C%20 commitment%2C%20service%20and%20 duty.

Efforts have been made towards joint training by increasing the joint content and syllabus in training establishments like Defence Services Staff College and the joint capsule during the Higher Command Course. These, however, have had limited effect on joint planning and operations. These activities are still being carried out in service-specific silos, despite joint staffing by the Air Force at the command and lower levels in the Army and the Navy. The charter to facilitate restructuring of military commands was construed as a mandate to create structures to establish theatre commands in a time frame of three years. However, this mandate appears to be driven without adequate thought being given to its functioning, efficacy, resources, and chain of command. Despite the positive changes, discrepancies in the reforms continue to exist.

The revenue budget of the Armed Forces has been delegated to the Secretary DMA, and therefore the CDS, with the new changes. With capital procurement being retained by the DoD within the Ministry of Defence, there exists a discrepancy between the revenue and capital budget utilisation. With increasing pressure to reduce revenue expenditure and rising costs of maintenance of modern arms, equipment, and infrastructure, there is a dichotomy between the two, leading to avoidable friction and delays that impinge upon operational preparedness. The creation of the DMA has led to an ease of access by the service headquarters to the decision-making body as it is now manned by service officers functioning at the level of Joint Secretary.

Even though there has been no discernible change in the speed of decision-making, there is greater understanding of the issues concerning the armed forces. There is a pitfall to this as well. At times these officers apply their past domain knowledge and experience with inherent biases, which may be detrimental to services / branches / arms other than their own. These biases would hopefully be overcome in the years to come as officers tenanting these appointments in the future may well have a joint services experience.

The CDS presently wears multiple hats as the Chairman, Chiefs of Staff Committee, Secretary DMA and as the CDS is supposed to provide single

point military advice to the government in consultation with the service chiefs. In addition, operational control over the Andaman and Nicobar Command, Strategic Forces Command, Defence Cyber and Space Agencies and the Special Operations Division also vests with the CDS through the CISC. This is too large a remit for a single individual in uniform to handle. There is a need to delegate and streamline the functioning of the CDS and the DMA. The present arrangement does not envisage a command and operational role of the CDS over the individual services except for the forces mentioned above. However, there is increasing clamour to burden the CDS with operational control over the upcoming theatre commands as well.

Further Reforms in the Defence Ministry

While there may be extensive debate on the relevance of the Chinese or US models of theatre commands, there is little or no comparison of the fact that the military leadership of those two countries occupies the high table in their national decision-making structure. While India has corrected this to some extent with the creation of the CDS and DMA, there is more that needs to be done.

It is necessary to either undertake collegiate decision-making within the various departments of the Ministry of Defence or appoint the CDS as the first among equals in the cohort of secretaries of the MoD. For example, the expenditure of the revenue and capital acquisition budget is controlled by different secretaries. There is a need to carry out prioritisation and allocation of revenue and capital budget and expenditure. Revenue should have been retained by the DoD and capital should have been with DMA as the responsibility of capability development rests with the DMA. Similarly, defence cooperation with other countries, the Defence Attachés abroad and their functioning comes under the DoD, while the Armed Forces are with the DMA. This leads to a lack of clarity and effective functioning towards defence cooperation and the impetus on defence exports from India. In 1955, when the designation of the service chiefs was changed from 'Commander in Chief' to 'Chief of Staff', the role and responsibilities remained the same. Even though the Defence Secretary

functioning as the head of the DoD is responsible for the defence of India, the accountability rests with the Armed Forces under the DMA. The CDS is not vested with operational control as per the present mandate. In India, the US system of theatre commanders reporting to the Secretary Defence is not a viable option, nor is the Chinese system of regional theatre commanders reporting to the Central Military Commission.

The MoD must also have cross-posting of officers in uniform as has been done with the DMA. The CDS should have the powers to appoint eminent experts from the strategic, security, technology, cyber and space domains as advisers on an as-required basis. The cyber and space agencies should be populated by civilian experts in the domain who would not only be specialists in their respective domains but will also enjoy continuity of tenures and obviate the requirement of service officers in uniform who function under the competing requirements of tenures and career progression.

Creation of Joint Theatre Commands

It is too early to speculate on the form and structure of the theatre commands and its accompanying chain of command in India. However, there is growing acceptance of the need for better synergy among the forces to execute joint and multi-domain operations. Thus, a collaborative and consultative approach is necessary to create structures that would suit Indian conditions instead of copying existing models from other countries such as the United States or China.

The biggest lacuna of the present system is lack of joint planning and execution. There is a dissonance in the understanding by the three services, each having its own vision of how future conflicts could unfold and the primacy of their own arm in winning wars. The service-centric approach tends to relegate the role of airpower. Airpower is increasingly becoming a key determinant of the outcome of conflicts. Furthermore, it is also the branch of the military that is most affected by technological change. Thus, the creation of joint or theatre commands needs to cater to the unique attributes of airpower and the deployment

of modern air forces. Taking into consideration these attributes, one former IAF Chief has noted that modern wars would "be swift and the objectives…met in days or weeks."[2]   Similarly, AVM Arjun Subramaniam has noted how the Air Force would be the decisive arm in modern conflict: "Capturing ground beyond a few kilometres or taking physical control of vast maritime spaces for prolonged durations are no longer sustainable operations of war as they arguably result in avoidable depletion of combat potential. It is in this context that airpower would offer a viable alternative by shaping 'battle spaces' adequately before the other services enter combat."[3]

These attributes are often neglected in India's debate on theatre commands and jointness. It is reflected in single service bias in planning and execution, which ultimately does not augur well for war-fighting, leading to a less than optimal solution. Peacetime exercises carried out by the services at the command, corps and lower levels bear testimony to this fact where the participation of the other service(s) is notional.

A change of mindset is therefore necessary in understanding the new domains of warfare where even the non-kinetic and non-lethal options form a continuum, apart from traditional military options. According to Lt Gen Satish Dua (retd), "The existing structure for cross-service cooperation is weak and efforts for jointmanship in the military are proceeding slowly, resulting in duplication of efforts, wastage of resources, and delay in decision-making."[4] Ultimately, any theatre command structure in India needs to be threat-based and embody the concept of 'Unity of Effort' in order to facilitate joint planning and execution.

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[2]   S Krishnaswamy, "Why theatre commands is an unnecessary idea," *The Indian Express,* August 16, 2018, https://indianexpress.com/article/opinion/columns/why-military-theatre-commands-is-an-unnecessary-idea-5308890/.

[3]   Arjun Subramaniam, "The roadmap to military reform," *The Hindu,* August 16, 2018, https://www.thehindu.com/opinion/op-ed/the-roadmap-to-military-reform/article24698213.ece.

[4]   Rahul Singh, "Weak cross-service cooperation in military hits decisions, says Lt Gen Dua," *Hindustan Times,* December 2, 2018, https://www.hindustantimes.com/india-news/weak-cross-service-cooperation-in-military-hit-decisions-says-lt-gen-dua/story-PC9cwBK8xrGrz1JX29VqKO.html

The character of war relates to how wars would be fought, depending on military capabilities, technology, civil-military relations and the opponent's aim and strategy. Theatre command models therefore need to be based on either geography or threat and must cater for multi-domain operations and force application against a specific adversary. A threat-based strategic orientation of the theatre command could ensure clear demarcation of responsibilities in terms of an adversary's assessment of capabilities and intent, joint planning and execution. Thus, the logic behind creating a functional 'Air Defence Command' has been debunked after an understanding that airpower being indivisible cannot be bifurcated into silos.

While unity of command is essential for force application, the unity of effort is considered paramount. In India's case, this is critical especially in view of the limited assets of the Indian Air Force. The Joint Staff of US military defines 'Unity of Effort' as a "cooperative concept which refers to coordination and communication amongst Government agencies toward the same common goals for success."[5] Through 'Unity of Effort', each agency ensures its efforts are in consonance with the objectives of the mission. Espousing this approach, the Indian military can enable joint planning and execution of operations. The following paragraphs outline some recommendations to instil 'Unity of Effort' in India's theatre command structure for the future.

The organisation under the CDS needs to have a Vice Chief of Defence Staff (VCDS) as a rotational appointment, looking after concepts, doctrine, joint planning, and operations at the national level. This vertical could have representation from other intelligence organisations, the Ministries of External Affairs, Home, and the Finance Ministry co-opted for their inputs. A large part of the operational staff from the individual service HQs could be re-appropriated as the planning staff to strengthen the operational role of the VCDS who would have the

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[5] "Unity of Effort Framework Quick Reference Pamphlet," Joint Staff, US Department of Defense.

theatre commands under his control. Similarly, the theatre commands could have only an operational role and function directly under the VCDS. The existing regional commands with some re-appropriation could continue to function only with administration, training, logistics and maintenance roles, with operational responsibility being vested with the theatre commander.

The CISC could take over the responsibilities of Secretary DMA and this would give the CDS more time to focus on strategic planning, operational oversight, and coordination, along with the other responsibilities of capacity-building and overseeing the other verticals of the Defence Intelligence Agency and Medical Services under him. The strategic guidance, operational philosophy and broad plans could emanate from the office and planning staff of the VCDS to be executed by the theatre commanders. The underlying principle to bring about the change should revolve around 'unity of effort' with the available resources, divesting operational responsibility to a centralised planning staff and decentralised execution through the theatre commanders.

At this point it needs to be stressed that core competencies on the application of force need to be retained with the professionals of the respective services. The training and operational role cannot be separated in the air force as operational squadron training forms an essential and inalienable part of overall training. High-value air assets like AWACS and air-to-air refuelling aircraft need to be centrally controlled because of their paucity while other fighter, transport aircraft and helicopters could be re-appropriated between the theatres through collegiate decision-making under the CDS.

In the long run, the roles and responsibilities of the service chiefs, theatre commanders and the CDS could evolve as more experience is gained through joint planning and execution in a tri-services environment.

Decision-Making and Joint Operations

The decision to create theatre commands must be made on the mandate of effective execution of plans. This requires a change of mindset from the present system of service-specific planning and execution to one where the orders would flow through a single chain of command (e.g., from VCDS to theatre commanders) to the fighting formations. The decision-making cycle initially may get an additional layer but once the delineation of operational responsibilities gets streamlined from the existing service-specific regional commands to the theatre commands, it could lead to the much desired unity of effort towards joint planning and execution. Secure and joint communications are a prerequisite to facilitate this. The integration in communications and networking is likely to take place with the first phase of Network for Spectrum to be rolled out in September 2023. The shift to the proposed model needs to be deliberated upon and fulfilled in phases. Finally, a command and control grid needs to be established which could use Artificial Intelligence to sift the requisite data from the multiple sensors and domains being used by the military and other agencies. It would be humanly impossible in the coming times to discern the actionable from the magnitude of data being generated.

Conclusion

The decision to undertake institutional reforms has indeed been transformational and, if pursued with national interest at its core, would lead India to its rightful place in the world's military hierarchy. The path ahead, however, needs to be tread with caution. The CDS presently wears multiple hats and there is a need to delineate responsibilities between the CDS, CISC and the DMA apart from conceptualising the operational role of the CDS with respect to the proposed theatre commands. Unity of effort and a common understanding amongst the three services on their roles in the proposed structures under a single service theatre commander can only take place once joint planning and execution is done towards warfighting. Further reforms in the Ministry of Defence

are required to either undertake collegiate decision-making amongst the various departments of the MoD or to appoint the CDS as the first amongst equals in the secretaries of the MOD. Cross-postings of uniformed officers in the DoD and the integration with other specialists from the cyber, space and technology domains is considered essential to have a whole-of-nation approach.

A slew of path-breaking and landmark initiatives undertaken by the present government towards military reforms need to be worked upon, streamlined, and executed with the sole purpose of ensuring national security that demands a whole-of-government approach. The military is just a part of comprehensive national power and a whole-of-government approach is essential to ensure that the various components mesh seamlessly in the new structures being created. While human beings are presumably rational and logical, they can also be emotional and psychological. Men and women in uniform, with their service and regimental affiliations, tend to become emotional, often to the detriment of national interests.

It is this tendency that the present military leadership needs to guard against in order to carry forward the reforms, change the mindset of their respective services and create structures that are future-ready, effective and efficient with the ability to execute multi-domain operations in peace and war. The incumbents are seized of the issue and are working in collaboration through collegiate debates, discussions and wargaming to arrive at the optimal solution. The time has come for the transformation of India's military capability which, in turn, would help propel India's rise.

> *If pursued with national interest at its core, reforms could lead India to its rightful place in the world's military hierarchy.*

III
THE IMPACT
OF EMERGING
TECHNOLOGIES

The Indian Military's Expanding Cyber Capabilities

Sameer Patil

Introduction

WITH THE WORLD'S SECOND-LARGEST internet user base and a leading Information and Communications Technology (ICT) industry, India recognises the critical importance of cyberspace and digital technologies for national transformation and power. The government aims to make India a US$1-trillion digital economy by 2025.[1] It has made a policy push in the digital payments space, seeking greater financial inclusion and creating a payments ecosystem. Additionally, the flagship programme of Digital India is harnessing Information Technology (IT) for the transition to digital governance and expanding the delivery of citizen-centric government services. India has also made cybersecurity a policy priority. This push has been reinforced by several measures, including the appointment of the National Cyber Security Coordinator, capacity building to secure critical national infrastructure, creation of the Indian Cybercrime Coordination Centre, and an extensive effort to build cybercriminal investigation and forensic capabilities.

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[1] "India's Trillion-Dollar Digital Opportunity," Ministry of Electronics and Information Technology,
    https://www.meity.gov.in/writereaddata/files/india_trillion-dollar_digital_opportunity.pdf.

Likewise, the Indian military appreciates the significance of cyberspace for modern conflicts under the broader rubric of information warfare. Defence planners have invested considerable financial and technological resources to develop cyber and psychological operations capabilities. The doctrines of the three military services have explored in detail the role of cyberspace in warfare and in defending national sovereignty.[2] An important step in building the military's cyber capability and defence was establishing a dedicated tri-service unit, the Defence Cyber Agency (DCyA), which became fully operational in 2019.

The military has implemented these initiatives to build its cyber capabilities. Nonetheless, discussions on these and related issues such as offensive cyber operations and cyber deterrence remain classified for national security reasons, and therefore, excluded from the public domain. This impedes the work of analysts on researching and writing about these subjects. This article, therefore, is based on information available in the public domain, supplemented by insights gathered from informal interactions with retired and serving military officials having ample knowledge of the issues involved.

Although details of the Indian military's cyber capabilities remain a matter of speculation, there has been substantial media reporting on cyberattacks targeting military networks and personnel. For instance, a media report in 2019 revealed that the Army had faced roughly two cyberattacks every month, which was more than the number reported in the previous year.[3] Similarly, in January 2022, Cloudsek, a private

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[2] To understand the Indian military's doctrinal understanding of cyber capabilities and warfare, this paper examined five strategies and doctrines. These are the Indian Navy's Indian Maritime Security Strategy of 2015 and Indian Maritime Doctrine 2009 (updated online version 2015); the Indian Air Force's Doctrine of the Indian Air Force; and the Indian Army's Land Warfare Doctrine-2018 and Joint Doctrine Indian Armed Forces, brought by the Integrated Defence Staff.

[3] Amrita Nayak Dutta, "Indian Army Faced Two Cyberattack Attempts Every Month in 2019," *The Print,* November 25, 2019, https://theprint.in/defence/indian-army-faced-two-cyberattack-attempts-every-month-in-2019/325008/.

cybersecurity firm, notified the Army about a cyber espionage campaign targeting its personnel through clones of the internal Army apps ARMAAN (Army Mobile Aadhaar App Network) and Hamraaz.[4,5]

This article comprises three parts. The first section discusses India's security canvas and the sources and nature of its cyber threats. It also examines current policy measures to tackle these threats. The second part explores the military's cyber capabilities and the steps implemented to build those capabilities. In particular, this segment discusses the doctrinal issues and the role of DCyA. Finally, the third part briefly identifies the gaps in India's cyber strategy. Broadly, this essay argues that despite operational and funding limitations, the military has developed multifaceted cyber capabilities. However, fundamental questions surround India's broader cyber posture, which prevent optimal utilisation of those capabilities.

India's Cybersecurity Panorama

Increasing digitisation has expanded India's threat landscape exponentially. In an assessment by Cloudsek, cyberattacks on Indian government agencies more than doubled in 2022, as compared to 2021, making India the most targeted country by then.[6] Figures from the Indian Computer Emergency Team (CERT-In) also show a sustained increase, as the agency handled 1,402,809 incidents in 2021 compared to 1,158,208 in 2020.[7] CERT-In also revealed a 51-percent increase in ransomware incidents between 2021 and the first half of 2022.

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4 "Malicious Clones of Indian Army Apps Used in Espionage Campaign Targeting Army Personnel," *Whitepapers and Reports, Cloudsek,* February 4, 2022, https://cloudsek.com/whitepapers_reports/malicious-clones-of-indian-army-apps-used-in-espionage-campaign-targeting-army-personnel/.

5 The Indian Army uses these apps to provide information and services to its serving personnel, including pay-related information.

6 "Global Cyber Security Incidents – Q4 2022," *Whitepapers and Reports, Cloudsek,* January 23, 2023, https://uploads-ssl.webflow.com/635e632477408d12d1811a64/63d39cb3222b7718cc7ebadc_Global-Cyber-Security-Incidents-Q4-2022.pdf.

7 CERT-In, "India Ransomware Report for H1-2022," https://www.cert-in.org.in/.

China-based hackers as well as syndicates supported by China have been linked to multiple attacks.[8] However, proving the culpability of the Chinese government or its Ministry of State Security (which is engaged in malicious cyber activities against other adversaries like the United States) in these attacks has proved difficult.[9] This is despite extensive work by private cybersecurity firms like Recorded Future and CyFirma, which have noted a pattern of cyberattacks by China against India.[10] A 2018 CERT-In study attributed 35 percent of cyberattacks against India to China, and 9 percent to Pakistan.[11]

While China-based or Chinese hackers have not carried out big disruptive attacks, several other penetrating cyberattacks have targeted India's national and commercial computer networks. These attacks have spanned two types of threats—attacks aimed at disrupting the functioning of critical national infrastructure, and those aimed at harvesting data from sensitive computer networks.

One of the first attacks targeting the military computer network, suspected of having originated from China, was reported in 2012, when the Indian Navy reportedly investigated a hacking attack on its Eastern Naval Command computers.[12] The alleged attempt may have resulted in confidential military data being stolen. In another incident detected in

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[8]   Sameer Patil, "India's Cyber Security Landscape," in *Varying Dimensions of India's National Security,* ed. Anshuman Behera and Sitakanta Mishra (Singapore: Springer, 2022), 75-90.

[9]   Soumik Ghosh, "Lack of Cyber Attribution a Major Challenge for India: Lt Gen Pant," *CSO India,* September 2, 2020, https://www.csoonline.com/article/3572646/lack-of-cyber-attribution-a-major-challenge-for-india-lt-gen-pant.html.

[10] See, for instance, "Continued Targeting of Indian Power Grid Assets by Chinese State-Sponsored Activity Group," *Insikt Group,* April 6, 2022, https://www.recordedfuture.com/continued-targeting-of-indian-power-grid-assets; Krishna Da, "Chinese Hackers Target Indian Vaccine Makers SII, Bharat Biotech, Says Security Firm," *Reuters,* March 1, 2021, https://www.reuters.com/article/us-health-coronavirus-india-china-idUSKCN2AT20P.

[11] "China Responsible for Over a Third of Cyber Attacks on Official Indian Sites, NSCS Informed," *The Financial Express,* August 23, 2018, https://www.financialexpress.com/india-news/china-responsible-for-over-a-third-of-cyber-attacks-on-official-indian-sites-nscs-informed/1289272/.

[12] Manu Pubby, "China Hackers Enter Navy Computers, Plant Bug to Extract Sensitive Data," *The Indian Express,* July 1, 2012, http://archive.indianexpress.com/news/china-hackers-enter-navy-computers-plant-bug-to-extract-sensitive-data/968897/.

2015, hackers, most likely supported by the Chinese government, ran a successful decade-long espionage operation (Advanced Persistent Threat/ APT30) against Indian servers, ferreting information on the India-China border dispute, Indian naval activity in the South China Sea, and India's relations with its South Asian neighbours.[13]

In recent years, attacks originating from China have combined disruption, coercion, and espionage. For instance, Recorded Future has revealed repeated breaches of India's power grids by RedEcho, a China-linked hacking group which, at least in one instance, had disrupted power supplies in Mumbai in October 2020.[14] However, these breaches happened when the Indian Army and China's People's Liberation Army (PLA) were engaged in a protracted border stand-off in the Ladakh sector, suggesting a strategy of intimidation.[15] Similarly, Indian authorities suspect the involvement of Chinese hackers in the December 2022 ransomware incident at New Delhi's All India Institute of Medical Sciences facility. These repeated breaches also suggest attempts at gathering confidential information.

In contrast, cyberattacks originating from Pakistan have more frequently demonstrated the threat of espionage than disruption or coercion. For instance, in March 2016, media reports noted that Pakistan was using the SmeshApp spyware to eavesdrop on Indian Army personnel and collect information on troop movements and counterterrorism operations.[16] Similarly, in 2020, Malwarebytes Labs cybersecurity firm had

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[13] "Threat Research: APT 30 and the Mechanics of a Long-Running Cyber Espionage Operation," *Fireeye,* April 2015, https://www2.fireeye.com/rs/fireye/images/rpt-apt30.pdf.

[14] "China-Linked Group RedEcho Targets the Indian Power Sector Amid Heightened Border Tensions," *Insikt Group,* February 28, 2021, https://www.recordedfuture.com/redecho-targeting-indian-power-sector.

[15] Sameer Patil and Kishika Mahajan, "Expanding Chinese Cyber-Espionage Threat Against India," *Observer Research Foundation,* April 18, 2022, https://www.orfonline.org/expert-speak/expanding-chinese-cyber-espionage-threat-against-india/.

[16] Pranay Upadhyay, "Google Removes SmeshApp Used by Pakistan to Snoop on Indian Troops," *News18,* March 15, 2016, https://www.news18.com/news/india/google-removes-smeshapp-used-by-pakistan-to-snoop-on-indian-troops-1216294.html.

detected repeated attempts to hack the Indian government and military computer networks for stealing sensitive data on the Pakistan's military and diplomatic interests.[17]

Another dimension of China's and Pakistan's threats in cyberspace is the information warfare propagated against India. In the case of Pakistan, the Pakistan Army's Inter-Services Intelligence (ISI) has exploited domestic developments in India, particularly the inter-religious dynamics and the counter-insurgency campaign in Kashmir Valley, to disseminate an anti-India narrative. On Kashmir, for instance, the ISI has sought to elicit international interest by portraying Kashmir's militancy as "indigenous resistance" and India as a "major human rights violator".[18] Meanwhile, from China, the threat has been more focused on contesting Indian claims over the stand-off on the Line of Actual Control, belittling India's military capabilities and projecting the PLA's superiority. Therefore, countering such narratives has posed a significant challenge for the Indian military.

There are two other equally important concerns. The first relates to the China-Pakistan cyber collusion in instances such as APT36's Operation Sidecopy, known for phishing attacks against Indian military networks.[19] Here, China has taken the lead by providing the technology and content, while Pakistan acts as the implementer and disseminator. This has raised the spectre of a 'two-front war' in cyberspace for India.[20] Second,

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[17] Kalpesh Mantri, "Operation 'Honey Trap': APT36 Targets Defence Organizations in India," *Seqrite Blog,* July 8, 2020, https://www.seqrite.com/blog/operation-honey-trap-apt36-targets-defense-organizations-in-india/.

[18] Sameer Patil, "Counter-Terrorism Scenario in J&K," *Yojana,* September 2022.

[19] Kalpesh Mantri, Pawan Chaudhari, and Goutam Tripathy, "Operation SideCopy," *Seqrite Whitepaper,* https://www.seqrite.com/documents/en/white-papers/Seqrite-WhitePaper-Operation-SideCopy.pdf.

[20] Aditya Bhan and Sameer Patil, "Cyber Attacks | Pakistan Emerges as China's Proxy Against India," *Moneycontrol,* February 11, 2022, https://www.moneycontrol.com/news/opinion/cyber-attacks-pakistan-emerges-as-chinas-proxy-against-india-8081491.html.

policymakers are apprehensive that Pakistan-based terrorist groups like Lashkar-e-Tayyaba and Jaish-e-Mohammed could also lay their hands on malware and ransomware tools to sabotage critical Indian infrastructure.[21] Any such terrorist sabotage has the potential to lead to a flare-up of India-Pakistan military tensions, as suggested by previous cross-border terrorist attacks.

In response to this emerging threat outlook, India has strengthened its cybersecurity capabilities in the civilian sector by introducing policy measures like the Information Technology Act (2000), amended in 2008, and the National Cyber Security Policy (2013).[22] In addition, it has created a host of new institutions to address specific aspects of cyber threat. In 2015, the government created the National Cyber Security Coordinator's office to synchronise efforts among the intelligence, law enforcement, judicial, and technical agencies and departments. Furthermore, there are agencies like the National Critical Information Infrastructure Protection Centre, CERT-In-operated Cyber Swachhta Kendra (Botnet Cleaning and Malware Analysis Centre), and sector-specific CERTs. In 2018, the government established the Indian Cyber Crime Coordination Centre, which acts as the line agency for tackling cybercrimes. It has a 24/7 cybercrime-reporting portal and a platform for joint cybercrime investigation.[23] Besides, India is strengthening its cyber forensic capabilities by setting up cyber forensic laboratories and centres in academic institutions. The government is also creating a national malware repository which reportedly has over 90 million samples of malware and will serve as a critical resource for building cybersecurity-related products.[24]

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[21] "Gauging India's Readiness in an Era of Cyber Warfare," *Financial Express,* November 24, 2022, https://www.financialexpress.com/defence/gauging-indias-readiness-in-an-era-of-cyber-warfare/2890584/.

[22] Patil, "India's Cyber Security Landscape," 84-85.

[23] "Forces Inimical to India Have 'Cyber Armies' to Launch Cyberattacks Against India: Home Minister Amit Shah," *The Hindu,* June 20, 2022, https://www.thehindu.com/news/national/forces-inimical-to-india-have-cyber-armies-to-launch-cyberattacks-against-india-home-minister-amit-shah/article65545112.ece.

[24] "Government Likely to Launch National Malware Repository on August 3," *The Economic Times,* July 1, 2022, https://economictimes.indiatimes.com/tech/technology/govt-may-launch-national-malware-repository-to-create-robust-cybersecurity-regime/articleshow/92602210.cms.

Indian policymakers have also significantly expanded cyber diplomacy with likeminded partners and at multilateral forums. Specifically at the United Nations, Indian diplomats have highlighted the need to evolve standard definitions of concepts including 'cyber sovereignty', 'deterrence', and 'cyberattacks'.[25] They have also supported the 'right to self-defence' against state-sponsored cyberattacks.[26]

In a nutshell, responding to persistent cyber intrusions remains a work in progress for India, but policymakers have shown interest in developing cyber resilience and defending cyberspace.[27] This approach, however, has several challenges.

Indian Military's Cyber Capabilities

Cyber has emerged as the fifth domain of warfare after land, air, sea, and space, even cutting across the other four domains. As geopolitical tensions and territorial disputes flare up, it appears that the world is returning towards inter-state warfare, but with hybrid warfare characteristics. Therefore, instead of the conventional 'tank and trench warfare', contemporary and future wars will prominently feature cyber-led disruptive technologies. The Russia-Ukraine conflict has demonstrated

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[25] "Statement at the Organisational Session of the Open-Ended Working Group (OEW) on Developments in the Field of Information and Telecommunications in the Context of International Security," Permanent Mission of India to the Conference on Disarmament, Geneva, Ministry of External Affairs, June 3, 2019, http://meaindia.nic.in/cdgeneva/?8251?000.

[26] Hannes Ebert, "Hacked IT Superpower: How India Secures its Cyberspace as a Rising Digital Democracy," *India Review* 19, no. 4 (October 2020): 376-413.

[27] Both the International Institute for Strategic Studies (IISS) and the Belfer Center's National Cyber Power Index 2022 have ranked India lower in cyber power. According to the Belfer Center, India has "low intent and low capabilities" when it comes to cyber power, while as per IISS, India has made modest progress in developing its policy and doctrine for cybersecurity. See Julia Voo et al., "National Cyber Power Index 2020," Belfer Center for Science and International Affairs, September 2020, https://www.belfercenter.org/sites/default/files/2020-09/NCPI_2020.pdf; "Cyber Capabilities and National Power: A Net Assessment," The International Institute for Strategic Studies, June 28, 2021, https://www.iiss.org/research-paper/2021/06/cyber-capabilities-national-power/.

the role of non-kinetic elements like cyber and disinformation operations in preparing the ground for Russia's military campaign before the outbreak of hostilities.[28] Moreover, the consequences of cyber operations are no longer confined to cyberspace.[29] For instance, in May 2019, the Israeli military pre-empted Hamas's cyberattack by bombing the terrorist organisation's technology division in the Gaza Strip.[30]

These developments are rapidly blurring the distinctions between the physical and virtual battlefields. They have further made cyber and electronic warfare an indispensable military capability and a critical element of conventional warfighting efforts focusing on Network Centric Warfare.[31] The following paragraphs discuss the cyber capabilities of the Indian military and describes the doctrinal understanding of the three services, their key tasks in the cyber domain, and institutional changes and other initiatives being implemented to meet current challenges.

From the military's perspective, cyber threats can be defined as threats to data, employees, and hardware. Saboteur elements can exploit a vulnerability in any of these three elements. Some of the key responsibilities assigned to the military in the cyber domain include:

- Developing a doctrine for cyber operations that aligns with India's national cybersecurity strategy (proposed/forthcoming);
- Protecting military computer network, platforms, and weapons systems from sabotage, degradation, and disruption;

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[28] Sameer Patil, "Lessons from the Ukraine Conflict for India's National Security Management," *Observer Research Foundation,* February 28, 2022, https://www.orfonline.org/expert-speak/lessons-from-the-ukraine-conflict-for-indias-national-security-management/.

[29] "India's New Defence Cyber Agency Will Have to Work Around Stovepipes Built by Army, Navy & Air Force: Lt Gen DS Hooda," *News18,* June 26, 2019, https://www.news18.com/news/opinion/new-defence-cyber-agency-will-have-to-work-around-stovepipes-built-by-army-navy-air-force-lt-gen-hooda-2204033.html.

[30] Israel Defense Forces (@IDF), "CLEARED FOR RELEASE: We thwarted an attempted Hamas cyber offensive against Israeli targets. Following our successful cyber defensive operation, we targeted a building where the Hamas cyber operatives work. HamasCyberHQ.exe has been removed," Twitter, May 5, 2019, https://twitter.com/IDF/status/1125066395010699264.

- Protecting sensitive information and personnel from cyber-enabled espionage operations;
- Integrating cyber threat intelligence with other categories of intelligence like technical (TECHINT), signals, human (HUMINT), and electronic (ELINT);
- Developing cybersecurity awareness among personnel and training them in cyber warfare;
- Countering anti-India foreign propaganda; and
- Deterrence and offensive cyber operations.

Cyber capabilities and military doctrines

The Indian military views cyber capabilities and warfare as part of the broader concept of 'information warfare'. This essentially means combining operations related to cyber, electronic, and psychological warfare. The objective is to undermine the adversary's information networks by denying, exploiting, corrupting, or destroying them, while simultaneously protecting India's information networks against potential attacks from the adversary.[32] The three services' doctrines and strategies agree unanimously on this front.[33] There is also a recognition that cyber capabilities are an important part of hybrid warfare and grey-zone tactics—what the Indian Army's Land Warfare Doctrine of 2018 defines as "No War No Peace".[34]

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[31] Kartik Bommakanti, "Electronic and Cyber Warfare: A Comparative Analysis of the PLA and the Indian Army", *ORF Occasional Paper No. 203,* Observer Research Foundation, July 2019, https://www.orfonline.org/wp-content/uploads/2019/07/OP203.pdf.

[32] "Ensuring Secure Seas: Indian Maritime Security Strategy," Ministry of Defence (Navy), Government of India, New Delhi, October 2015, https://www.indiannavy.nic.in/sites/default/files/Indian_Maritime_Security_Strategy_Document_25Jan16.pdf

[33] See note no. 2.

[34] "Land Warfare Doctrine- 2018," Indian Army, November 2018, https://indianarmy.nic.in/Site/FormTemplete/frmTempSimple.aspx?MnId=gH8MJZWPofIyxnfaJVJLTw==&ParentID=C4Kc38z1El/htbUuZvMFRw==.

Elaborating on the hybrid warfare aspect, the Indian Air Force, in its doctrine, notes that India's adversaries have adopted "grey zone tactics by employing cyber, information and economic means as instruments of statecraft."[35] It adds that cyber warfare has become "an attractive low cost war-waging model (with)... notable features such as: low entry cost, blurred traditional boundaries and an expanded role for perception management."[36] The Indian Navy's 2015 maritime strategy, meanwhile, focuses on developing multi-domain awareness. It also emphasises the capability for "safeguarding, and also obtaining, information" in cyberspace.[37] Surprisingly, however, the updated version of the Indian Maritime Doctrine 2009 (updated online version 2015) makes little mention of cyber, except to say that the principle of security entails measures to protect the country's vulnerabilities from action by the enemy, including "information security of our war plans by physical, cyber and electronic security measures."[38]

The Indian Army's Land Warfare Doctrine of 2018 posits that cyberspace will be a "key battle winning factor in future conflicts."[39] The doctrine, hinting at offensive cyber operations, asserts that the army will "upgrade existing Cyber Warfare capabilities with the objective to develop cyber deterrence and defence capabilities, while simultaneously devising means of eliminating such threats."[40] It also mentions the aim to "achieve full spectrum information dominance over the adversary."[41] The Joint Doctrine Indian Armed Forces of 2017 echoes this: "Cyber Power is the ability to use cyberspace freely and securely to gain an advantage over

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[35] "Doctrine of the Indian Air Force," Indian Air Force, 2022, https://indianairforce.nic.in/wp-content/uploads/2023/01/2MB.pdf

[36] "Doctrine of the Indian Air Force"

[37] "Ensuring Secure Seas: Indian Maritime Security Strategy"

[38] "Ensuring Secure Seas: Indian Maritime Security Strategy"

[39] "Land Warfare Doctrine- 2018"

[40] "Land Warfare Doctrine- 2018"

[41] "Land Warfare Doctrine- 2018"

the adversary while denying the same to him in various operational environments, and by applying the instruments of National Power." It also recognises the importance of cyber power in Network Centric Warfare (NCW).[42]

This overview of doctrines suggests that, while the Indian military recognises cyber as a crucial element of future warfare, its understanding of the actual role of cyber capabilities in warfighting is still evolving. The Indian Air Force broadly illustrates this in its doctrine, which appreciates the importance of cyber warfare for "enhancing operational tempo that contributes to mobility, lethality, accuracy or flexibility of air and surface forces."[43]

Defence Cyber Agency

The DCyA was formed in 2019 to control and coordinate the joint cyber operations.[44] Headed by Rear Admiral Mohit Gupta, the agency is headquartered in New Delhi and has units around the country.[45] Besides this, there is not much official information on the DCyA, but open-source information has revealed certain details. For one, the agency replaces the earlier Defence Information Assurance and Research Agency. Currently, it has 150 personnel drawn from the three services, but it is supposed to have a staff strength of approximately 1,000 personnel.[46,47] It works

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[42] "Joint Doctrine Indian Armed Forces," Ministry of Defence, Government of India, New Delhi, April 2017, https://ids.nic.in/WriteReadData/Document/2/13/1718bbb2-cb9c-4ef5-9843-cb670e58afb7.pdf.

[43] "Doctrine of the Indian Air Force"

[44] Ministry of Defence, "Cyber Warfare," PIB, August 4, 2021, https://pib.gov.in/PressReleasePage.aspx?PRID=1742322

[45] "India Set to Get Defence Cyber Agency to Fight Pak, Chinese Hackers," *NDTV,* April 30, 2019, https://www.ndtv.com/india-news/india-set-to-get-defence-cyber-agency-to-fight-pak-chinese-hackers-2030798

[46] Abhinandan Mishra, "India's Cyber Offensive Capabilities Still Not Top-Notch," *Sunday Guardian Live,* August 27, 2022, https://www.sundayguardianlive.com/news/indias-cyber-offensive-capabilities-still-not-top-notch.

[47] "India's New Defence Cyber Agency," *CCG Blog,* May 9, 2019, https://ccgnludelhi.wordpress.com/2019/05/09/defense-cyber-agency/.

closely with civilian security and intelligence agencies like the National Technological Research Organisation, the Research and Analysis Wing, the National Security Council Secretariat (NSCS), and the Defence Research and Development Organisation (DRDO). However, the exact nature of this relationship remains unclear.[48]

Besides controlling and coordinating the joint cyber operations, the DCyA's tasks remain unclear. However, most analysts agree that it has both defensive and offensive capabilities. This includes "hacking into networks, mounting surveillance operations, laying honeytraps."[49,50] According to Lt Gen DS Hooda, former General Officer Commanding-in-Chief of the Indian Army's Northern Command, DCyA's two priority tasks would be to develop a doctrine that incorporates cyber capabilities into conventional operations and to design a policy for securing military networks.[51] Media reports have also attributed the responsibility for conducting offensive cyber operations to the DCyA.[52]

Despite this prioritisation of cyber operations and capability development, the Lok Sabha's Standing Committee on Defence, in its report for 2020-21, had noted a funding gap for the DCyA and other newly created tri-service agencies such as the Armed Forces Special Operations Division

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[48] Shravishtha Ajaykumar, "India: Crucial Cyberwarfare Capabilities Need to be Upgraded," *Observer Research Foundation,* September 26, 2022, https://www.orfonline.org/expert-speak/india-crucial-cyberwarfare-capabilities-need-to-be-upgraded/

[49] John Leyden, "Indian Cyber-Espionage Activity Rising Amid Growing Rivalry with China, Pakistan," February 25, 2012, https://portswigger.net/daily-swig/indian-cyber-espionage-activity-rising-amid-growing-rivalry-with-china-pakistan

[50] Pradeep Sagar, "Three-Pronged Plan," *The Week,* June 1, 2019, https://www.theweek.in/theweek/current/2019/05/31/three-pronged-plan.html.

[51] "India's New Defence Cyber Agency Will Have to Work Around Stovepipes Built by Army, Navy & Air Force: Lt Gen DS Hooda"

[52] There appears to be a division among the officers on offensive cyber operations. Those who oppose cyber offense are of the view that cyber warfare appears to lend itself more readily to defensive measures rather than offensive actions, since the latter requires high investments of time, effort, and capital. It also poses ethical and legal challenges, particularly in democratic countries. See CLAWS Pragyan Conclave 2022.

and the Defence Space Agency. The committee observed that the Ministry of Defence had informed of a shortfall of INR 399.08 crores.[53] Consequently, the ministry noted its inability to operationalise these three tri-service agencies.

While the DCyA's tasking is a matter of speculation, its status as an agency has also become a matter of discussion. In 2011, the Task Force on National Security headed by Naresh Chandra had recommended the establishment of a tri-service cyber command along with aerospace and special operations commands.[54] However, the prevalent thinking within the government was that unless India acquired requisite capabilities, such commands will not be established. Subsequently, when the DCyA was set up, the debate on 'agency versus command' re-emerged. For instance, a report written by a group of retired military officers emphasised that an agency like the DCyA is "perhaps lowest in the rung", has "limited resources", and would be unable to "convey deterrence."[55] Therefore, they recommended upgrading from agency to command to respond effectively to emerging cyber threats. In 2021, media reports suggested that the government was contemplating creating cyber command in Madhya Pradesh to equip upcoming theatre commands.[56]

The Indian military has also established service-specific CERTs. Official documents have also noted the existence of cyber groups for the Army, Navy, and Air Force which, along with the DCyA, protect and defend the defence forces' information and communication technology assets.[57]

[53] Lok Sabha Secretariat, "Fifteenth Report of the Standing Committee on Defence (2020-21)," February 12, 2021, https://loksabhadocs.nic.in/lsscommittee/Defence/17_Defence_15.pdf.

[54] P.C. Katoch, "Defence Cyber Command," *SP's Naval Forces,* July 6, 2021, https://www.spsnavalforces.com/experts-speak/?id=454&h=Defence-Cyber-Command.

[55] "Credible Cyber Deterrence in Armed Forces of India," VIF Task Force, March 2019, https://www.vifindia.org/sites/default/files/Credible-Cyber-Deterrence-in-Armed-Forces-of-India_0.pdf.

[56] Shishir Gupta, "Indian Military Personnel to Train in US on Cybersecurity, Command in the Offing," *Hindustan Times,* June 30, 2021, https://www.hindustantimes.com/india-news/india-military-personnel-to-train-in-us-on-cybersecurity-command-in-the-offing-101625025032655.html.

[57] Ministry of Defence, "Cyber Warfare"

Cyber capabilities at the operational level

At the operational level, the three services have extensively incorporated digital technologies to augment their intelligence surveillance and reconnaissance capabilities. In the case of the Army, for instance, integrated HUMINT, ELINT, and TECHINT, along with the intelligence from space and cyber capabilities from various agencies is being made available to field formations.[58] As for the platform-centric services for the Air Force and Navy, cyber capabilities are part of the overall tech absorption and adoption they have implemented to be proficient in the NCW capabilities.[59] However, this dependence on data and sensor-driven technologies also opens up vulnerabilities for the services.[60] Therefore, a significant effort is underway to ensure that the integrity and resilience of the computer network, digital platforms, and space and airborne assets. Though this also runs the risk of looking at the issue of cyber capabilities as a mere information technology issue.

As part of this, a particular emphasis has been on deploying indigenous software and hardware. The DRDO has taken the lead on this, most notably by attempting to develop a Linux-based indigenous operating

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[58] Jayant Baranwal, "Strengthening our Military Capabilities and Developing Cyber, Space and Strategic Communications is an Undeniable Requirement- Interview with Gen Naravane, Chief of Army Staff," SP's Land Forces, 2022, https://www.spslandforces.com/story/?id=788&h=.

[59] Jayant Baranwal, "IAF Views Cyber Operations as an Integral Part of all Military Operations. We Are Continuously Working to Upgrade These Capabilities at All Times," SP's Aviation, 2022, https://www.sps-aviation.com/story/?id=3076&h=IAF-Views-Cyber-Operations-as-an-Integral-Part-of-all-Military-Operations-We-are-Continuously-Working-to-Upgrade-these-Capabilities-at-all-times.

system called Bharat Operating Systems Solutions.[61] In 2017, reports noted that Udhampur-based Northern Command had begun testing the system.[62] However, that effort fizzled out due to limited hardware support and functionality.[63]

Other initiatives

Training and exercises are important to enhance the military's cyber capability. These add to the personnel's skillsets, shape inter-agency coordination, develop crisis response mechanisms, test and reinforce standard operating procedures, and delineate the chain of command for emergency decision-making.[64] The Joint Training Doctrine of Indian Armed Forces 2017 emphasised "operation oriented" joint training with a focus on refining joint operational skills and increasing "interoperability."[65] Accordingly, the DCyA has conducted exercises by simulating attacks on its own network.[66] The Army has also conducted annual cybersecurity exercises to identify vulnerabilities in its network and take remedial measures.[67] There are also reports mentioning joint exercises envisaging

[60] Ramesh Rai, "Focus on Fifth Domain," *FORCE Magazine,* https://forceindia.net/guest-column/focus-fifth-domain/.

[61] Centre for Development of Advanced Computing, "BOSS Linux and Variants," https://www.cdac.in/index.aspx?id=st_pr_Boss_gnu_linux.

[62] Ajit Kumar Dubey, "In Line with PM Modi's Push, Army Gets New Software to Enhance Cyber Security," *Indian Today,* April 2, 2017, https://www.indiatoday.in/mail-today/story/indian-army-cyber-security-boss-968999-2017-04-02.

[63] Shubhangi Shah, "A Made-in-Bharat OS," *Financial Express,* January 29, 2023, https://www.financialexpress.com/life/technology-a-made-in-bharat-os-2962842/.

[64] Munish Sharma, "Cyber Exercises and the Indian Armed Forces," *IDSA,* May 16, 2019, https://idsa.in/idsacomments/cyber-exercises-the-indian-armed-forces-msharma-160519.

[65] "Joint Training Doctrine- Indian Armed Forces," Ministry of Defence, Government of India, New Delhi, November 2017, https://www.ids.nic.in/IDSAdmin/upload_images/doctrine/JTD-14-NOV-FINAL.pdf.

[66] Rajesh Uppal, "Under Cyber Warfare Threat from China and Pakistan, India Steps up Cyber-Security Measures and Operationalising its Cyber Command," *IDST,* December 28, 2020, https://idstch.com/geopolitics/under-threat-from-cyber-warfare-from-china-and-pakistan-india-operationalising-its-cyber-command/

[67] Amrita Nayak Dutta, "Coronavirus Doesn't Stop Indian Army from Carrying Out its Annual Cyber Security Exercise," *The Print,* April 2, 2020, https://theprint.in/defence/coronavirus-doesnt-stop-indian-army-from-carrying-out-its-annual-cyber-security-exercise/393049/.

scenarios of attacks on military servers and power grids.[68] The Indian Army has, with support from the NSCS, established an artificial intelligence (AI) centre at the Quantum Lab at the Military College of Telecommunication Engineering, Mhow, Madhya Pradesh, which imparts training on cyber warfare.[69] The Army, meanwhile, is also utilising hackathons through Sainya Ranakshetram to strengthen its cyber warfare capabilities.[70]

Although the military is making efforts to expand trained personnel in cyber warfare, general cybersecurity hygiene among the rank and cadres remains a persistent concern. There are no comprehensive statistics to note a definite trend. Still, a steady stream of reports has noted defence personnel getting entangled in honey traps, primarily through social media platforms, and tricked into revealing sensitive information.[71,72,73] To stem incidents like these, the military has issued a social media advisory and directed serving officers to delete social media and other apps meant for messaging, gaming, and content-sharing.[74] However, effective implementation of these steps has proved a difficult task.

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[68] Rajat Pandit, "Forces Prepare to Deal with Cyber Attacks on Key Infrastructure," *Times of India,* April 29, 2019, https://timesofindia.indiatimes.com/india/forces-prepare-to-deal-with-cyber-attacks-on-key-infrastructure/articleshow/69088311.cms.

[69] "Indian Army Establishes Quantum Laboratory at Mhow, Offers Training in Cyber Warfare," *Economic Times,* December 29, 2021, https://government.economictimes.indiatimes.com/news/governance/indian-army-establishes-quantum-laboratory-at-mhow-offers-training-in-cyber-warfare/88566099.

[70] Ministry of Defence, "Indian Army Organises Sainya Ranakshetram 2.0 - A Cyber Threat Seminar Cum Workshop," *Press Information Bureau,* January 17, 2023, https://pib.gov.in/PressReleasePage.aspx?PRID=1891808

[71] Manjeet Negi, "Indian Navy Honeytrap Case: 13 Personnel Apprehended in Espionage Probe," *India Today,* February 16, 2020, https://www.indiatoday.in/india/story/indian-navy-honeytrap-espionage-pakistan-intelligence-social-media-1647041-2020-02-16.

[72] "IAF Officer 'Honey-Trapped' by Pakistan's ISI was Posted in Sensitive Defence Unit," *Hindustan Times,* February 10, 2018, https://www.hindustantimes.com/delhi-news/honey-trapped-iaf-officer-was-posted-in-sensitive-defence-unit-for-airborne-warning-and-control-system/story-Hle7lGfmsgJDmbrRbi1bKN.html

[73] "Indian Army Soldier Arrested in Espionage Case," *The Hindu,* July 27, 2022, https://www.thehindu.com/news/national/indian-army-soldier-arrested-in-espionage-case/article65688466.ece.

[74] "Army Personnel Told to Delete Facebook, Instagram and 87 Other Apps by July 15," *The Hindu,* July 27, 2020, https://www.thehindu.com/news/national/army-bans-89-apps-including-facebook/article32029792.ece.

Regarding information warfare, the Indian Army has taken the lead by creating the post of Director General of Information Warfare under the Deputy Chief of Army Staff, Strategy in 2020. This post would have the Additional Director General (Strategic Communications) under it.[75] The idea behind creating this post was to perform cyber and information warfare functions under one regiment. However, the border stand-off with China has led to these efforts being put on the backburner. The efforts to address the menace of disinformation have also been replicated at the corps level. For instance, the army's Srinagar-based Chinar Corps is implementing an extensive counter-narrative exercise against ISI's anti-India propaganda. This effort, however, lacks the required push of national amplification.[76] Moreover, the Air Force and the Navy's efforts in information warfare lack the resourcefulness of the Army.[77]

The Military's Role in India's Broader Cybersecurity Posture

The above account suggests an extensive effort by the Indian military to integrate cyber capabilities within the rubric of information warfare. However, this transformation will be incomplete until India fleshes out an appropriate strategy or doctrine that can act as a guiding framework for deploying cyber capabilities. India still lacks an operational National Cyber Security Strategy, which has been delayed by at least three years.[78]

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[75] "Centre Approves Army Headquarters Reorganisation, Force Gets Third Deputy Chief," *ANI,* December 3, 2020, https://www.aninews.in/news/national/general-news/centre-approves-army-headquarters-reorganisation-force-gets-third-deputy-chief20201203213427/.

[76] Sameer Patil, "Counter-Terrorism Scenario in J&K"

[77] Snehesh Alex Philips, "Indian Army, Air Force and Navy Must Work Out a Joint Media Policy for Information Warfare," *The Print,* March 13, 2020, https://theprint.in/opinion/brahmastra/indian-army-air-force-navy-must-work-out-a-joint-media-policy-for-information-warfare/380161/.

[78] "National Cybersecurity Strategy 2023 May Come Out Soon: Pant," *ET Telecom,* February 20, 2023, https://telecom.economictimes.indiatimes.com/news/national-cybersecurity-strategy-2023-may-come-out-soon-pant/98093316.

A clear cybersecurity strategy is critical to integrate the military's cyber capabilities into the national cyber effort. It will also establish India's position on cyber deterrence.[79]

Furthermore, on offensive cyber operations, a coherent framework seems to be lacking, and not necessarily the capability to engage in cyber sabotage, as pointed out by former National Security Advisor MK Narayanan.[80] It is notable that, since the formation of the DCyA, cyberattacks originating from Indian threat actors have picked up repeated targeting of Pakistan and China's computer networks.[81] Broadly, these threat actors can be categorised into hacktivists, patriotic hackers, and APTs.[82]

The siloed approach adds another element of complication. There appears to be a firm civilian-military divide in cyberspace management, with civilian agencies taking the lead in cyber defence and the military focusing on securing its computer network. Within the services too, the siloed approach persists, despite the formation of the DCyA, as they are averse to sharing operational data and resources. There is no clarity, for instance, about whether the DCyA has taken steps towards instituting a tri-service fusion centre type operational mechanism to create situational awareness on cyber threats. There is also the question of human resources as to whether the DCyA should keep drawing personnel from existing pools of signal corps and electronic warfare branches of the services or raise its own specialised cadre.[83] Some of these issues are expected to get clarity once the government formulates a joint doctrine

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[79] Deependra Singh Hooda, "Towards a Cyber Deterrence Strategy for India," *Delhi Policy Group,* Policy Brief VI, no. 19, July 2021, https://www.delhipolicygroup.org/publication/policy-briefs/towards-a-cyber-deterrence-strategy-for-india.html

[80] MK Narayanan, "The Best Among Limited Options," *The Hindu,* September 21, 2016, https://www.thehindu.com/opinion/lead/The-best-among-limited-options/article14600622.ece.

[81] Leyden, "Indian Cyber-Espionage Activity Rising Amid Growing Rivalry with China, Pakistan"

[82] Arindrajit Basu, "India's International Cyber Operations: Tracing National Doctrine and Capabilities," *UNIDIR,* December 16, 2022, https://www.unidir.org/cyberdoctrines/India.

[83] Mark Pomerleau, "Cyber Command Looking to Equip its Cyber Warriors," *C4ISRNET,* March 30, 2017, https://www.c4isrnet.com/2017/03/30/cyber-command-looking-to-equip-its-cyber-warriors/.

on cyber operations.[84] However, if there is institutional resistance to proceed on the path of jointness, it is bound to have implications for India's cybersecurity preparedness.

The National Cyber Security Strategy and the Joint Cyber Doctrine must clearly articulate these concerns and should be inter-aligned. A coherent policy articulation will help delineate the military's role and contribute to a robust cybersecurity posture.

Conclusion

Cyber operations have become intrinsic to any country's conventional military capabilities. It offers adversarial militaries the ability to maintain deniability while disrupting, degrading, or destroying their adversary's computer networks. India has recognised the need to bolster its cyber defences and has taken a proactive approach to plug vulnerabilities in its computer network. The military has followed suit in shaping its cyber capabilities but is in danger of carving out its turf in protecting cyberspace. The absence of a properly defined National Cyber Security Strategy may only reinforce this trend. To prevent this, Indian defence planners must take a comprehensive look at India's cybersecurity posture and adequately define the military's role.

India's principal adversary, China, has successfully grasped these trends and created the Strategic Support Force, which combines the PLA's cyber, space, and electronic warfare service branches. It has helped China advance its strategic objectives and achieve information dominance while exploiting its adversaries' vulnerabilities. New Delhi will have to take a hard look at its understanding of cyberspace to achieve similar objectives.

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[84] "TWENTY-SIXTH REPORT: DEMANDS FOR GRANTS (2022-23)," Standing Committee on Defence (2021-22), Lok Sabha, March 2022, https://loksabhadocs.nic.in/lsscommittee/Defence/17_Defence_26.pdf.

The Expanding Role of Drones in the Indian Military

Nishant Rajeev

UNMANNED AERIAL VEHICLES (or drones) have proliferated rapidly around the world; in 2012, there were 56 types of drones in 11 different countries.[1] By 2020, "at least 102 nations had acquired military drones, and around 40 possessed, or were in the process of purchasing, armed drones."[2] Despite their proliferation between 2012 and 2020, however, the efficacy of drones in a conventional conflict was debatable. For the most part, they had been used in low-intensity conflicts and counterterrorism operations where the hostile airspace was rarely contested.[3]

This changed in 2020, following the Nagarno-Karabakh conflict that caught global attention. Azerbaijan's unconventional application of Turkish drones to defeat Armenian air defences paved the way for a quick and

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1   "Drones by country: who has all the UAVs?," *The Guardian,* https://www.theguardian.com/news/datablog/2012/aug/03/drone-stocks-by-country.

2   Agnes Callamard and James Rogers, "We need a new international accord to control drone proliferation," *Bulletin of the Atomic Scientists,* December 1, 2020, https://thebulletin.org/2020/12/we-need-a-new-international-accord-to-control-drone-proliferation/.

3   Craig Whitlock, "Drone combat missions may be scaled back eventually, Air Force chief says," *The Washington Post,* November 13, 2013, https://www.washingtonpost.com/world/national-security/drone-combat-missions-may-be-scaled-back-eventually-air-force-chief-says/2013/11/13/470deda4-4c97-11e3-b692-e722f1795169_story.html.

decisive victory.[4] Even before the conflict, some analysts had already gone as far as declaring drones to potentially be at the forefront of a new "revolution in military affairs".[5] The use of drones in the Nagarno-Karabakh conflict brought a change to the very nature of warfare.[6] The victory was consequential because it was the first largely conventional conflict where drones were key to the outcome of the conflict. Today, drones continue to play a prominent role in Russia's ongoing invasion of Ukraine that began in February 2022. Drones have been applied for a variety of tasks, from reconnaissance and precision strike to strategic bombing of Kyiv by Russia.

In light of these developments, different militaries across the world have embarked on incorporating drones into their arsenal. Some countries have brought out specific publications to both employ drones and protect against emerging drone threats. While most countries are yet to bring out drone-specific publications, they are debating the efficacy of drones in modern warfare.[7] The Indian military is also undertaking similar assessments and the debates are ongoing.

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4   Seth Jones, et al., "Combined Arms Warfare and Unmanned Aircraft Systems," *CSIS Report,* November 2022, pg no. 10-15, https://www.csis.org/analysis/combined-arms-warfare-and-unmanned-aircraft-systems.

5   Guy Edwards, "Military autonomous and robotic systems," *Air Power Review* 16, no. 3 (2013), pp. 50-71. Tim Hsia and Jared Sperli, "How Cyberwarfare and Drones Have Revolutionized Warfare," *New York Times*, June 17, 2013, https://atwar.blogs.nytimes.com/author/tim-hsia-and-jared-sperli/. For a general discussion on the strategic implications of drones see Michael Mayer, "The New Killer Drones: Understanding the Strategic Implications of Next-Generation Unmanned Combat Aerial Vehicles," *International Affairs* 91, No. 4 (July 2015), pg. 765-780.

6   "The Azerbaijan-Armenia conflict hints at the future of war," *The Economist,* October 8, 2020, https://www.economist.com/europe/2020/10/08/the-azerbaijan-armenia-conflict-hints-at-the-future-of-war.; Robyn Dixon, "Azerbaijan's drones owned the battlefield in Nagorno-Karabakh — and showed future of warfare," *The Washington Post,* November 11, 2020, https://www.washingtonpost.com/world/europe/nagorno-karabkah-drones-azerbaijan-aremenia/2020/11/11/441bcbd2-193d-11eb-8bda-814ca56e138b_story.html.; Stephen Witt, "The Turkish Drone That Changed the Nature of Warfare," *The New Yorker,* May 9, 2022, https://www.newyorker.com/magazine/2022/05/16/the-turkish-drone-that-changed-the-nature-of-warfare.; For an alternate view see Antonio Calcara, et al., "Why Drones Have Not Revolutionized War: The Enduring Hider-Finder Competition in Air Warfare," *International Security 46*, no. 4(2022): 130–171.

India acquired military drones in the late 1990s from Israel. It has deployed drones to patrol and survey its contested border with China and Pakistan and its coastline. In recent years, however, the Indian military has made a sustained push to expand their existing inventory and induct new drone capabilities.

This article examines how the Indian military is looking to integrate drones into its doctrines and force structure. Broadly, the Indian military is of the view that drone capabilities have the potential to bolster India's military power. To this end, the Indian Army, Navy and Air Force have each launched initiatives to harness the potential of drones to increase their military effectiveness. However, there appears to be disagreements between the services on how to employ drones in modern combat.[8] If the Indian military's efforts do not proceed in an integrated manner, it can potentially hamstring their efforts to leverage the potential of this platform. This article relies largely on speeches and publications by senior military officers as well as media reports on the induction and fielding of new capabilities.

It proceeds as follows. First, it outlines India's history with drones, highlighting how their role was limited to reconnaissance. The article then analyses the recent initiatives to modernise India's drone capabilities; studies the lessons drawn from recent conflicts involving drone operations; highlights how these lessons are being translated into operational concepts that are driving acquisition of new capabilities; and concludes with some thoughts on the way forward.

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[7] Emily Feng and Charles Clover, "Drone swarms vs conventional arms: China's military debate," *Financial Times,* August 25 2017, https://www.ft.com/content/302fc14a-66ef-11e7-8526-7b38dcaef614.

[8] D.S. Hooda, "In drone era, tanks must adapt to last longer," *The Tribune*, October 15, 2020, https://www.tribuneindia.com/news/comment/in-drone-era-tanks-must-adapt-to-last-longer-155904.

India's History with UAVs

The Indian military inducted drone technology in the late 1990s. The Indian Army procured its first drones, the Searcher Mark 1 drone from Israel in 1996.[9] The initial order was for 36 Searcher MK 1 drones.[10] Following this, the Indian Army moved to procure the Searcher Mark II variant and the Heron drones. The Searcher series of drones had an altitude ceiling of 15,000 ft while the Heron operated at 30,000 ft. The Indian Air Force (IAF) and Indian Navy (IN) followed the army in UAV inductions. The IAF operated the Searcher Mark II and Heron drones, inducting these systems from 2000 onwards. By 2007, the Indian Air Force had five squadrons of UAVs, although the exact numbers are not available in the public domain.[11] Similarly, the IN established its first drone squadron in 2006 and raised three squadrons by 2012.[12] The Indian Armed Forces steadily built up their UAV numbers. While the initial deals were for small numbers of drones, the Indian military signed more deals throughout the 2000s, to bring their overall numbers to "well over 100" by 2010.[13] In 2009, the IAF procured 10 Harop loitering munitions from Israel for a deal worth US$100 million.[14] This was an upgraded version of the Harpy loitering munition.

9   AK Sachdev, "IAF's Unmanned Capability: Prospects for Indigenisation," *Indian Defence Review* 34, no. 1 (Jan – Mar 2019), http://www.indiandefencereview.com/news/iafs-unmanned-capability-prospects-for-indigenisation/.

10   This data point was compiled from the SIPRI Arms Transfer Database.

11   Rajat Pandit, "After jets, UAVs are on shopping list," *Times of India*, March 26, 2010, http://timesofindia.indiatimes.com/articleshow/1587166.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst,"

12   "Indian Navy commissions its third UAV squadron," *Times of India,* April 11, 2012, http://timesofindia.indiatimes.com/articleshow/12626344.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

13   Rajat Pandit, "India lines up Israeli drones in race with Pak," *Times of India*, March 26, 2010, http://timesofindia.indiatimes.com/articleshow/5724232.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

14   A. K. Sachdev, "The Importance of the Unmanned," *FORCE Magazine*, October 2021, https://forceindia.net/cover-story/the-importance-of-the-unmanned/.

By the early 2010s, the Indian military sought armed UAVs. The IAF was also pushing for the purchase of the Heron TP, an armed version of the Heron drone operated by India. However, the deal was delayed due to restrictions imposed by the Missile Technology Control Regime (MTCR) at the time.[15] India was not a member of the MTCR and formally applied to join the group in June 2015.[16] It was admitted as a member of the grouping in June 2016, paving the way for acquisition of both high-end missile systems and long-range drones.[17] Ultimately, however, this deal did not go through, although the Indian Army does operate four Heron TP drones from Israel in 2021.[18]

By 2020, the Indian military operated around 200 drones of which around 90 are estimated to be Herons.[19] By 2019, the IAF had an estimated 110 Harop loitering munitions.[20]

During this period, all the drones inducted by the Indian military were medium altitude long endurance (MALE) drones. These drones were not armed with kinetic weapons. Instead, they came with an array of

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[15] Mihir Paul, "The future is unmanned," *FORCE,* https://forceindia.net/aero-india-2019/future-is-unmanned/.

[16] Devirupa Mitra, "India to be Admitted as MTCR Member on Monday," *The Wire,* June 26, 2016, https://thewire.in/diplomacy/india-to-be-admited-as-mtcr-member-on-monday.

[17] Lalit K. Jha, "India likely to enter Missile Technology Control Regime soon," *Mint,* June 5, 2016, https://www.livemint.com/Politics/SIOinh6MUD1HEXQbO3wfEL/India-likely-to-enter-Missile-Technology-Control-Regime-soon.html.

[18] Snehesh Alex Philips, "Indian Army will soon get 4 Heron TP drones on lease from Israel, plans to deploy them at LAC," *The Print,* May 26, 2021, https://theprint.in/defence/indian-army-will-soon-get-4-heron-tp-drones-on-lease-from-israel-plans-to-deploy-them-at-lac/665981/. ; "Indian Army receives new Israeli Heron drones for deployment in Ladakh sector," *The Economic Times,* November 30, 2021, https://economictimes.indiatimes.com/news/defence/indian-army-receives-new-israeli-heron-drones-for-deployment-in-ladakh-sector/articleshow/88004017.cms.

[19] A. K. Sachdev, "The Importance of the Unmanned,"; Raghav Bikhchandani "Heron, Searcher, Sea Guardian, SWITCH — the many UAVs that make up India's drone arsenal," August 06, 2021, https://theprint.in/defence/heron-searcher-sea-guardian-switch-the-many-uavs-that-make-up-indias-drone-arsenal/709670/.

[20] P.C. Katoch, "Loitering Munitions," SPS Land Forces, September 1, 2022, https://www.spslandforces.com/experts-speak/?id=926&h=Loitering-Munitions.

intelligence, surveillance and reconnaissance sensors. These included electro-optical sensors, thermal sensors and synthetic aperture radars. Apart from foreign drones, the Indian Defence Research and Development Organisation (DRDO) is developing MALE UAVs for the Indian armed forces. In the long run, the DROD's Rustom and TAPAS series of drones will replace the Searcher and Heron drones imported from Israel.

The Indian military employed UAVs to counter both the sub-conventional and 'grey zone' operations of Pakistan and China as well as to enhance conventional warfighting capabilities. UAVs are deployed along India's vast territorial borders for intelligence and surveillance purposes. They assist the Indian military in detecting intrusions by insurgents along the Line of Control and the Chinese military along the Line of Actual Control. The Indian Navy (IN) has also deployed UAVs from bases in the coastal states of Kerala, Gujarat and Tamil Nadu to patrol India's vast coastlines to enhance its maritime domain awareness. Furthermore, the UAVs allow the Indian military to "peep" into enemy territory to a limited extent. This gives the Indian military the ability to monitor troop movements and infrastructure construction such as bunkers.

During wartime, UAVs can be used for target acquisition and reconnaissance missions. They form an integral part of reconnaissance strike complexes that are at the heart of a network centric warfare. Until 2020, most of the Indian Army's UAVs were administered by the regiment of artillery under its Surveillance and Target Acquisition (SATA) units. Their task was to locate targets for artillery and missile attacks. The IAF uses UAVs for similar purposes. The UAV's primary role is to assist in ground attack and interdiction roles. Furthermore, given the lower risks due to the lack of human pilot, they are also used for Suppression of Enemy Air Defence (SEAD) roles. While the drones can be used to acquire targets through its array of sensors, loitering munitions can be programmed to both acquire and attack targets.

Despite acquiring and operating drones for over two decades now, the Indian services continue to have limited drone capabilities. Most of India's military drones operate on 'Line of Sight' technology. This technology

requires a clear line of sight between the ground base station that controls the drone and the drone itself. This technology has several constraints. First, India's disputed border with its neighbours traverses mountainous terrain. Due to steep ridgelines in the mountains, there is a risk of ground base stations losing communication with the drone due to lack of a clear line of sight. Therefore, India deploys its drones conservatively, which in turn hampers their ability to collect intelligence.[21] Second, Indian drone operations provide poor quality intelligence. In the words of Maj Gen P. K. Chakravorty (retd.), "the issue which is of concern is the quality of pictures obtained while using the Synthetic Aperture Radar (SAR)", adding that the quality of picture "does not give us a clear indication of the object".[22] Another officer writes that "numerous UAV missions end up in obtaining the same data existing in open domain, albeit at a much inferior quality."[23] Finally, sharing intelligence generated by drone operations with tactical and "on-ground" forces is another challenge.   As Lt Col Karthik Veermani notes, "UAV effort is readily available, much earlier and easier than satellite resources/ IAF resources. However, routing the UAV footage down to sub tactical level constantly remains a major challenge."[24]

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[21] Karthik Veermani, "Optimal Exploitation of UAV Missions: User's Perspective," CENJOWS, June 15, 2022, pg no. 9, https://cenjows.in/wp-content/uploads/2022/06/Optimal-Exploitation-of-UAV-by-Lt-Col-K-Veeramani-on-14-Jun-2022.pdf.

[22] P.K. Chakravorty, "Employment of Unmanned Aerial Vehicles (UAVS) and Need for Unmanned Combat Aerial Vehicles (UCAVS) in the Indian Army," *Indian Defence Review,* June 15, 2018, http://www.indiandefencereview.com/spotlights/employment-of-unmanned-aerial-vehicles-uavs-and-need-for-unmanned-combat-aerial-vehicles-ucavs-in-the-indian-army/.

[23] Karthik Veermani, "Optimal Exploitation of UAV Missions: User's Perspective," *CENJOWS,* June 15, 2022, https://cenjows.in/wp-content/uploads/2022/06/Optimal-Exploitation-of-UAV-by-Lt-Col-K-Veeramani-on-14-Jun-2022.pdf.

[24] Veermani, "Optimal Exploitation of UAV Missions: User's Perspective,". Also see Chakravorty, "Employment of Unmanned Aerial Vehicles (UAVS) and Need for Unmanned Combat Aerial Vehicles (UCAVS) in the Indian Army,".

Modernisation Efforts

Since the Galwan crisis in June 2020, the Indian military has been modernising its equipment and updating its strategic posture to confront the military threat from China. Statements and publications by Indian military officials suggest that drone capabilities can help India offset the asymmetry with China. Thus, the Indian military is proceeding along two pillars to leverage drone capabilities. It is modernising existing drone capabilities to be able to overcome the challenges experienced in drone operations; at the same time, it is inducting new capabilities based on lessons of drone operations in recent conventional wars.

Led by the IAF, the Indian Armed Forces have launched Project Cheetah, an initiative to upgrade the capabilities of its existing UAV fleet. Project Cheetah was initially mooted by the IAF in 2013 but has been delayed since.[25] There has been a renewed push for the project in the wake of the Ladakh standoff with China. Under this project, the Heron and Searcher drones will be provided with larger array of sensors, satellite communication and be armed with air-to-surface missile, giving it precision-strike capabilities.[26] The Indian navy and air force already have dedicated communication satellites launched in 2013 and 2018, respectively. Satellite communication allows drone operators to overcome communication issues due to adverse weather conditions and geography.[27]

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[25] Snehesh Alex Philip, "Project Cheetah set to take off, India to get upgraded & armed drones from Israel," *The Print,* August 3, 2021, https://theprint.in/defence/project-cheetah-set-to-take-off-india-to-get-upgraded-armed-drones-from-israel/708122/.

[26] "IAF's 'Project Cheetah' for weaponising Israeli drones to be awarded to Indian firms under Make in India route," *The Print,* September 18, 2022, https://theprint.in/india/iafs-project-cheetah-for-weaponising-israeli-drones-to-be-awarded-to-indian-firms-under-make-in-india-route/1133618/.

[27] Saurav Jha, "Successful GSAT-7A Launch Heralds A New Era For The Indian Air Force's Drone Operations," *Delhi Defence Review,* December 19, 2018, https://delhidefencereview.com/2018/12/19/successful-gsat-7a-launch-heralds-a-new-era-for-the-indian-air-forces-drone-operations/. ; Rajat Pandit, "Satellite control set to give drones more sting," *The Times of India,* September 22, 2018, http://timesofindia.indiatimes.com/articleshow/65907159.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

The technology also increases the range of drone operations previously, limited by the 'line of sight' based technology.[28] Under Project Cheetah, India's Heron drones will be armed with air-to-ground missiles, giving them precision-strike capabilities. Armed drones can thus be used to undertake standoff missile strikes against targets in enemy territory.

More recently, India has also been looking to procure the Predator-B drone from the United States. Unlike the previous drone purchases, these drones are High Altitude Long Endurance (HALE) drones and are likely to be armed. The Indian Navy (IN) leased two such drones in 2020. The service, satisfied with the performance of the two drones, has been advocating for large-scale induction of the system. India agreed to purchase 31 units of the Predator-B/ Sea-Guardian drones in June 2023, with 15 earmarked for the Indian Navy and eight each for the army and air force.[29]

Apart from large MALE and HALE drones, the Indian army is procuring mini- and micro- drones and quadcopters for the infantry. As noted above, passing on intelligence from drones to field units remains a challenge. Equipping field units with smaller drones that can be operated by a single individual and carried in a backpack allows soldiers to generate their own intelligence regarding their surroundings. The Indian Army has placed massive orders for surveillance drones which includes 1,000 surveillance copters.[30]

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[28] Jha, "Successful GSAT-7A Launch Heralds A New Era For The Indian Air Force's Drone Operations,"

[29] "Centre to kick off acquisition of 31 armed Predator drones from US early next month: Report" *Business Today,* June 25, 2023, https://www.businesstoday.in/latest/economy/story/centre-to-kick-off-acquisition-of-31-armed-predator-drones-from-us-early-next-month-report-386967-2023-06-25.

[30] Vivek Raghuvanshi, "Indian Army seeks more than 2,200 drones," *Defence News,* November 3, 2022, https://www.defensenews.com/unmanned/2022/11/03/indian-army-seeks-more-than-2200-drones/

Finally, the Indian Navy (IN) has also been busy developing unmanned systems. It released an "Unmanned Roadmap" in 2021 and shared an unclassified version with the industry to help guide technology development. As per the Indian Defence Secretary, the IN is "focusing on three focus areas — unmanned aerial vehicles; unmanned underwater vehicles, which is a smaller submarine; and underwater domain awareness."[31] Projects currently being evaluated involve primarily unmanned underwater vehicles. In March 2023, the Indian Navy expressed interest in procuring 12 Extra Large Unmanned Underwater Vehicles (XLUUV).[32] Indian companies are working to develop other ship and submarine launched unmanned aerial and underwater systems.[33] Previously, Mahindra Defence and Israeli drone maker Aeronautics Ltd. signed a partnership to build naval unmanned aerial vehicles. These are designed to be launched and recovered from Indian warships.[34] However, much of the Indian Navy's capabilities are still nascent and are unlikely to be deployed widely any time soon.

While these are steps in the right direction, issues continue to persist. Drones in general, tend to be vulnerable platforms. In recent conflicts, drones have proven their ability to evade detection, but they continue to remain vulnerable to countermeasures. Media reports state that the Indian Army's newly inducted Heron TPs' "anti-jamming capability is much

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[31] Mayank Singh, "Indian Navy's focus includes unmanned underwater capabilities, says Defence Secretary," *The New Indian Express,* March 17, 2022, https://www.newindianexpress.com/nation/2022/mar/17/indian-navys-focus-includes-unmanned-underwater-capabilities-says-defence-secretary-2431261.html.

[32] Aditya Krishna Menon, "India Initiates Development Of Massive Armed XLUUV," *Naval News,* April 24, 2023, https://www.navalnews.com/naval-news/2023/04/india-initiates-development-of-massive-armed-xluuv/

[33] "L&T, MDL & DRDO At Forefront Of UUV Solutions For Indian Navy & Exports," *Indian Aerospace and Defence Bulletin,* January 6, 2023, https://www.iadb.in/2023/01/06/lt-mdl-drdo-at-forefront-of-uuv-solutions-for-indian-navy-exports/.

[34] Shoshana Solomon, "India's Mahindra partners with Israel's Aeronautics to make drones," *The Times of Israel,* April 12, 2018, https://www.timesofisrael.com/indias-mahindra-partners-with-israels-aeronautics-to-make-drones/.

better than their previous versions."[35] While the capability is superior, the Heron TP's inventory is low. The Indian Army operates only four of the advanced Herons according to publicly available information. Furthermore, India's satellite bandwidth capacity will dictate the tempo of Indian drone operations.[36] If the bandwidth capacity does not match the planned tempo of operations, it can impede the effectiveness of drone operations.

Notwithstanding such shortfalls of the modernisation drive, it is a concerted effort to address the shortcomings experienced in Indian drone operations. They improve the drone's performance in carrying out the tasks they were intended for—i.e., intelligence, surveillance and reconnaissance. However, modern conflicts have demonstrated that drones are versatile platforms. They have been employed innovatively in conventional wars to strike targets in enemy territory and open the path for conventional forces. Cognizant of these developments, public statements and writings by Indian military officers indicate that the role of drones is set to expand, helping India bridge the growing asymmetry in military capabilities with China.

Recent Expansion of Role for Drones

The Indian military has kept a close eye on recent conflicts where drones have been employed. The most notable are the Nagarno-Karabakh conflict in 2020 and the Russia-Ukraine war which began in February 2022 and is still ongoing. As will be discussed in detail in subsequent sections, Indian military leaders have reached two key conclusions from these conflicts on the advantages offered by drones. First is that drones pose

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[35] "Indian Army receives new Israeli Heron drones for deployment in Ladakh sector," *The Economic Times,* November 30, 2021, https://economictimes.indiatimes.com/news/defence/indian-army-receives-new-israeli-heron-drones-for-deployment-in-ladakh-sector/articleshow/88004017.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst.

[36] Saurav Jha, "India's Armed Drone Fleet," *The Diplomat,* June 25, 2015, https://thediplomat.com/2015/06/indias-armed-drone-fleet/.

unique challenges to traditional platforms and have made them more vulnerable. Second, drones offer ways to overcome dense air defence networks and strike targets in the enemy's rear areas.

In both the Ukraine-Russia conflict and the Nagarno-Karabakh conflict, drones inflicted critical losses on tanks, armoured personnel carriers and the infantry. According to the former Chief of Army Staff, Gen M.M. Naravane, new technologies are heralding the end of traditional platforms such as main battle tanks, manned aircraft and large surface ships. He says, "the vulnerabilities of all three have been amply exposed and unmanned alternatives are already under testing."[37] Previously, the main threat to tanks and mechanised forces has been shoulder-fired guided missiles. These usually need to be fired from within the line of sight. While deadly, it also puts the operators of the missiles within range of tanks and its supporting elements. In the case of drones, both the platform and operators tend to be out of range of the tank and infantry weapons. Thus, they cannot be targeted by the advancing tank or infantry units.[38] Deception tactics like smoke screens also do not work, especially with loitering munitions that can be redirected after the screen clears. Drones and loitering munitions are also able to evade air defence radar detection given their smaller sizes.

Second, both the Indian Army and IAF see unmanned systems as a means to overcome an adversary's robust air defence networks. Unmanned systems allow the military to take greater risks and strike targets deep in enemy territory. The loss of a platform is not an issue as there would be no risk to human life. Lt Gen Raj Shukla, the former chief

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[37] MM Naravane, "Drones are changing warfare than war doctrines change," *Times of India,* October 27, 2022, http://timesofindia.indiatimes.com/articleshow/95126560. cms?pcode=462&from=mdr&utm_source=contentofinterest&utm_medium=text&utm_ campaign=cppst_prime.; D.S. Hooda, "In drone era, tanks must adapt to last longer," *The Tribune,* October 15, 2020, https://www.tribuneindia.com/news/comment/in-drone- era-tanks-must-adapt-to-last-longer-155904.

[38] David Hambling, "Russia Turns To Kamikaze Drones To Slow Ukrainian Advance," *Forbes,* June 13, 2023, https://www.forbes.com/sites/davidhambling/2023/06/13/russia-throws-in- kamikaze-drones-to-slow-ukrainian-advance/?sh=3dcf23d161f2.

of Indian army's training and doctrine command, states, "The potency of our airpower to penetrate a very strong Chinese AD umbrella in the Western Theatre Command (WTC) merits a realistic examination. Drones in modern conflict do seem to be the future."[39] However, the level of maturity of drone technology is what differentiates the Indian Army and the IAF. As noted above, the Indian Army believes that the drones have a significant impact on how future wars will be fought. For its part, the IAF is skeptical. The IAF has acknowledged their successful impact in the Armenia and Azerbaijan conflict and the initial stages of the Russia-Ukraine war. However, they continue to be skeptical of the ability of drones to operate in contested airspaces. As Air Chief Marshal Vivek Ram Chaudhari stated, "while initial reports were largely positive, as the major action shifted to the East (*of Ukraine*), where a structured Russian AD (*air defence)* system was available, most inputs indicate high vulnerability and limited impact."[40]

With these advantages in mind, the Indian Army's Heron drones are being armed with air-to-ground missiles and guided bombs under Project Cheetah. In light of their expanding role, the Indian Army has made organisational changes to drone formations. They began transferring all drone units from the artillery to the army aviation corps from 2020 onwards.[41] Given the expanding range of tasks that drones can

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[39] Raj Shukla, "The military lessons from the Ukraine conflict," ORF, June 1, 2022, https://www.orfonline.org/expert-speak/the-military-lessons-from-the-ukraine-conflict/.

[40] Vishal Thapar, "Drones Had Limited Impact In Ukraine War As Battle Shifted East: IAF Chief," *Business World,* November 25, 2022, https://www.businessworld.in/article/Drones-Had-Limited-Impact-In-Ukraine-War-As-Battle-Shifted-East-IAF-Chief/25-11-2022-455586/. ; For a similar viewpoint see "India keeps an eye on drone warfare even as it considers buying the US MQ-9 Reaper," *The Economic Times,* October 13, 2020, https://economictimes.indiatimes.com/news/defence/india-keeps-an-eye-on-drone-warfare-even-as-it-considers-buying-the-us-mq-9-reaper/harop/harpy-suicide-drones/slideshow/78638042.cms. ; Manu Pubby, "Armenia-Azerbaijan conflict: India keeping a close watch, feels that just drones can't win wars," *The Economic Times,* October 9, 2020, https://economictimes.indiatimes.com/news/defence/armenia-azerbaijan-india-keeping-a-close-watch-assessment-that-just-drones-cant-win-wars/articleshow/78548173.cms?from=mdr.

[41] Snehesh Alex Philip, "Army's drone formation sees massive changes as tensions with China mount at LAC," *The Print,* October 18, 2021, https://theprint.in/defence/armys-drone-formation-sees-massive-changes-as-tensions-with-china-mount-at-lac/752296/.

undertake, placing drones under the aviation corps brings all flying assets under a single command structure. This allows for better coordination and control.

The Indian Army has been testing drone swarm concepts as part of their combined arms manoeuvre capabilities. Army planners envisage drone swarms to enable attacks on follow-on forces and logistics installations in the enemy's rear as ground troops engage forward elements of an attacking force.[42] The Indian Army showcased its own swarm drone technology in 2021, where a swarm of 50 drones demonstrated a simulated attack on enemy positions.[43] It also fielded swarm drones during Exercise Dakshin Shakti in 2021 and are now in the process of integrating them into the army's mechanised forces.[44] In addition to swarm drones, the Indian Army is integrating loitering munitions into its forces. It procured 450 units of the Nagastra loitering munition from Solar Industries, a private Indian company.[45] The Nagastra-1's range is between 30 km (in a fully autonomous mode) and 15 km (when manually operated. Its loiter time is for 60 minutes and it has an accuracy of less than 2 metres.[46] The Indian Army has issued a Request for Information

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[42] M.M. Naravane, "Inaugural Address at Multi-Domain Operations: Future of Conflicts Seminar," Divya-Drishti 2021 Annual Seminar-cum-Webinar, Centre for Land Warfare Studies, February 11, 2021, pg. 25-28 https://www.claws.in/static/FINAL-CLAWS_DIVYA-DRISHTI-2021-SEMINAR-REPORT-1.pdf.

[43] Snehesh Alex Philips, "Army gets its first set of offensive swarm drone system, IAF next," *The Print,* February 13, 2023, https://theprint.in/defence/army-gets-its-first-set-of-offensive-swarm-drone-system-iaf-next/1368508/.

[44] "Army Chief Visits Jaisalmer To Review Exercise Dakshin Shakti," *Press information Bureau,* November 26, 2021, https://pib.gov.in/PressReleasePage.aspx?PRID=1775333. ; "Swarm drones being inducted into mechanised forces of Indian Army," *The Print,* August 26, 2022, https://theprint.in/india/swarm-drones-being-inducted-into-mechanised-forces-of-indian-army/1101806/.

[45] "Indian Army orders 'Made-in-India' Nagastra-1 attack drones," *Mint,* April 22, 2023, https://www.livemint.com/news/india/indian-army-orders-made-in-india-nagastra-1-attack-drones-5-things-to-know-11682143414220.html.

[46] Prakash Katoch, "Indigenous Nagastra Kamikaze Drone," *SP's Aviation,* May 15, 2023, https://www.sps-aviation.com/experts-speak/?id=723&h=Indigenous-Nagastra-Kamikaze-Drone.

(RFI) for canister launched loitering munitions that can be integrated into its mechanised forces. The Canister Launched Anti-Armour Loiter Munitions (CALM) Systems will be mounted on the Carrier Mortar Tracked (CMT) version of the BMP infantry combat vehicle as part of a larger modernisation plan for the mechanised forces.[47]

The IAF seems to be putting its efforts into Manned-Unmanned or Combat Air Teaming capabilities. Director General of the Centre for Airpower Studies Air Marshal Anil Chopra (retd.) notes: "The future wars will be in a greatly contested environment and thus the need for MUM-T."[48] Highlighting future scenarios, Air Force planners believe that unmanned aircraft, whether remotely piloted, semi-, or fully autonomous, can be paired with manned aircraft for future missions. The unmanned component can undertake penetration operations into dense air defence zones while being directed from the manned aircraft. Once there, unmanned aircraft can collect intelligence or engage in electronic and kinetic attacks to create openings for manned aircraft penetration.[49]

The IAF has launched programmes for manned and unmanned teaming or combat air teaming. The programmes involve pairing autonomous systems with fixed wing manned aircraft to carry out specific missions. Different modes of employment have been identified including pairing

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47 Vijay Mohan, "Army seeks loiter munitions for its mechanised forces along western, northern borders," *The Tribune,* April 10, 2022, https://www.tribuneindia.com/news/nation/army-seeks-loiter-munitions-for-its-mechanised-forces-along-western-northern-borders-385213. ; Rahul Singh, "Night-fighting gear, anti-drone weapons: Army sets brisk pace for upgrading mechanised infantry," *Hindustan Times,* August 28, 2022, https://www.hindustantimes.com/india-news/futuristic-vehicles-night-fighting-gear-anti-drone-weapons-army-sets-brisk-pace-for-upgrading-mechanised-infantry-101661698114845.html.

48 Anil Chopra, "Why Manned-Unmanned Aircraft Teaming is the Future," *News 18,* June 8, 2023, https://www.news18.com/opinion/opinion-why-manned-unmanned-aircraft-teaming-is-the-future-8032147.html.

49 K.A. Muthana, "An Aerial Practitioner's Perspective," *Fighting Future Wars,* Special Issue No. II, Policy Paper VIII, Council for Strategic and Defence Research, December 2021, https://csdronline.org/upload/user/CSDR_KA_Muthana_An_Aerial_Prac_Perspective.pdf; Manmohan Bahadur, "UAVs: India's weak link in modern warfare?," *India Today,* June 21, 2021, https://www.indiatoday.in/magazine/defence/story/20210621-uavs-india-s-weak-link-in-modern-warfare-air-vice-marshal-manmohan-bahadur-vm-retd-1813372-2021-06-11.

manned aircraft to another UAV, swarm drones or cruise missiles.[50] The IAF has bought 100 units of the Advanced Loitering System-50 (ALS-50) developed by Tata industries.

Looking Ahead

All branches of the Indian military have had some experience operating drones. However, these operations formed a small part of their overall operations and primarily focused on augmenting its existing capabilities. Drawing lessons from recent conflicts, the Indian Army, Navy and Air Force are set to expand their capabilities with drone technologies. They intend to make these platforms and capabilities a central part of their concepts on the use of force.

Integrating the efforts of the three services will be key to fielding a militarily effective force. This involves achieving consistency and having mutually reinforcing capabilities across the services.[51] However, the three services have been developing concepts and force structures to employ drones independently. If these efforts are not integrated or synergised, these platforms can seriously impede military effectiveness. Gaps will appear in executing military doctrine that will stymie operations.

Such issues may arise as the Indian military integrates drones (whether remotely piloted or autonomous) into its force structures. Inter-service disagreements have previously delayed the induction Sea-Guardian / Predator drones from the United States.[52] As noted earlier, the IAF is

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[50] Akshara Parakala, "Aero India 2021: HAL's loyal wingmen break cover," *Janes,* February 5, 2021, https://www.janes.com/defence-news/news-detail/aero-india-2021-hals-loyal-wingmen-break-cover ; Anil, Chopra, "Unmanned Wingman Plan India," *Indian Defence Review,* June 30, 2022, http://www.indiandefencereview.com/news/unmanned-wingman-plan-india/.

[51] Risa A. Brooks, "Introduction: The Impact of Culture, Society, Institutions, and International Forces on Military Effectiveness" in *Creating Military Power: The Sources of Military Effectiveness*, ed. edited by Risa A. Brooks and Elizabeth A. Stanley (California: Stanford University Press, 2007), 10-11. Also see Millett, Allan R., et al. "The Effectiveness of Military Organizations." *International Security* 11, no. 1 (1986), pg. 37-71.

skeptical of the use of drones in contested airspace. On this basis, the service opposed the purchase of drones during internal government discussions.[53] In addition to survivability, the high cost of the platform takes funds away from other programs that the IAF would like to pursue.[54] Thus, the lack of a common outlook within the armed forces on the capabilities offered by drones delayed the Predator's induction.

The lack of interoperability amongst UAVs from the three different services can limit the effective usage of UAVs. The UAVs operated by the three services have been "acquired individually by each user under different protocols."[55] As Lt Gen Prakash Katoch notes, "Common standards and protocols, mutually compatible database structures, development/ deployment of interfaces between systems using disparate platforms and commonality of hardware have not commenced."[56] More specifically on the issue of UAV interoperability in the Indian Armed Forces, he highlights that the "services cannot exchange individual UAV pictures and Air Force picture does not come directly into Army's Operations Rooms."[57]

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[52] Shishir Gupta, "Plan to buy Predator drones put on hold," *Hindustan Times,* February 23, 2022, https://www.hindustantimes.com/india-news/plan-to-buy-predator-drones-put-on-hold-101645565612604.html. ; Sandeep Unnithan, "Why the Indo-US armed drone deal didn't go through," *India Today,* November 3, 2020, https://www.indiatoday.in/india-today-insight/story/why-the-indo-us-armed-drone-deal-didn-t-go-through-1737433-2020-11-02.

[53] Shishir Gupta, "India rethinks buying US armed drones," *Hindustan Times,* June 5, 2020, https://www.hindustantimes.com/india-news/india-rethinks-buying-us-drones/story-lrXANhzediWzKLd6j9bsqJ.html. ; Snehesh Alex Philip, "Inside story of why India's military worked to push mega US drone deal," The Print, June 22, 2023, https://theprint.in/theprint-essential/inside-story-of-why-indias-military-worked-to-push-mega-us-drone-deal/1636130/.

[54] Gupta, "India rethinks buying US armed drones".

[55] Narayanan Menon, "Military Application for Unmanned Aerial Systems in India," *Indian Defence Review,* May 30, 2012, http://www.indiandefencereview.com/news/military-application-for-unmanned-aerial-systems-in-india/0/.

[56] P. C. Katoch, "Keys to Success: Net-centricity, Command, Control, Synergised Operations," *SP's Land Forces,* Issue 1, 2014, https://www.spslandforces.com/story/?id=293.

This will be an acute problem, especially if unmanned platforms of one service are called upon to support operations of another service.

It is clear that the Indian Armed Forces are looking at drones to help bridge the asymmetry between the Indian and Chinese militaries. They have each expanded their efforts to bring drones into their force structures. However, the absence of an integrated approach and joint planning has left gaps in the ability of the services to fully exploit UAVs. Such an effort can enhance India's ability to field and employ drones, rather than leaving the individual services hamstrung.

> " *India is modernising its drone capabilities while inducting new capabilities based on lessons of drone operations in recent conventional wars.*

[57] Katoch, "Keys to Success: Net-centricity, Command, Control, Synergised Operations". The author acknowledges that this information is dated. The author was unable to find material corroborating this information in the present as information in public domain is limited. However, this author recommends that the issue needs to be studied further as it is important, especially since UAVs are poised to play a greater role in Indian military strategy.

Passive Observation: Responsible AI and the Indian Military

Shimona Mohan

Introduction

WITHIN THE PAST COUPLE OF DECADES, emerging technologies like artificial intelligence (AI) have percolated into almost every industry around the world. AI is now recognised as a cross-cutting competency and has rapidly become a key technology in many areas including defence, healthcare, and finance. In parallel, armed conflict has moved beyond the traditional domains of land, air and sea into the fourth and fifth dimensions of space and cyberspace, while making liberal use of AI and related technologies.

The evolving nature of warfare and seemingly limitless potential for dual-use applications of AI has led a number of countries including the United States (US), Russia, China, and Israel to invest billions of dollars into the development and deployment of several new military AI projects, systems and tactics in a bid to gain an upper hand in the burgeoning 'tech arms

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1   Donald MacKenzie, "Review: Technology and the Arms Race," *International Security,* Vol. 14, No. 1 (1989), pp. 161-175, https://www.jstor.org/stable/2538768?read-now=1&seq=1#page_scan_tab_contents

race'.[1] In comparison, India has rather belatedly begun the mammoth task of modernising and 'intelligentising'[2] its defence architecture by prioritising its military tech development.

Meanwhile, there are growing global calls to ensure that AI is ethical, explainable and trustworthy, and states are increasingly being coaxed to practice responsible behaviour in their engagements with AI for security and defence purposes. While this view has had limited adoption and institutionalisation so far and has yet to be translated into major policy outcomes, there are concerns over the lack of regulations and standards for the design, development and deployment of military AI.

As public and private entities in India begin to embrace the cyber and AI revolution, New Delhi has also simultaneously started advancing its efforts to create national strategies, principles and tools for civilian applications of responsible AI (RAI). This is considered a progressive step, since India seems to be prioritising responsible development and deployment of AI at the outset of its integration into civilian systems at scale. However, RAI in the defence and military domain is yet to receive similar attention in the country, the scope of which this article aims to chart out.

The analysis herein gives an overview of the current status of AI integration and activity in the Indian defence space, characterises global conversations around the responsible use of AI in the military domain, and contextualises these discussions in terms of the Indian approach to the responsible use of military AI. The essay characterises India's conception of RAI as one of "passive observation", and concludes with recommendations and next steps to assess and aid the responsible uptake of AI in the Indian military.

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[2] The term 'intelligentisation' is used often in the context of the inclusion of AI and other new tech to bolster defence capacity. However, the term seldom appears elsewhere in any other setting, which is why it is put in single quotes to denote its specific meaning in this context.

AI in the Indian Defence Paradigm

India has dramatically expanded and accelerated its scope of activity in all these domains in the past five years or so, and military AI has been gradually evolving to form an integral part of the Indian defence structure. India's engagements with AI for defence can be summed up in three related laterals: new entities and multistakeholder partnerships; research, development and deployment endeavours; and national strategies, reports and documents.

India initiated a concerted effort around military AI in 2018 through the establishment of a multistakeholder task force that was headed, interestingly, by an industry behemoth and not a defence entity. The task force was mandated to formulate a concrete strategy and framework for the proposed employment of AI for national security and defence needs,[3] and submitted a report with its recommendations to the Government of India (GoI) in mid-2018.[4] On the basis of this report, a Defence Artificial Intelligence Council (DAIC) was set up under the Ministry of Defence (MoD), and a Defence AI Project Agency (DAIPA) was created under the Department for Defence Production (DDP) of the MoD.[5] This was followed by the establishment of an AI roadmap for each Defence Public Sector Undertaking (DPSU), with about 70 defence-specific AI projects identified for development in the coming few years, and an earmarking of INR 100 crore per year for AI projects for the armed forces.[6]

The task force and its resulting report and military AI structuring breathed new life into the Indian future-facing technology landscape. While AI

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[3] Rajat Pandit, "India now wants artificial intelligence-based weapon systems," *Times of India,* May 21, 2018, http://timesofindia.indiatimes.com/articleshow/64250232.cms?utm_source=contentofinterest&utm_medium=text&utm_campaign=cppst

[4] Ministry of Defence, Government of India, AI task force hands over Final Report to RM, https://pib.gov.in/newsite/PrintRelease.aspx?relid=180322, June 30, 2018.

[5] Ministry of Defence, Government of India, Enhancement of Capabilities of AI Technology, https://www.pib.gov.in/PressReleasePage.aspx?PRID=1846937, August 1, 2022

[6] Ministry of Defence, Government of India, Enhancement of Capabilities of AI Technology

in its contemporary understanding is a recent phenomenon for the Indian military, Indian defence research and development networks had institutionalised related technologies in their domains long before, notably with the establishment of the Centre for Artificial Intelligence and Robotics (CAIR) under the Defence Research & Development Organization (DRDO) in 1986.[7] DRDO picked up pace in this area in 2020 when it announced the creation of five new laboratories around AI and other frontier technologies, named the DRDO Young Scientist Laboratories (DYSL).[8]

In addition, the military itself took additional steps to prioritise research around AI. A notable example is the Army's establishment of an AI Centre at the Military College of Telecommunication Engineering in Mhow in 2021, with support from the National Security Council Secretariat (NSCS).[9] The Navy also set up an 'AI core group' and an AI centre of excellence at INS Valsura, within the ambit of which it holds regular webinars and workshops around AI.[10] The Air Force rounded out the services and established its own Centre of Excellence for AI under the aegis of UDAAN (Unit for Digitisation, Automation, Artificial Intelligence and Application Networking) in 2022,[11] and has also held workshops on the integration of AI and other frontier technologies within its functioning.[12]

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[7] Defence Research & Development Organization (DRDO), "Centre for Artificial Intelligence & Robotics (CAIR)," https://www.drdo.gov.in/labs-and-establishments/centre-artificial-intelligence-robotics-cair

[8] "DRDO to set up 5 new labs to prepare Indian armed forces for future high-tech warfare," *Economic Times,* January 3, 2020, https://government.economictimes.indiatimes.com/news/defence/drdo-to-set-up-5-new-labs-to-prepare-indian-armed-forces-for-future-high-tech-warfare/73086012

[9] "Army sets up quantum computing lab, AI centre at engineering institute in Mhow," *The Indian Express,* December 31, 2021, https://indianexpress.com/article/education/army-sets-up-quantum-computing-lab-ai-centre-at-engineering-institute-in-mhow-7697802/

[10] Indian Navy, "'Leveraging Artificial Intelligence (AI) for Indian Navy' Workshop at INS Valsura," 2022, https://indiannavy.nic.in/content/%E2%80%98leveraging-artificial-intelligence-ai-indian-navy%E2%80%99-workshop-ins-valsura

[11] Ministry of Defence, Government of India, *Artificial Intelligence (AI) Centre of Excellence (Coe) launched by IAF,* https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1840695, July 10, 2022

[12] Ministry of Defence, Government of India, *Seminar on Emerging Disruptive and Futuristic Technologies,* https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1907707, March 16, 2023

Concurrently, the development of military AI products received a big push and several technologies under testing were recently launched, including 75 AI-based defence products and technologies identified by the AI roadmap and unveiled during the first-ever 'AI in Defence' (AIDef) symposium and exhibition organised by the MoD in July 2022.[13] These products include AI-based swarm and storm drones, cognitive radars, uncrewed vehicles, motion and anomaly detection, target identification systems, facial and gesture recognition technologies, instantaneous translators, and monitoring and predictive systems, among others.

A catalogue of their features, capabilities, applications and advantages was released in the public domain through a DDP publication on the AI Preparedness of India in Defence in 2022.[14] While this report describes uses of AI by defence forces in mostly non-critical areas with limited battleground presence, it does mention a couple of examples of lethal autonomous weapons systems (LAWS). The Defence Minister of India, Rajnath Singh, has also hinted at the addition of AI capabilities in sentry guns akin to those employed on turbulent borders by South Korea and Israel.[15]

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[13] Ministry of Defence, Government of India, *Raksha Mantri launches 75 Artificial Intelligence products/technologies during first-ever 'AI in Defence' symposium & exhibition in New Delhi; Terms AI as a revolutionary step in the development of humanity,* https://pib.gov.in/PressReleasePage.aspx?PRID=1840740, July 11, 2022

[14] Ministry of Defence, Government of India, *Artificial Intelligence in Defence: Presenting AI Preparedness of the Country in Defence, 2022,* https://www.ddpmod.gov.in/artificial-intelligence-defence

[15] Kalyan Ray, "Indian Armed Forces aiming to go big with Artificial Intelligence," *Deccan Herald,* July 9, 2022, https://www.deccanherald.com/national/indian-armed-forces-aiming-to-go-big-with-artificial-intelligence-1125123.html

Global Push for Responsible AI

With the increase in use cases and applications of AI around the world, there has been a gradual momentum around rallying for responsible innovation ecosystems.[16] This is especially valid in the development and deployment of new technologies, where there is a chance for responsible innovation and use to be institutionalised right from the get-go, and not as an afterthought or a checkbox to performatively satisfy policy and/or compliance-related constraints. A majority of like-minded countries have opined in multilateral fora like the Convention on Certain Conventional Weapons (CCW) Group of Governmental Experts (GGE) on LAWS that technology cannot be developed in a vacuum of value-neutrality.[17] They believe that there are always chances of implicit errors and inadvertent oversights – and there thus needs to be a conscious effort to include ethical design thinking while developing and using new technologies.

In this context, RAI is broadly understood as the practice of designing, developing, and deploying AI to empower employees and businesses, and impact society in a fair manner.[18] Given AI's dual-use character, this is a loose and flexible understanding, and posits RAI as an umbrella term that usually encompasses considerations around fair, explainable and trustworthy AI systems. Researchers from Google, Microsoft and IBM attempted to operationalise these principles and created two Responsible

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[16] Bernd Carsten Stahl, "Responsible innovation ecosystems: Ethical implications of the application of the ecosystem concept to artificial intelligence," *International Journal of Information Management,* Volume 62 (2022), https://www.sciencedirect.com/science/article/pii/S0268401221001341#:~:text=On%20the%20process%20level%2C%20responsible,outcomes%20of%20their%20innovation%20activities.

[17] "Stopping Killer Robots: Country Positions on Banning Fully Autonomous Weapons and Retaining Human Control," *Human Rights Watch,* August 10, 2020, https://www.hrw.org/report/2020/08/10/stopping-killer-robots/country-positions-banning-fully-autonomous-weapons-and

[18] Accenture, "Responsible AI: Scale AI with confidence," https://www.accenture.com/in-en/services/applied-intelligence/ai-ethics-governance#:~:text=So%2C%20what%20is%20Responsible%20AI,and%20scale%20AI%20with%20confidence.

AI Licenses (RAIL) for general purpose AI systems in 2019,[19] which have been followed by many other sector-specific licenses stemming from various organisations since.

Within the international security paradigm, the idea of RAI is even more vague, though recent conversations have characterised military-oriented RAI as a principled approach to the use of AI which minimises unintended biases and accidents,[20] and retains human control over the use of force.[21] Instinctively then, the application of responsible and ethical military AI between allies becomes important because policy alignment can improve interoperability in doctrines, procedures, legal frameworks, and technical implementation measures.[22]

But what about RAI deployment in a situation between adversaries? At this juncture, one might ask why military AI, which is designed to be used in offensive combat operations and assist a country in inflicting harm upon its opponents in the first place, should have responsible AI considerations? This is because AI-based weapons systems like LAWS and other defence aids which have not been screened for RAI considerations carry tangible risks of exhibiting biased, error-prone and/or unsuitable processing of information for the operational environment in which they are deployed. Systems without effective RAI thus pose unintentional exclusive harms not only towards adversaries, but also possibly for the entity employing them, making their use unnecessarily high-risk despite their other benefits.

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[19] "Responsible AI Licenses V0.1," Responsible AI Licenses (RAIL), 2019, https://www.licenses.ai/ai-licenses/

[20] US Department of State, Political Declaration on Responsible Military Use of Artificial Intelligence and Autonomy, February 16, 2023, https://www.state.gov/political-declaration-on-responsible-military-use-of-artificial-intelligence-and-autonomy/

[21] "'Responsible AI' in the Military Domain: Implications for Regulation," *OpinioJuris,* March 31, 2023, http://opiniojuris.org/2023/03/31/responsible-ai-in-the-military-domain-implications-for-regulation/

[22] Zoe Stanley-Lockman, "Responsible and Ethical Military AI Allies and Allied Perspectives," *Center for Security and Emerging Technology (CSET),* August 2021, https://cset.georgetown.edu/publication/responsible-and-ethical-military-ai/

A primary cause for such faults is flawed training datasets and commands, which can result in misrepresentation of critical information as well as unintended biases. Another, and perhaps far more challenging, reason is issues with algorithms within the system which are undetectable and inexplicable to the user. As a result, AI has been known to produce outputs based on spurious correlations and information processing that does not follow the expected rules. These faults can, however, be fixed by incorporating explainable AI (XAI) and RAI models in military AI, which help to 'transparentise' the black box of the military AI systems within which the information processing takes place.[23]

Assessing and acknowledging these potential flaws in emerging AI systems for their respective military AI ecosystems, countries like the US,[24] UK,[25] Switzerland,[26] France,[27] Australia[28] and the group of countries under NATO[29] have already begun including ethical and responsible AI in their military AI strategies. The Netherlands and South Korea have also taken the lead on spurring larger global conversations around RAI in the military, and concluded the first edition of a dialogue on the same titled the REAIM (Responsible AI in the Military) Conference in February 2023.[30]

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[23] Shimona Mohan, "Managing Expectations: Explainable A.I. and its Military Implications," *Observer Research Foundation,* Issue Brief No. 570 (2022), https://www.orfonline.org/research/explainable-a-i-and-its-military-implications/#_edn12

[24] Mack DeGeurin, "Pentagon Unveils Plan to Make 'Responsible Military AI' More Than Just a Buzzword," *Gizmodo,* June 23, 2022, https://gizmodo.com/pentagon-unveils-plan-to-make-responsible-ethical-milit-1849100945

[25] Ben Kelly, "Enabling the responsible use of AI in defence," *Centre for Data Ethics and Innovation (CDEI) Blog,* June 15, 2022, https://cdei.blog.gov.uk/2022/06/15/enabling-the-responsible-use-of-ai-in-defence/

[26] Federal Department of Foreign Affairs FDFA, *"Arms control and disarmament are currently going through a turbulent period,"* February 2, 2022, https://www.eda.admin.ch/eda/en/fdfa/fdfa/aktuell/newsuebersicht/2022/02/strategie-ruestungskontrolle-und-abruestung.html

[27] Ministère des Armées, "L'intelligence artificielle au service de la défense," September 13, 2019, https://www.vie-publique.fr/rapport/270333-lintelligence-artificielle-au-service-de-la-defense

[28] Department of Defence, Australian Government, *A Method for Ethical AI in Defence,* 2020, https://www.dst.defence.gov.au/sites/default/files/publications/documents/A%20Method%20for%20Ethical%20AI%20in%20Defence.pdf

[29] North Atlantic Treaty Organisation (NATO), *Summary of the NATO Artificial Intelligence Strategy,* October 22, 2021, https://www.nato.int/cps/en/natohq/official_texts_187617.htm

[30] REAIM Conference 2023, https://reaim2023.org/

India's Approach to Responsible AI in the Military

While India has had a late-mover handicap in terms of its foundational AI adoption across civilian and military domains, this is to some extent nullified by its continued initial focus on responsible innovation and deployment of new tech in the civilian domain, which many much more advanced AI powers are only now recognising as a concrete policy issue. However, there is little mention of and information about India's military engagements with RAI. The MoD has emphasised in a press release on the need to think about the ethics of military AI and its potential dangers at an early stage,[31] but there have been no other clear statements from the government regarding RAI for security and defence purposes.

The civilian RAI space is a completely different story. NITI Aayog, the policy think tank of the GoI, has engaged with civilian RAI since 2018, and released a two-part report in 2021 on approaches toward[32] and operationalisation of[33] RAI principles for the deployment and use of civilian AI architectures. The seven principles that NITI Aayog highlights are: safety and reliability; equality; inclusivity and non-discrimination; privacy and security; transparency; accountability; and protection and reinforcement of positive human values. It also recommends measures for the government and the industry bodies and civil society to implement these principles in the AI products they develop or work with. Indian tech industry body NASSCOM embedded the principles of this framework into India's first RAI Hub and Toolkit released in late 2022, which comprises sector-agnostic tools to enable entities to leverage AI by prioritising user trust and safety.[34]

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[31] Ministry of Defence, Government of India, https://pib.gov.in/PressReleasePage. aspx?PRID=1840740, July 11, 2022

[32] NITI Aayog, *Responsible AI #AIforAll: Approach Document for India Part 1 – Principles for Responsible AI,* February 2021, https://www.niti.gov.in/sites/default/files/2021-02/ Responsible-AI-22022021.pdf

[33] NITI Aayog, *Responsible AI #AIforAll: Approach Document for India: Part 2 - Operationalizing Principles for Responsible AI,* August 2021, https://www.niti.gov.in/sites/default/files/2021-08/ Part2-Responsible-AI-12082021.pdf

[34] "NASSCOM launched the Responsible AI hub and resource kit," *INDIAai,* October 11, 2022, https://indiaai.gov.in/news/nasscom-launched-the-responsible-ai-hub-and-resource-kit

However, while India has the research, tools and opportunity to include RAI within its military AI architectures as well, this has yet to be put into practice. Seasoned Indian military personnel have sounded a word of caution when it comes to India's contextual integration of new tech in the military, which lacks careful long-term planning and examination of the real effects of these systems on the battlefield.[35] Apart from the fact that India does not have a concrete AI policy for either civilian or military domains, Indian defence forces have not yet conducted Type 3 (user trials) and Type 4 (operational environment-specific evaluation) testing of their military AI systems.[36]

Since AI systems can produce different results during testing and on actual battlefields based on differing input information, including XAI and RAI considerations in military AI systems at the design stage could help the Indian military in weeding out undesirable output generation before the systems are tested and deployed. India also currently has the apt opportunity to do so, with about 100 more defence-specific AI products under research and development.[37] There is also enough research supporting RAI integration as well as toolkits and licenses, both indigenous and otherwise, to operationalise RAI in the open-source domain, but efforts to do so from within the Indian military have not panned out so far.

While this lack of activity around RAI in the military may be chalked up to a low incidence rate of policy considerations around AI in the Indian military in general, India's engagements with the global military

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[35] Insights have been gained by the author from actively serving military professionals as well as retired veterans currently in the defence policy space, either in off-the-record conversations or in closed conferences under Chatham House rules.

[36] Lt Gen (Dr) NB Singh, "Operational Testing and Evaluation of Weapons and Equipment," *Indian Defence Review,* Vol. 37.1 (March 2022), http://www.indiandefencereview.com/news/operational-testing-and-evaluation-of-weapons-and-equipment/

[37] Ministry of Defence, Government of India, *Raksha Mantri launches 75 Artificial Intelligence products/technologies during first-ever 'AI in Defence' symposium & exhibition in New Delhi; Terms AI as a revolutionary step in the development of humanity,* https://pib.gov.in/PressReleasePage.aspx?PRID=1840740, July 11, 2022

RAI discourse seems to suggest otherwise. India was invited by the Netherlands for the REAIM Conference 2023, where 80 other governments were present as well. About 60 of these countries agreed to a joint Call of Action to include RAI considerations in their military ecosystems and to push for advancing this agenda at relevant governance forums like the CCW GGE on LAWS.[38]

India attended the conference but was curiously one of the few countries that did not endorse this Call, indicating that RAI in the military was not a priority for it yet despite the MoD's mention of ensuring ethical AI in the military. This may point to a larger trend of India not aligning its security policies with majoritarian alliances in favour of its own security considerations, like in the case of India being one of only four countries to not sign the Nuclear Non-Proliferation Treaty (NPT).[39,40] A second REAIM Conference, hosted by South Korea, is planned for 2024, and it remains to be seen how active India will be then. Currently, it seems like India's approach to RAI in the military is that of a passive observer.

Given the nascent stage of negotiations and policy focus around RAI in the military, it is difficult to ascertain global trends around its adoption based on any distinguishing factors as yet, and thus, India's approach may not be particularly distinctive. However, the list of countries that have agreed to the nature of the Call at REAIM—which include a varied mix of geographic locations, economic prowess, political ideologies and tech advancement levels—indicate that the Call is seen more as a least common denominator than a binding policy statement. This is especially apparent for several countries who do not otherwise see eye-to-eye, a prime example being the US and China—they have both agreed to the

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[38] Government of The Netherlands, *REAIM 2023 Endorsing Countries and Territories,* https://www.government.nl/documents/publications/2023/02/16/reaim-2023-endorsing-countries

[39] United Nations Office for Disarmament Affairs (UNODA), *Treaty on the Non-Proliferation of Nuclear Weapons,* https://treaties.unoda.org/t/npt

[40] Nitin Pai, "NPT turns 50. The first half it lived a lie, the second half it saw its own demise," *The Print,* March 3, 2020, https://theprint.in/opinion/npt-turns-50-first-half-lived-a-lie-second-half-saw-own-demise/374512/

Call but are often at loggerheads over military AI regulation in forums like the CCW GGE on LAWS.

The significance of the Call and other impending international conversations around RAI for defence purposes remains to be seen, but to even begin to engage meaningfully with military AI ethics issues, India first needs to have a comprehensive strategy for AI within its military space to define its priorities and policy preferences, and then align its international engagements around military AI congruently. The only vaguely related document produced by India was the 2018 National Strategy on AI,[41] which solely dealt with civilian applications of the technology and is quickly becoming outdated due to the emergence of several new technologies related to AI and their multifarious applications. As soon as India finalises its Digital Personal Data Protection Bill (DPDP Bill),[42] plausibly in 2023, the natural next step should be to look towards regulating AI applications across sectors, including defence, in a similar vein.

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[41] NITI Aayog, *National Strategy for Artificial Intelligence,* June 2018, https://niti.gov.in/sites/default/files/2019-01/NationalStrategy-for-AI-Discussion-Paper.pdf

[42] Krishnadas Rajagopal, "New Digital Personal Data Protection Bill in Monsoon Session," *The Hindu,* April 11, 2023, https://www.thehindu.com/news/national/new-data-protection-bill-likely-to-be-introduced-in-monsoon-session-in-parliament-centre-to-supreme-court/article66723887.ece#:~:text=The%20Union%20government%20informed%20the,online%20space%20is%20%E2%80%9Cready%E2%80%9D

Conclusion

India has certainly upped the ante in its defence tech engagements in the past few years, especially in the area of AI, and has attempted to do so while upholding national and common global norms of responsible innovation and behaviour. However, its progress in the military tech domain is so far nowhere near its bigger allies and adversaries, either in the development and deployment of the military uses of AI, or the responsible and ethical use thereof.

In an era where AI is developing at breakneck speeds and percolating into every sector, with new developments like generative AI that come with their own set of implications for the military, it is advisable for India to formulate a concrete policy around contending with the advantages as well as challenges AI brings to the area of defence. While the design, development and deployment of military AI systems will be a continuously evolving and expanding process, India sorely needs an AI policy to structure its internal as well as international stance on RAI and other upcoming military AI governance considerations.

Going forward, it will also become crucial for India to ensure that there is optimum constructive interaction amongst technologists, military personnel and policy experts who understand this nexus of issues that military AI and ethics will continue to present. Consistent and multi-faceted actions around responsible innovation in all major tech and military developments is on the way to becoming a requirement, at least at a policy level, to participate in global networks around these domains. India will need to carefully consider which priorities it values and would want to invest in so that it can institutionalise this not only for responsible military AI, but also for any other future iteration of military technology.

The iCET and the Future of U.S.–India Defence Ties

Raj Shukla and Rudra Chaudhuri

ON 31 JANUARY 2023, AJIT Doval, India's National Security Adviser (NSA) and his United States (US) counterpart Jake Sullivan launched the initiative on Critical and Emerging Technology (iCET) in Washington D.C.[1] First mentioned in a readout following a meeting between Prime Minister Narendra Modi and President Joe Biden in May 2022, on the sidelines of the QUAD Leaders' Summit in Tokyo, iCET provides an interlinked framework for technology cooperation between the two countries.[2] One part of the iCET design is boosting defence ties.[3] Another interrelated part of the iCET framework is improving investments and partnerships

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[1] "FACT SHEET: United States and India Elevate Strategic Partnership with the initiative on Critical and Emerging Technology (iCET)," Statements and Releases, White House, United States Government, https://www.whitehouse.gov/briefing-room/statements-releases/2023/01/31/fact-sheet-united-states-and-india-elevate-strategic-partnership-with-the-initiative-on-critical-and-emerging-technology-icet/, 2023.

[2] Rudra Chaudhuri, "What is the United States-India Initiative on Critical and Emerging Technology (iCET)?," Carnegie India, February 27, 2023, https://carnegieindia.org/2023/02/27/what-is-united-states-india-initiative-on-critical-and-emerging-technologies-icet-pub-89136.

[3] For more on what iCET see https://carnegieindia.org/2023/02/27/what-is-united-states-india-initiative-on-critical-and-emerging-technologies-icet-pub-89136.

pertaining to each other's space and quantum capabilities, as well as building India's semiconductor ecosystem.[4]

This article explores the future of defence ties between the two countries, in the context of iCET. It seeks to capture what the iCET has been able to achieve thus far, and outlines the challenges embedded in forging closer ties and in genuinely de-risking India's military dependence on Russia. Lastly, it highlights certain policy prescriptions for the future of the iCET and India-U.S. relations.

iCET comes at a time when there is a palpable verve in India-US relations that is far more expansive than defence ties alone. The two countries are reimagining pathways for cooperation, from defence and outer space to semiconductors and artificial intelligence (AI). The "deliverables" highlighted in the joint statement during Prime Minister Modi's recent state visit to the United States clearly captures the need on the part of both governments to seize the current moment in geopolitical change.

That moment is also characterised by a clear realisation on India's part that its 60-year-old defence relationship with Russia requires urgent rebalancing. The uncertainty around the future of supply chains and spare parts, Russia's increasing dependence on China, and the ambiguity around the future of the Russian economy has prompted a pressing need to look beyond Russia for India's defence needs and security. To be sure, India has a so-called "comfort" with Russia that officials say is absent in its relations with the United States.[5] Yet, they also emphasise the need for defence relations with other countries.

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[4] Konark Bhandari, Arun Singh, and Rudra Chaudhuri, "India and the United States' Good Bet: One Year of the U.S.-India Initiative on Critical and Emerging Technology (iCET)," *Carnegie India,* June 12, 2023, https://carnegieindia.org/2023/06/12/india-and-united-states-good-bet-one-year-of-u.s.-india-initiative-on-critical-and-emerging-technology-icet-pub-89926.

[5] Authors' interview with a senior Indian official, June 2023. A lot of the references to the conversation are drawn from Rudra Chaudhuri's discussion with officials and the private sector in the last one year of working on iCET.

For India, the rationale seems straightforward—a deeper and all-encompassing partnership with the United States is possibly the best bet to attract manufacturing, relocate global supply chains to India, create a resilient base for strategic investments, and coproduce dual-use technologies. Such initiatives can boost India's still-emerging military industrial complex. For the United States, it is about partnering with a country that holds the promise of offering a degree of mutually understood stability in a moment of geopolitical change and sharp contest.

New Delhi and Washington D.C. agree that industry, research institutions, and experts need to work closely and co-invest in the future of critical and emerging technologies, and essentially, in each other's material and ideational economies.[6]

iCET Achievements So Far

In June 2023, India's Hindustan Aeronautics Limited (HAL) signed a deal with the US's General Electric (GE) to manufacture F414 jet engines in India.[7] The deal was the highlight of the U.S.-India joint statement during Prime Minister Modi's visit to Washington D.C. that month. It has been hailed as "transformative" and "historic", with one official adding that "we are breaking through into new frontiers."[8] While details have not been made publicly available at the time of writing this article, there is an expectation of a "very high" level of technology transfer embedded in this agreement. This is "genuine co-production" of a technology that is grudgingly shared even with the United States' treaty allies, is how officials put it.

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[6] Ashley J. Tellis, "America's Bad Bet on India," *Foreign Affairs,* May 1, 2023, https://www.foreignaffairs.com/india/americas-bad-bet-india-modi.

[7] Prashant Jha, "US seals key 'jet engine deal' ahead of Modi's visit," *Hindustan Times,* June 19, 2023, https://www.hindustantimes.com/india-news/us-seals-key-jet-engine-deal-ahead-of-modi-s-visit-101687114785567.html.

[8] Jha, "US seals key 'jet engine deal' ahead of Modi's visit."; Dinakar Peri, "GE, HAL sign MoU for manufacture of jet engines in India; U.S. Congress approval awaited," *The Hindu,* June 22, 2023, https://www.thehindu.com/news/national/ge-hal-sign-mou-for-manufacture-of-jet-engines-in-india-us-congress-approval-awaited/article66996981.ece.

Further, US officials have worked hard to get the necessary export control exemptions for this deal to be announced, as those closely working on this transaction have claimed. In many ways, this is the centerpiece of the iCET's defence vertical. It will no doubt serve as a gamechanger, allowing crucial strategic technologies to be co-produced in India and for India.

There are also ongoing discussions on the co-production of long-range artillery between a US company and an Indian private sector counterpart.[9] In addition, and importantly, the US Department of Defense (DoD) and the Indian Ministry of Defence (MoD) launched the defence accelerator, INDUS-X, just as Prime Minister Modi landed in Washington D.C for the state visit in June. INDUS-X brings startups, defence primes, and export controllers under one roof to discuss the future of defence ties and facilitate deals between Indian and US entities.

As the readout following the launch underlined, "The initiatives complement existing government-to-government [G to G] collaboration."[10] The creation of INDUS-X was an inclusive process, with the involvement of think tanks, the private sector, experts, industry bodies, and the DoD and the MoD. This kind of partnership itself is rare. Going forward, a Senior Advisory Group has been created[11] and mentor-protégés programs have also been outlined. Commitments have been made to raise funds for joint challenges and co-fund defence-related projects between US and Indian startups.

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[9] Dinakar Peri, "India, U.S. discuss possibilities of co-producing jet engines, long-range artillery and infantry vehicles," *The Hindu,* May 21, 2023, https://www.thehindu.com/news/national/india-us-discuss-possibilities-of-co-producing-jet-engines-long-range-artillery-and-infantry-vehicles/article66877533.ece.

[10] Department of Defence, United States Government, https://www.defense.gov/News/Releases/Release/Article/3434923/launch-of-the-india-us-defense-acceleration-ecosystem-indus-x/, 2023.

[11] "Fact Sheet: India-U.S. Defense Acceleration Ecosystem (INDUS-X)," Department of Defense, United States Government, June 21, 2023, https://media.defense.gov/2023/Jun/21/2003244837/-1/-1/0/FACTSHEET-INDUS-X-FINAL.PDF.

In many respects, INDUS-X serves as the roadmap for fusing ties between startups. For too long, this section of the defence economy in both countries has not been able to gain the kind of traction required for co-production. This could change from hereon. There is much work to be done to implement the goals of INDUS-X, but an architecture exists, which was not the case prior to the creation of the iCET.

The Way Ahead

There is as much skepticism about the future of defence ties such as INDUS-X as there is optimism. This balance of attitudes exists both inside and outside of the two governments. Those who have been at the heart of this relationship are less sure of the deliverables and the actual potential for forging closer ties.[12] With the view to get the present right and learn from the past, the following recommendations might be considered.

The first is related to the Defence Technology and Trade Initiative (DTTI), predominantly a mechanism for cooperation that was shaped by the two governments as a G to G initiative. The iCET structure, as discussed above, has been designed around the private sector and the vibrant startup and innovation ecosystem from the outset. The iCET consultations, run by the National Security Council (NSC) and the National Security Council Secretariat (NSCS) have built a large ecosystem of players in the iCET space. This must continue to broaden and ought not to be limited to early winners and those with an emerging iCET legacy footprint.

First, it may be a good idea to constantly identify private sector companies and startups with prospective proficiencies in each of the technology domains—AI and chips—and create interface pathways for them with US academia, centres of R&D, defence majors, venture capitalists, and other sources of funding. It is also important to help them grow into viable and collaborative players in these critical and emerging technologies. It makes sense to grow the defense accelerator side of the iCET as an exclusive innovation/startup enterprise.

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[12] Tellis, "America's Bad Bet on India."

Second, while a dialogue between US export control authorities and Indian industry and startups has been a central effort of the iCET, it is crucial to make sure that this line of communication thickens, and quickly.[13] There is much that can be done under the threshold of the US International Traffic in Arms Regulations (ITAR).[14] Renovating the ITAR will take a long time as well as political capital in the United States that is not readily available. Yet, as India's startups have begun to realise, for licenses and certain technology access permissions, much can be done below and around the ITAR. However, to understand this maze, it is essential for India and the United States to sustain and develop the export control part of the dialogue. On June 6, the two countries launched the Strategic Trade Dialogue (STD), which is designed to deal with export control and unclog pathways for cooperation.[15] This is a promising start.

However, while the optimism around the iCET is warranted (as the joint statement in June makes clear with a range of substantive deliverables), export controls, at some level, require the buy-in from the US Congress. In part, certain licenses and exemptions require legislative scrutiny. While the STD will no doubt play an important role in navigating potential congressional obstacles, having export controllers at the centre of the INDUS-X ecosystem will allow Indian industry to keep learning and adapting to the needs of licensing regimes.

To be clear, in the startup community, many defence-related capabilities, whether in AI or space, are relatively new phenomena. It is only now that India's entrepreneurs are able to knock on US doors. The iCET has ensured that someone in the United States is there to answer these calls, but letting startups inside will have its own administrative requirements.

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[13] Rezaul H Laskar, "India at par with NATO partners for high-tech trade, says top US official," *Hindustan Times,* April 28, 2023, https://www.hindustantimes.com/india-news/us-treats-india-as-nato-partner-for-technology-sharing-commerce-official-101682687807040.html.

[14] "Understanding ITAR, CCL and EAR99 Classifications?," Frequently Asked Questions, Research and Economic Development, University at Buffalo, https://www.buffalo.edu/research/research-services/compliance/export/frequently-asked-questions/what-are-itar-the-ccl-and-ear99-and-how-does-one-figure-out-whic.html.

[15] "Launch of India-US Strategic Trade Dialogue," Embassy of India, Washington D.C., Government of India, https://www.indianembassyusa.gov.in/News?id=249871.

Conclusion

There is much to be enthusiastic about with regards to the iCET and the future of India-US defence ties—from the co-production of GE engines to startup hackathons and export control workshops. Yet, the hard reality for India is that de-risking from Russia will take time, perhaps up to several decades. Even then, there is good reason to make sure that Russian armor and platforms will remain in the Indian defence mix. As officials in India make clear, and as highlighted in the introduction to this essay, there is comfort with Russia that is longstanding. If, over the next decade, the iCET and its variables like INDUS-X can engineer a de-monopoly strategy from Russia, it would indeed be a mark of success.

In doing so, and apart from the points about export controls highlighted above, it ought to be clear that a private sector-driven set of incentives is markedly and understandably different than those offered by state-owned enterprises in Russia or France. The negotiations are commercial as much as they are strategic. The form of conversation is different, and a new comfort bridge with the United States will need to be built. There will also be calls from the US Congress on end-user verifications, certifications, and a clear intent to delink US-Indian co-production in India from the latter's existing Russian supply chains.

For this purpose, it would do iCET well to be coordinated by the NSC and the NSCS, which are both executive offices of the White House and the Indian Prime Minister's Office, respectively. Yet, in the end, this will need Modi and Biden to enable political progress on the iCET and larger India-US defence ties. Equally important is the constant mobilisation of all iCET stakeholders at all times.

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