SCHOLAR WARRIOR

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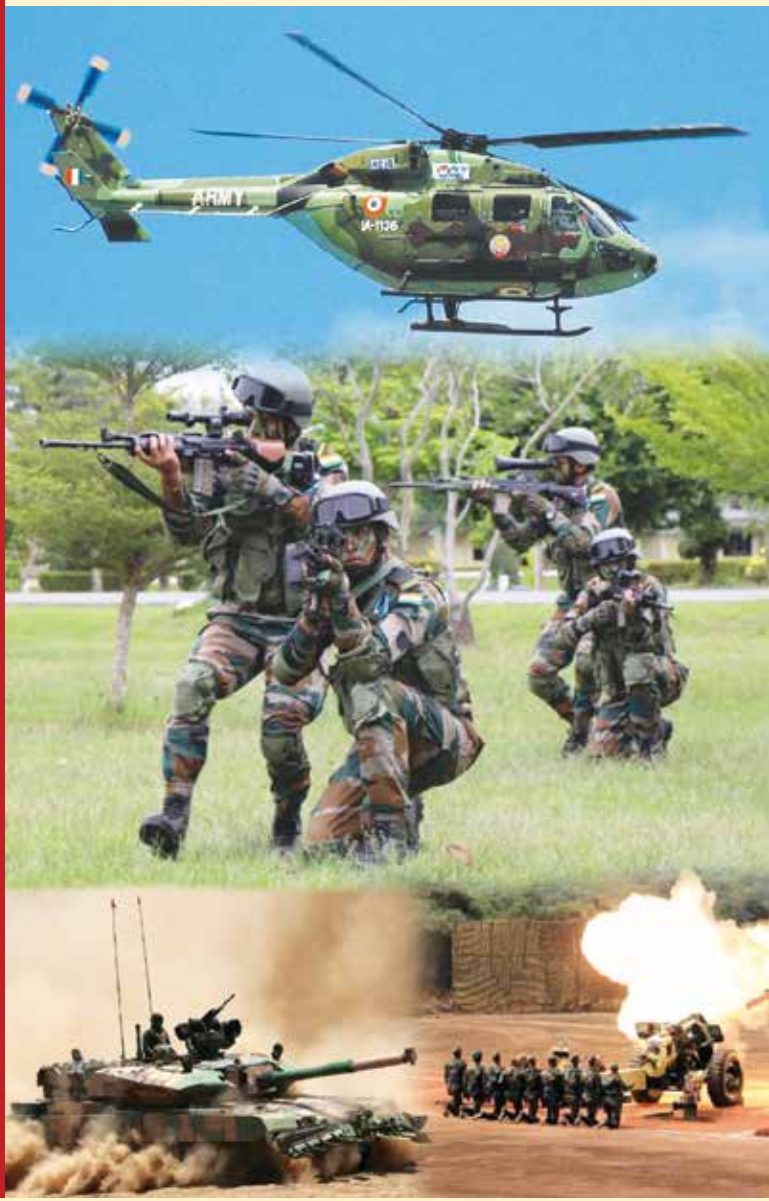

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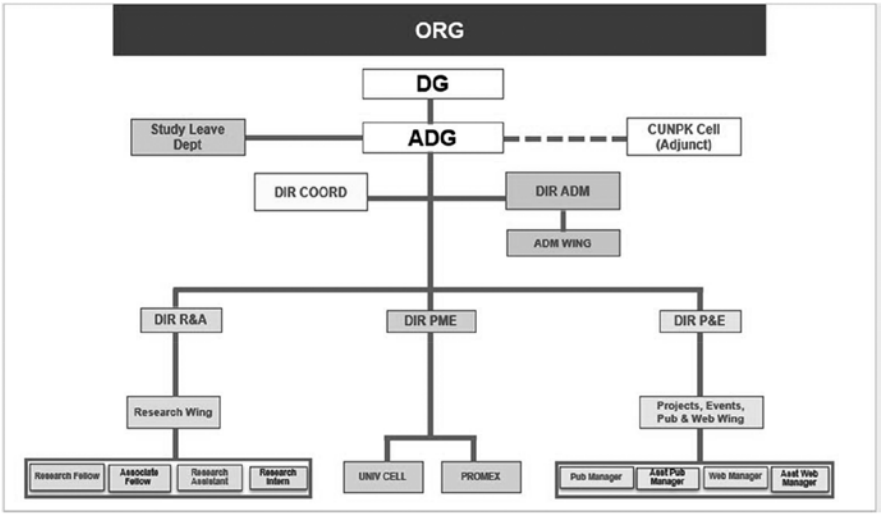

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SCHOLAR WARRIOR

SECTION I

ARTICLES

CENTRE FOR LAND WARFARE STUDIES

Global Security Initiative (GSI): China's Shield for Human Intelligence (HUMINT) Operations

DCS MAYAL

Abstract

The Global Security Initiative (GSI), introduced by China in 2022, represents a strategic framework aimed at reshaping global security governance. While officially presented as a multilateral approach to fostering peace and stability, the GSI also serves as a discreet platform for advancing China's intelligence objectives, particularly Human Intelligence (HUMINT) operations. By leveraging its global partnerships and deepening influence in critical regions, China integrates its unique HUMINT activities into the broader GSI agenda to achieve national objectives. This approach is particularly evident in developing/ underdeveloped regions where China's economic and political stakes are high, such as Africa, South Asia, and Central Asia. The GSI enables covert HUMINT gathering while maintaining plausible deniability through innocuous tools such as economic dependency, technology-sharing agreements, and strategic collaborations. This paper examines the relation between GSI and China's HUMINT strategies, highlighting its implications for global security dynamics and the potential risks posed to partner nations' sovereignty and security frameworks.

Introduction

In recent years, Beijing has introduced diverse initiatives aimed at countering negative perceptions and establishing a foundation for People Republic of China (herein referred to as China) to take a leading role in addressing a broad spectrum of global issues. In April 2022, Xi Jinping proposed the Global Security Initiative (GSI) at the Boao Forum for Asia Annual Conference which is one of the "three major initiatives" recently proposed by China that also include the Global Development Initiative (GDI), introduced in September 2021, and the Global Civilizational Initiative (GCI), introduced in March 2023. In September 2023, the key elements of the GSI were highlighted in China's global governance reform proposal and integrated into its "community of shared future for mankind"* vision for strategic guidance.[1] Within the triumvirate, all the initiatives complement each other, with security as a prerequisite for development, development as a guarantee of security, and both security and development embodying civilization.[2] China has exclusively established the Center for Global Security Initiative Studies in July 2024 based on the China Institute of International Studies (CIIS).[3] According to CIIS report 2024, GSI has reportedly received support and appreciation from more than 100 countries as well as international and regional organizations. The core principles of GSI have also been incorporated into more than 90 bilateral and multilateral cooperation documents between China, other nations, and international organizations.[4]

Global Security Initiative (GSI)

The GSI, taken as a whole, is considered as Xi's attempt to present a more comprehensive vision of a new world order and formulate the ideological backbone for a global governance system that elevates Chinese influence at the expense of American power.[5] Even after two years of introduction, the GSI's content is intentionally kept broad and vague to attract broader support and enable its flexible implementation. Instead of directly confronting the US and its allies, the GSI strategy mirrors Mao's idea of "encircling the cities from the countryside," aiming to gradually constrain the US from the periphery to expand its own freedom of action.[6] The GSI entails integrating economic, military, and diplomatic elements into China's grand strategy with aim to reshape the balance of power by linking economic and security cooperation and advancing influence through defence diplomacy and law-enforcement capacity building.[7] Interestingly, GSI, despite being a security initiative, is led by China's Ministry

of Foreign Affairs rather than the Ministry of Defense or the People's Liberation Army (PLA), underscoring its non-military approach.[8]

The 2023 GSI concept paper outlines the initiative's lofty declaratory aims: eliminating the root causes of international conflicts, improving global security governance, increasing global stability, and realizing lasting world peace and development. To achieve these goals, the GSI is framed around adherence to six core concepts and principles or "six commitments" which are to pursue China's vision of "common, comprehensive, cooperative, and sustainable security," to respect sovereignty and territorial integrity, to abide by the purposes and principles of the United Nation (UN) Charter, to take the legitimate security concerns of all countries seriously, to peacefully resolve differences and disputes between countries through dialogue and consultation, and to maintain security in the traditional and non-traditional domains.[9] The GSI concept paper also identifies twenty priority areas in three main categories. First, traditional security priorities include UN-led conflict prevention, peacekeeping, WMD non-proliferation, arms control, maritime security, space security, and fostering stable relations among major powers. Second, regional security issues are focused on Asia, Middle East, Africa, Latin America, Caribbean, and the Pacific Islands, mirroring China's economic interests in developing regions, while notably excluding Europe. Third, non-traditional security priorities address information security, biosecurity, AI governance, global health, food security, transnational crime, and climate resilience. These issues reflect China's integrated view of security and development, aligning with Xi's "comprehensive national security" framework and highlighting areas where China can assert leadership in evolving global governance.[10] China ultimately aims to use the GSI framework as a catapult to establish mechanisms or agreements that would legally enable Beijing to offer military or security assistance overseas.[11]

Through the GSI, China has strengthened security ties with neighboring nations and connected its peace efforts, such as the Saudi-Iran deal, Ukraine peace plan, and Palestinian reconciliation, to the initiative. China has also linked special funds, like the China-UN Peace and Development Trust Fund and Lancang-Mekong Cooperation Special Fund, to the GSI.[12] The GSI also reinforces multilateral organizations like the UN and ASEAN, advocating for the adoption of Chinese security norms and positioning Chinese-led initiatives such as the China-Africa Peace and Security Forum, Lancang-Mekong Cooperation, and BRICS+, as key forums for global security dialogue. This approach supports China's overseas interests by protecting its citizens and businesses abroad while

advancing its vision for global security reform.[13] Although still in its early stages, the GSI has shown potential to disrupt the global security framework through non-military means, increasingly relying on HUMINT to gather information and shape regional dynamics without raising global concern.

Chinese HUMINT Operations

HUMINT has long been a cornerstone of traditional intelligence gathering globally. However, with the rise of disruptive technologies, intelligence collection has undergone a significant transformation. Modern advancements offer methods that are more cost-effective and capable of harvesting vast amounts of information almost instantaneously without risking human life. Despite this technological shift, China, which maintained the largest pool of human resources until mid-2023, continues to prioritize its distinct HUMINT collection modus operandi. Contrary to the traditional tradecraft of intelligence collection by a specialised agent, Chinese agencies use the policy of "thousand grains of sand or mosaic approach or human wave or citizen spying,#"[14] wherein they basically employ numerous Han people and their diaspora settled abroad. Beijing's creativity and ability to combine all the elements of 'societal power,' including espionage, information control, industrial policy, political and economic coercion, foreign policy, the threat of military force, and technological strength, pose a challenge to the existing rules-based international order.[15]

China's HUMINT collection strategy relies on a vast network of seemingly ordinary individuals to gather small pieces of information, which are later combined into a complete intelligence picture. Despite advancements in technology, China continues to prioritize HUMINT, aligning it with its broader foreign policy goals. By blending traditional intelligence methods with modern tools, China has strengthened its ability to collect vital information, supporting its rise as a global economic and military power. This integration underscores China's strategic focus on gaining competitive advantages, promoting economic growth, and expanding its influence on the world stage.

Global Footprints of Chinese HUMINT Operations

The GSI subtly supports Chinese HUMINT operations by fostering partnerships and exchanges through international organisations, multilateral platforms, or bilateral channels, allowing intelligence gathering to occur discreetly within formal diplomatic and cooperative frameworks. Through the GSI,

China establishes avenues for HUMINT operations via defence diplomacy, law enforcement cooperation, and cultural or educational exchanges etc. enabling intelligence operatives to work seamlessly abroad in a collaborative, non-secretive manner. This approach provides Chinese agents with legitimate opportunities to engage with foreign officials, monitor developments, and observe key infrastructure and strategic sites. By framing these access points as international cooperation, the GSI enhances China's HUMINT capabilities, advancing its broader goals of influence and security while minimizing the visibility of intelligence activities.

The National Intelligence Law, enacted on 27 June 2017 as part of Beijing's six years old campaign to tighten its security legislation and legally obligates Chinese companies, entities and individuals to cooperate with national intelligence agencies. Even the Amnesty International has expressed concerns over Beijing's National Intelligence Law and stated that the national security legal architecture poorly defines concepts of "intelligence work", making it prone to risk and violation of human rights.[16] China has enacted several other laws and regulations to strengthen the legal framework for implementing security strategies within countries and abroad. The extra-territorial application of these laws aims to secure cooperation from Chinese citizens, diaspora, and foreign entities, posing distinct challenges to global freedom of expression. Other key laws that bolster the legal basis for security activities abroad include the National Security Law (2015), the New Maritime Law (2021), and the New Land Border Law (2022). In June 2022, Xi also signed an order to implement the "Action Guidelines on Military Operations Other Than War" on an experimental basis which allows the Chinese military to conduct "special military operations" abroad.[17] China is expected to align new laws with the evolving GSI in future to enhance HUMINT activities with an aim to provide a clearer understanding of global dynamics, supporting its strategic objective of achieving global dominance through strengthened intelligence capabilities and informed decision-making.

The GSI reaffirms the role of the UN for promotion and adoption of Chinese security norms and operational practices globally. China has strategically increased its influence within the UN by placing its nationals or pro-China figures in key/steering roles, thus allowing it to shape global discourse and promote policies aligned with its strategic objectives.[18] This placement is generally undertaken using diplomatic channels, political leverage, and monetary support. These carefully positioned representatives then helps advance

Chinese interests by influencing how organisations make decisions, respond to issues, and set policies. China also promotes its interests by embedding a network of supporters at lower levels within the UN and its specialized agencies who immensely contribute towards coordination, agenda-setting, monitoring sensitive discussions, and influencing bureaucratic processes from within with reduced accountability.[19] By cultivating influence at multiple tiers, China also seeks to steer the UN's activities in a direction that aligns with its global ambitions, while leveraging the organisation's legitimacy to minimize international scrutiny of its actions. As a leading exporter of surveillance cameras and facial recognition technology, China leverages its manufacturing prowess to deepen global security partnerships, boost the competitiveness of its firms, and expand intelligence gathering opportunities, thereby reinforcing its position as a major security power.[20] Strong security connections forged during the setup, operation, and maintenance of Chinese equipment inevitably fosters HUMINT operations through frequent interactions at both governmental and corporate levels.

China has also leveraged the UN to promote "safe city" projects by positioning its low-cost surveillance technologies such as facial recognition, cameras, and monitoring tools which are essential for public safety and urban management, particularly in developing or authoritarian states. Through UN-backed partnerships, China markets these systems to help government monitor and control populations, enabling data collection that may suppress dissent and tighten control. As these technologies integrate into local governance, China gains influence over these countries' operations, often with minimal transparency and increased privacy risks.[21] The installation of surveillance technologies is often accompanied by the deployment of Chinese nationals abroad, who oversee system installation, training, and maintenance. In some cases, Chinese technicians gained access to national intelligence grids, enabling democratic rollbacks and embedding Chinese security norms within partner nations.[22] This export of technology fosters relationships between Chinese firms and local or national politicians, businesses, and security agencies in recipient countries. The "safe city" projects highlights the diverse range of actors and motivations driving China's global policing activities, which are aligned with its broader security interests overseas. By exporting surveillance equipment, China also strengthens its security ties with other nations, consolidates its role in global security provision, and enhances the competitiveness of Chinese firms in the surveillance technology market. These ventures also present potential

intelligence-gathering opportunities and help position China as a leading security power on the global stage.[23]

China has also donated large amounts of traditional police equipment, such as vehicles and uniforms, to developing/underdeveloped countries which satisfies the domestic security demands of foreign governments, while simultaneously building China's overseas security partnerships. A 2022 study found that China's extensive security assistance to nearly all African countries has strengthened government ties, improved local police capacity, and enhanced its image as a responsible global power while safeguarding regional investments.[24] Chinese forces, once isolated, are now engaged in medical aid, infrastructure projects, school support, and community activities, fostering trust among local populations as a regular basis for future economic and political engagements. These cooperation strengthen ties with African governments, build support from citizens, and enhance protections for the Chinese diasporas.[25] China's active contributions to global policing norms and activities secure Chinese interests without risking it becoming entangled in foreign conflicts by putting 'boots on the ground.'

The 2023 GSI Concept Paper announced China's intent to collaborate with foreign police to address global security issues, enhancing its influence abroad while protecting its overseas interests. By selectively pursuing policing agreements in strategically important countries, China has spread its policing norms, particularly in Africa. This cooperation is largely conducted through bilateral agreements, with China's Ministry of Public Security training over 2,700 foreign officers in 2023 and holding 77 training sessions from 1995 to 2021, mainly since 2017. These efforts, targeting nations bordering China or with key economic ties, centralize China's role in global security and reform policing norms, especially in multilateral contexts, while also strengthening foreign forces' capacities to safeguard Chinese interests. For instance China's training of South African police aims to help protect Chinese-owned mines, which comprise 8% of South Africa's mining sector, and supports broader relationship-building efforts, including stronger military and political ties with South Africa's ruling party.[26]

China also trains foreign forces in policing models that prioritize intrusive operations linked to internal security and domestic politics. The increase in training sessions in 2023 highlights China's aim to reshape global policing norms to reflect its own security practices, an objective further supported by global legal education programs that embed China's approach within the GSI framework. The rise in training sessions in 2023 reflects China's intent to reshape global

policing norms to align with its domestic security practices, a goal also pursued through global legal-education programs that further embed China's security approach within the GSI framework.[27] Since 2000, the Forum on China-Africa Cooperation Legal Forum has trained over 40,000 African lawyers, and focuses on harmonising Chinese and African laws.[28] In addition to digitizing security under "safe city" projects, training to military/law enforcement personnel, the other means of propogating cooperation with foreign countries are joint military training, exercises and patrols, mine clearance, military assistance grants, security for joint projects, personnel and property.[29]

China's global security approach can be traced back to the launch of the BRI in 2013 after Xi took over the reins of China. As China expanded overseas investments and direct investments, the need to protect its assets, capital, and citizens abroad grew. To secure these interests, China has also promoted Private Security Companies (PSC) abroad. By engaging regional nations in the GSI, China aims to safeguard its economic stakes, potentially increasing PSCs and China's security presence in the region.[30] Chinese nationals operating as PSCs often create opportunities for HUMINT agencies to establish a presence discreetly, avoiding suspicion or raising alarms. China is collaborating with the Myanmar military junta to establish a joint security company to protect Chinese investments and personnel in Myanmar.[31] The Chinese government has engaged three private security firms in November 2024 to oversee the protection of Chinese nationals in Pakistan. These companies, closely associated with retired officers from the Chinese PLA, are tasked with managing security operations in high-risk areas.[32]

Chinese permanent or temporary presence abroad for police patrols strengthens its role in global security and fosters close ties with foreign law enforcement. China has signed several bilateral policing agreements in recent past which has enabled the permanent presence of Chinese forces in several foreign country such as Kiribati,[33] Soloman Island,[34] Ethopia,[35] Croatia,[36] Serbia,[37] Italy etc. In 2022, political opposition led Italy to stop joint patrols after it was revealed that China had operated 11 covert police stations in the country to intimidate and collect intelligence on Chinese citizens living abroad.[38] From 2016 to 2022, four local Chinese public security bureaus reportedly set up 102 overseas police service stations in 53 countries across America, Europe, Africa, and Asia. According to reports from human rights NGO 'Safeguard Defenders', authorities in the US, Canada, United Kingdom, Netherlands, and 10 other nations launched investigations into these outposts.

Concerns over these stations grew amid evidence of China's foreign interference operations and intimidation of critics abroad.[39] China has pressured thousands of wanted individuals to return, even from countries like the US, using its agents. Between April 2021 and July 2022, the Chinese authorities reported successfully persuading 230,000 Chinese nationals to return to face criminal proceedings for their alleged actions.[40] In addition to Overseas Police Station, China also undertakes transnational repression through Operation Fox Hunt +[41] or by using international organisations like Interpol or through Overseas Chinese Assistance Centres, to intimidate or ensure repatriation of dissidents by accusing targeted individuals as economic fugitives requiring repatriation to face charges of corruption.

China is expected to leverage its GSI to reshape the global security landscape and strengthen its HUMINT capabilities. By promoting the GSI at the UN and other multilateral forums, China seeks to position itself as a leader in international security governance, advocating frameworks based on multilateralism, mutual respect, and non-interference. Through GSI-driven partnerships in peacekeeping, counter-terrorism, and regional defence, China aims to legitimize its growing military presence abroad while creating avenues for intelligence gathering. Central to this strategy is the export of surveillance technology and "safe city" projects, marketed through UN-backed partnerships, particularly in developing nations. These systems, supported by Chinese technicians, provides potential access to sensitive data, facilitating both security cooperation and HUMINT collection. China's emphasis on expanding police equipment donations and training programs aligns with GSI objectives, fostering local security capacities while deepening its influence. Moreover, China's legislative framework, designed to support intelligence gathering and protect its overseas interests, may be further integrated into the GSI to enable overseas deployments of Overseas Police Service Station, PSCs and military personnel. By advancing security-related legal frameworks at the UN, China can push for international adoption of its standards. This combined approach will invariably enable China to enhance HUMINT operations, secure its investments, and advance its geopolitical ambitions.

Conclusion

China's GSI reflects its strategic ambition to reshape global security while advancing its HUMINT capabilities. Positioned as a platform for multilateral

cooperation, the GSI integrates China's economic, political, and security interests on a global scale. By enacting new laws, fostering partnerships, and exporting surveillance technologies, China builds a robust infrastructure for expanding its HUMINT operations. Through initiatives like deploying PSCs and influencing international standards at key forums, China strengthens its global presence, secures its investments, and discreetly gathers intelligence. Ultimately, these efforts simultaneously protect China's overseas investments and foster HUMINT operations that reinforce its geopolitical ambitions. The GSI not only consolidates China's influence in global governance but also embeds its HUMINT networks, enabling discreet but effective information gathering mechanism under the guise of mutual security. As the GSI evolves, it highlights China's ambition to redefine global security norms and position itself as a dominant player, leveraging intelligence as a cornerstone of its international strategy.

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Notes

* The "**community of shared future for mankind**" is a concept promoted by China advocating global cooperation, mutual respect, and shared development. It envisions interconnected nations addressing common challenges through multilateralism, fostering economic, cultural, and political ties. This approach emphasizes collective progress, sustainability, and a harmonious global order, aligning with China's strategic goals and global influence.

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The Journey of Professional Military Education for Officers' in the Indian Armed Forces

SA SHARMA AND DEEPALI KHAIRE

Abstract

The article aims to lay down certain perspectives of Professional Military Education (PME) and how it differs from training. It then dwells into the evolution of various PME Institutions and courses in the Indian Armed Forces post-independence. Further, various aspects with regard to the primary focus areas of these PME Institutions/ Courses, genre of Officers undergoing them as also the Apex bodies governing their curriculum and conduct has also been highlighted. The article also brings out the present state of Indian Defence University (IDU) and envisaged linkage of the PME institutions to IDU as per the Draft IDU Bill. Finally, the way theaterisation may affect conduct of PME in future has been brought out as an intangible point to ponder at this stage and consequently the possible need for a common Tri-Services Vision for PME institutions/ Courses being conducted at mid, senior and apex levels has also been highlighted.

The evolution of the Indian Armed Forces has closely been in conjunction with India's rise, challenges, and triumphs. Ever since independence in 1947, the valour

and competence, that has defined the Indian Armed Forces, has remained steadfast and undiminished.[1] The Indian Armed Forces has consolidated itself post-Independence and came a long way since then, as one of the most professional Armed Forces in the world. Needless to say, rigorous training and Professional Military Education (PME) has also played a significant role towards this.

This article summarises the journey of Professional Military Education (PME) in India with specific reference to the Evolution of the Institutions that impart PME to Officers' of all the three Services of the Indian Armed Forces, ever since we achieved independence. The article would focus on the Institutions and bodies that deal with Mid/ Senior/ Apex level PME courses for the Officers from all the three Services and bring out their journey thus far. Before that, it may be appropriate to understand the concept of PME which is often used in various discussions.

What is the essence of PME? Military training equips both Officers and 'Other Ranks' with the skills necessary to fulfil their duties effectively. Professional Military Education (PME) specifically aims to prepare Service members, more so Officers, for progressively higher levels of responsibility, including Joint and higher leadership roles. Strategic and operational PME, in particular, imparts a comprehensive understanding of warfare's art and science, fostering essential qualities and cognitive abilities crucial for military professionals.[2] This type of education typically could cover a wide range of subjects such as military history, ethics, leadership, critical thinking, communication, and problem-solving. It differs from technical training which are tailored to specific roles and career paths within each Service.[3] The Joint Doctrine[4] as also the Joint Training Doctrine[5] of the Indian Armed Forces do not have a mention of the term Professional Military Education (PME). However, the term PME is often used in various forums and debates with varied views and opinions. Therefore, in the absence of any doctrinal exactitude of the term PME in the Indian Armed Forces, it still is sometimes left to individual interpretations.

This article has thus also attempted to lay down the broad definition for what exactly is a PME Course in the Indian context, so that the flow and the aspects brought out in this article are better understood. While the term PME is used in various mediums and forums, a broad understanding of a PME Course (at mid/ senior and apex levels) could be as enunciated below:

> 'Any Course that empowers, enhances and subconsciously aids an Officer to broadly understand and reason out various aspects of Military

Decision making including 2nd, 3rd, 4th ….. order effects would come under the ambit of Professional Military Education …. The effect in most cases may not be immediately discernable on completion of the PME course. However, it would only help the Officer to better realise the complexities and consequences of his/her decisions when they needs to take one. In other words, the outcome/output of a PME Course is intangible and would always remain so. Any attempt to tangibly quantify the product (the human capital) of a PME Course could result in diluting the very essence of PME itself'

So then … Is there a difference between a PME Course and Training Course?

The bedrock and ethos of the Indian Armed Forces is embedded in the intrinsic manner in which its personnel undergo training and education in the form of courses. However, the quintessential approach to Training Vs PME always determines the way any course is conducted.[6] The Indian Armed Forces have the Headquarters Integrated Defence Staff (HQ IDS) and Service specific Training Commands under which there are various Training Institutions. The institutions imparting PME also form a part of this Organisational structure. The alumni of these PME Institutions are from all the three Services, and in many cases they could have undergone a PME Course at each stage of their career in any of the other parallel PME institutions of other Services/Joint Institutions, as against the norm prevalent for a Service specific Training course required to be undertaken in Service specific training institutions. The distinction between education and training also lies in the difference between acquiring knowledge and acquiring practical skills.[7] Quality PME is more about a broader understanding of issues for future leadership and decision-making roles in the Military.

It is therefore opined that the PME course is to broaden their horizon and not skill them with a particular technical expertise pertaining to tactics, techniques and procedures required for their next Staff or operational assignment.[8] The fact that the education gained from a PME Course would indeed be beneficial for their performance in any appointment after the course cannot be refuted. However, in most cases it would be due to the exposure they have garnered from the PME course rather than any particular technical skill set that they would have acquired. From this emerges the question - Then what exactly is a Training Course. The emphasis on understanding this difference is to realise that we need to approach these courses in an appropriate and rational manner, while

formulating the curriculum. A training course could thus be summarised as enunciated below:

> 'Any Course that is undertaken to hone the skills of a Military Officer to take on a specialised tasks on completion of the course could be termed as a training course. The Officer is appointed to a billet that necessitates certain knowledge and expertise required, which the Officer would have learnt in the course he has completed. The training course has a direct impact on the tasks that the Officer would undertake after completion and in most cases could address issues of tactics, techniques and procedures.'

Evolution of the Institutions which impart PME in the Indian Armed Forces

Having seen the background of PME Vs Training Courses let us now dwell upon the various PME Courses that Officers of the Indian Armed Forces undergo at the mid/senior level during their career span. These courses are broadly categorised under Service Specific and Tri-Service Institutions. It may be essential to also understand the timelines with respect to the evolution of these Institutions.

Mid-Level PME Courses at the DSSC Wellington, MILIT Pune and Naval War College Goa

The establishment of the Defence Services Staff College (DSSC) in 1949[9] marked the beginning of PME Journey in Independent India. Officers of the three Services, Coast Guard, Civil Services and Foreign Officers undergo the One-year Staff Course at this place which equips them to excel as staff officers and emerging military leaders. It also provides them with the knowledge and prepares them to function effectively in a tri-services environment.[10]

Officers having similar number of years of Service (10 to 13 years based on Service specific requirements) also are selected to undergo courses at other institutions such as the one year Defence Services Technical Staff Course (DSTSC) at Military Institute of Technology (MILIT) Pune with Tri Services participation of about 160 Officers.[11] The MILIT (erstwhile Institute of Armament Technology; then the Defence Institute of Advanced Technology and now the Military Institute of Technology) was set up in 1952. The genre of Officers undergoing courses as well as the strength has changed with times.

Akin to officers from the three Services attending the courses at DSSC and MILIT, some officers of the same seniority from the Indian Navy attend the 24-week Naval Staff and Technical Management Course (NSTMC) in lieu, which focuses on staff and management subjects[12], at the Naval War College (NWC), Goa.

> All the above courses are a career milestone educational course rather than a specific skill set imparting one. The curriculum of all the above three courses are varied and they mainly enhance the professional knowledge and acumen of the officers rather than providing them with any specific skill set akin to a training course.

The DSSC and MILIT are Tri-Service Institutions which come under the ambit of Headquarters Integrated Defence Staff (HQ IDS). The Naval War College (NWC) (erstwhile College of Naval Warfare) is a Service specific institution and was established in 1988 at Karanja, Mumbai and later shifted to Goa.[13] The NWC comes under the ambit of Southern Naval Command, the Training Command of the Indian Navy.

Senior Level PME Courses at Service Specific War Colleges and the College of Defence Management

Higher Air Command Course at College of Air Warfare, Secunderabad: The School of Land and Air Warfare started in New Delhi in 1959 and was later shifted to Hyderabad and renamed as the College of Air Warfare. The College of Air Warfare (CAW) conducts the One Year Higher Air Command Course (HACC). This PME Course is for Officers of the rank of Group Captain/Equivalent ranks from Army and Navy (20-23 years of Service). While the majority of the course composition is Officers from the Indian Air Force, the Officers from other two Services[14] add value when it comes to Service Specific inputs. The HACC focuses on various aspects such as National Security, International relations, planning and execution of air operations, operational war fighting concepts and issues of strategic nature. In the operational context, the overall flavor of the course is Air power centric, and the course curriculum is governed mainly by the Air Force Training Command/ Air Headquarters. The officers from Army and Navy attending the course gain an exposure to Air Operations.[15]

Higher Defence Management Course at College of Defence Management, Secunderabad: The Institute of Defence Management was established in 1970

at Secunderabad to teach modern management techniques. The Institute was later renamed as College of Defence Management (CDM). It conducts the Higher Defence Management Course (HDMC). This PME Course is a Tri-Services course for Officers of the rank of Col/Captain/Group Captain from Army, Navy and Air Force (20-23 years of Service) respectively.

The CDM has various faculties such as Strategic and Behavioral Sciences, Resource Management, Decision Sciences, Research and Consultancy. The course curriculum is unique, with a focus on national seniority, economics, financial and project management, systems approach, organisational behaviour, quantitative research etc. Officers of the same seniority as those undergoing the Higher Command Courses at the Service specific War Colleges, are selected/ nominated for this course.[16] With CDM being a Tri-Service Institution, the curriculum of the HDMC is governed by Headquarters Integrated Defence Staff (HQ IDS).

Army Higher Command Course at Army War College, Mhow: The Indian Army introduced the Higher Command Course at College of Combat, Mhow (Now Army War College) in 1971. The Army War College, Mhow conducts various courses primarily for officers from the Indian Army, at different stages of their career. The PME Course (senior level) is the Army Higher Command course conducted by the Higher Command Wing of AWC, Mhow.

The ethos of the Army Higher Command Course is similar to that of the Higher Air Command Course conducted by the College of Air Warfare or the Naval Higher Command Course conducted by the Naval War College, Goa (being highlighted later). This PME Course is also for Officers of the rank of Col/Equivalent from Navy and Air Force with 20-23 years of Service. While the majority of the course composition is Indian Army Officers, a few Officers from other two Services also attend the course. In the operational context, focus is primarily Land centric and the course curriculum is governed by the Army Training Command.

Naval Higher Command Course at Naval War College, Goa: The Committee for the Review of Training of Officers for the Services (CORTOS) was set up in 1986 to examine officer training "starting from the NDA right up to the NDC" (steered by Ministry of Defence). It aimed at increasing specific contents of Services training and also increase inter-services interaction for ushering jointness. The main recommendations included the Creation of a College of Naval Warfare (later rechristened as Naval War College).[17] The Naval War College, located at Goa, conducts the Naval Higher Command Course with majority of

the course comprising of Indian Navy Officers and a few Officers from other two Services.[18] The course aims to prepare senior officers for critical operational and strategic roles.[19] The overall flavour of the course, in the operational context, is on maritime issues. The course curriculum is governed by the Southern Naval Command/Naval Headquarters.

Joint Capsule (JOCAP) at Army War College, Mhow: The CORTOS Committee also then had recommended that the last legs of the Service specific higher command courses should be conducted together, which is in the form of the Joint Capsule (JOCAP).[20] The JOCAP is conducted at Army War College, Mhow and encompasses Lectures/Strategic level talks and Wargames, with participation of Officers from the three Services, undergoing the Higher Command courses in the respective War Colleges.[21] Their counterparts, undergoing the HDMC Course at CDM Secunderabad, do not attend the JOCAP.

Selection Criteria for the PME Courses: While each of the above senior level PME Courses are conducted by different Institutions with various apex bodies governing their curriculum, an Officer when due, can be selected/nominated to undergo any of these Higher Command Courses or the HDMC,[22] inter alia implying that the overall desired end state, that is envisaged by the Indian Armed Forces from attendance in these courses, may need to be aligned.

Apex Level PME Course at NDC, New Delhi

National Defence College: At the highest level of PME is the National Defence College (NDC) which was established in 1959. It runs a 11 Month course for officers of the rank of a Brigadier/Equivalent ranks and was meant to replicate the British Imperial Defence College. The NDC was earlier under the Chiefs of Staff Committee (COSC) and was later brought under the control of the Defence Ministry, Department of Defence in 1976. The Officers who undergoes this course have around 26 to 28 years of Service and it has Tri-Service representation as well as Officers from Civil Services and Foreign Countries. Invariably, officers who have undergone the mid and senior level PME courses are the ones who attend this. The NDC does not have a parallel course/institution amongst the three Services and is thus one of its kind. The course focuses on aspects ranging from Understanding India, Economic Security, Science and Technology, Global Issues, International Security Environment, India's Strategic Neighborhood and finally

Strategies and Structures for National Security.[23] The curriculum and conduct of the course is governed by the Department of Defence at MoD.

The Indian Defence University

On a Parallel note, after the 1999 Kargil war, a committee was created under Shri K. Subrahmanyam for creation of the Indian Defence University (IDU). This was also the first attempt at reviewing military education by a committee comprising both civilians and military officials. IDU has been projected as the intellectual hub that would consolidate education in all three services while integrating civilian officials from other ministries to promote a whole of government approach to national security. While the draft bill of IDU is yet to be approved by the Parliament, it is important to highlight that the bill in its present state indicates affiliation of only the National Defence College, College of Defence Management, Defence Services Staff College and the National Defence Academy (and possibly a few others) to the IDU as and when formed. The Service specific PME Institutions (War Colleges) are not in the ambit of the IDU draft bill, at this stage.[24]

Theaterisation and PME

As highlighted above, the present PME construct of the Indian Armed Forces for mid and senior level courses for Officers' has various apex bodies (Tri-Service as also single Service) governing the curriculum, the selection of officers, as also the conduct of these courses. While it may seem to be working well at this juncture, theaterisation of the Indian Armed Forces, as and when it happens, may necessitate a holistic view with regard to the '***Desired End State***' expected from the human capital undergoing these courses. This would have to be in conjunction with the different leadership roles that the Officers would need to play in a new Tri-Services environment. Towards that, while many steps towards enhancing Jointness and synergy have been initiated post creation of the post of Chief of Defence Staff (CDS) in January 2020, there may be a need for some revisions in our approach towards conduct of PME, which would need to be from a Tri-Services perspective, based on the envisaged roles of Officers in Theatre Commands, as and when formed.

Conclusion

The Indian Armed Forces is an organisation which focuses extensively on imparting effective training and education to its personnel. The professional

time spent on various PME Courses at mid/senior and apex level play a very crucial role in nurturing the senior leadership of the Services. This article has highlighted certain perspectives of Professional Military Education Vs Training before dwelling into the evolution of various PME Institutions and courses in the Indian Armed Forces, post-independence. The article aimed to put forth various aspects with regard to the primary focus areas of the Indian Armed Forces' PME Institutions/Courses, genre of Officers undergoing the courses at mid/senior/apex level as also the Apex bodies governing the curriculum and conduct of these PME Courses. The present state of IDU and envisaged linkage of only certain PME institutions to IDU as per the draft Bill was also brought out. The way theaterisation may affect the conduct of PME in future, based on envisaged roles of future military leaders in a predominantly Tri-Services environment, has also been highlighted as a point to ponder.

The present organisational structure and ethos in which PME is imparted in the Indian Armed Forces, be it in a Joint environment/Institution (all three Services viz. Army, Navy and Air Force) or in single Service specific PME institutions, may therefore need to be further synergised, with common policy guidelines, especially in light of the formation of Theatre Commands in the near future. Towards this, the deliberation on the need for a common Tri-Service Vision for PME, especially for the mid, senior and apex level courses in the Indian Armed Forces, could be a start point.

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Notes

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Digital Personal Data, Quest for Protection: The Draft Rules 2025

BIPIN BAKSHI

Abstract

The Draft DPDP Rules 2025 have been promulgated recently and comments on the draft were sought by 18 February 2025. It is well known that we face threats of digital attacks varying from cyber bullying to financial fraud if our personal data falls into the hands of inimical actors. This further transcends into a National Security threat when data of security personnel and institutions becomes available to malevolent actors. There are certain observations and comments pertaining to inadequate specification of safeguards, absence of audit, ambiguity in the reporting process, inadequate quorum for voting of the board, lack of correlation of the board with existing agencies and the aspects of compensation to individuals, which may be considered to ensure better security for the personal data of individuals. The sensitive nature of this data makes it imperative to take more stringent steps, giving priority to security over functional costs.

The Draft DPDP Rules 2025 have been promulgated by the government recently following the enactment of The Digital Personal Data Protection (DPDP) Act 2023 on 11 August 2023.[1] This is a welcome step in the ongoing efforts to establish regulations regarding the very sensitive issue of personal data harvested by

multiple agencies online in the digital era. While there is a threat of invasion of privacy of individuals on the one hand, there is also an omnipresent threat of digital attacks, varying from cyber bullying to financial fraud, if the personal data of individuals falls into the hands of inimical actors in infospace. This further transcends into a **National Security threat** when data of security personnel and institutions becomes available for malevolent foreign state or non-state actors. Hence, safeguarding of digital personal data becomes a very critical aspect for both individual security and national security.

The Draft rules proposed to be made by the Central Government in exercise of the powers conferred by sub-sections (1) and (2) of section 40 of the Digital Personal Data Protection Act, 2023 (22 of 2023), have been promulgated vide The Gazette of India, Extraordinary, Part II – Sec 3(i), containing the Notification by the Ministry of Information and Technology on 3 January 2025. Comments were sought on the draft rules by 18 February 2025.[2]

There are several notable positive steps proposed by way of these rules which will enable the implementation of the Act. However, there are certain observations and comments that may be considered for refining these rules and increasing the effectiveness of digital personal data security.

Inadequate specification of Safeguards and absence of Audit

The rules have asked for safeguards to be placed for prevention of possible breaches while handling sensitive personal data, which is critical in the context of both individual privacy and national security. However, it is felt that simply stating that the safeguards should be reasonable leaves a lot of room for interpretation, and may create vulnerabilities as no specific security safeguards have been laid down. Moreover, while the continued processing of information in case of breach is stated to require Data Backups, the need to safeguard those backups has not been specified.[3] The clauses mentioned in the draft rules are as under:

> ***Reasonable security safeguards.***—*(1) A Data Fiduciary shall protect personal data....by taking reasonable security safeguards to prevent personal data breach including (a) appropriate data security measures; (b) appropriate measures to control access; (c) reasonable measures for continued processing including by way of data backups.*

Keeping in mind the sensitivity of the data and the backups, stringent procedures need to be specified in keeping with global best practices, and regular audit of these security measures should be provided for in the rules. For this audit, an existing government agency may be nominated or a new organisation can be created. "Prevention is better than cure", as goes an old adage, and providing for regular audits will go a long way in reducing incidents which we will be handling in a reactive manner.

Ambiguity in the Reporting Process for Breaches

There are guidelines laid down for reports in case of data breaches, however these are ambiguous and drafted in a manner that leaves room for unacceptable delays.[4] Firstly, the immediate report that should be sent out is simply stated to be WITHOUT DELAY, with no time frame laid down. Secondly, there is a provision for delaying the detailed report beyond 72 hours to afford time for the data fiduciary to gather full information about the breach, the persons involved and remedial measures implemented or proposed to prevent future breaches. The detailed report could thus be delayed by as much as 7 to 10 days, by which time further damage could have been carried out by the perpetrators of the breach. Therefore, it is felt that there is a need for a second interim report in a more reasonable time frame. With this in mind, and to ensure timely reporting, it is essential that time frames be laid down for Immediate, Interim and Detailed Reports, with a specified format for each. The reporting processes and formats also need to be harmonised with the requirements of other stakeholders like CERT-IN, RBI and SEBI as applicable in various circumstances. The present specifications laid down in the draft rule only indicate the timelines and reports as under:

> *On becoming aware of any personal data breach, the Data Fiduciary shall intimate (a)without delay, a description of the breach, and (b) within 72 hours (or longer), a detailed report.*

It is suggested that the immediate report, with the bare minimum information pertaining to the breach, should be submitted within 12 hours, an interim report with essential information be submitted within 48 hours and the detailed report within 7 days. Further, a format could be given in the rules for these three reports.

Inadequate Quorum for Voting of the Board

The draft rules would grant approval even if 83% of the board members may not be in agreement, which goes against the principles of natural justice and needs to be amended. With only One Third of the board members present to complete a quorum and a simple majority including a casting vote by the Chairman being enough to pass a motion, 16.6% of the board members can get a motion passed even if the balance 83% members are either not in agreement or not in attendance.[5] The specific provision of the draft rules are as under:

> *18 - (4) All questions which come up before any meeting of the Board shall be decided by a majority of the votes of Members present and voting, and 18(3)- One Third of the membership of the board shall be the quorum for its meetings.*[6]

It is suggested that the quorum be enhanced to Three Fourth (75%) of the membership and a provision for remote voting be included, for members who may not be able to attend physically. Since the board in any case is to function as a digital office, there should be no encumbrance in accepting remote attendance/remote voting of members. Therefore, setting a quorum of only one third needs to be reviewed. As an example, if there are 6 board members including the Chairman, the quorum is presently met if the Chairman and one member are present. If the member opposes, and the Chairman uses his casting vote to tip the balance, the decision is taken even if all the other 5 members are either absent or not in agreement.

There are likely to be financial implications of these decisions which will get conflicting interests and international geopolitics into play as multinational companies would be involved in some of the cases. Therefore, there is a need to ensure that the votes of maximum number of members of the board are considered before arriving at decisions. Moving ahead with half of one third of the board does not seem the best way to manage votes in this context.

Correlation of the Board with Existing Agencies

Digital data flows are a significant threat, which are already being closely watched by a number of agencies that are stakeholders/watchdogs in Infospace. Hence, there are overlapping concerns with management of personal data under the act and draft rules, now promulgated. It will be better if the newly created

board gets connected to one of these many agencies rather than operating in a vacuum, or creating another silo in an already crowded space as detailed below.

Response to computer related incidents is under the mandate of the Indian Computer Emergency Response Team (CERT-IN), while protection of nominated digital infrastructure is done by National Critical Information Infrastructure Protection Centre (NCIIPC). Both these premier agencies also look at protection and response to cyber attacks, data breaches and the like, and take suitable actions depending on the target and source of attacks.

Besides this there is the National Cyber Coordination Centre and the National Cyber Security Coordinator, who is part of the National Security Council Secretariat (NSCS). We also have the elements of Home Ministry, other cyber wings of the Armed Forces and Law Enforcement Agencies, the Data Security Council of India, and several other agencies that monitor content on OTT (Over the Top) digital channels, Print and Electronic Media, listed below:-

(i) CERT- IN- MeitY (Indian Computer Emergency Response Team under the Ministry of Electronics and Information Technology)
(ii) NCIIPC- NTRO
(iii) NCCC – (National Cybersecurity Coordination Centre)
(iv) National Cyber Security Coordinator (NSCS)
(v) MHA C&IS (Computer and Information Security Division, MHA)
(vi) I4C (Indian Cybercrime Coordination Centre)
(vii) Defence Cyber Agency
(viii) Army Cyber Group
(ix) Data Security Council of India
(x) R& AW Cyber Wing
(xi) Intelligence Bureau Cyber Wing
(xii) Intelligence Wings of Army, Navy and Air Force
(xiii) News Broadcasting and Digital Standards Authority
(xiv) Press Council of India
(xv) DIT&CS[7] (Directorate of Information Technology and Cyber Security, Defence Research and Development Organisation)

The newly established board will be another player in the digital space. Functioning as a digital office, it will lack the institutional support, technical capability for investigation/audit and the direct backing of a ministry in its functioning. One of the options to overcome these issues is to tie it informally with CERT-IN, which is also with the same ministry that is setting up the board.

It is considered essential to give the board a formal relationship with one of the existing organs that have the technical capability to support it and make it an effective organisation.

The board is mandated to conduct an inquiry in case of a breach and to impose penalty as provided in the Act. Such inquiries may require considerable time and technical expertise. Possibly recognising the lack of intrinsic capability of the board, the Act states in Chapter VI, Section 28 (9):

> (9) The Board may require the services of any police officer or any officer of the Central Government or a State Government to assist it for the purposes of this section and it shall be the duty of every such officer to comply with such requisition.

The process to be followed for obtaining the services of an officer as mentioned in the act should be further clarified in the rules. This will be essential as there is presently lack of institutional/technical capability available to the board. Such ad-hoc measures will be obviated if the board is formally associated with a ministry as recommended above.

Ambiguous Terms and Conditions of Service

The draft rules mention a **Consolidated salary** without the facility of house and car on the one hand, whereas the fifth schedule goes on to specify Leave, LTC and Foreign Travel as per Central Government rules and draws parallels with pay matrix.[8] It needs to be clear if these employees/members are part of the government or not. The ambiguity will divert the efforts of the board and create unnecessary misconceptions about the status, rights and perks of employees. It is felt that the fifth schedule should delete all aspects of government benefits, rules and regulations, LTC and foreign travel. This will also remove unnecessary seniority and protocol issues if the board is formally appended to CERT-IN/ MeitY as recommended in foregoing paragraphs.

Cross-border flow and Submission of Data

The earlier provisions for data localisation and stringent measures to ensure submission of data to the Indian Government that were earlier envisaged in the DPD Bill 2019 are largely diluted in the DPDP Act 2023.[9] However these issues are very much relevant and there is a scope to impose more stringent clauses by way

of drafting of the rules, which is an opportunity that should not be missed. The present provisions in the draft rules are as under:

> ***Processing of personal data outside India.*** Transfer to any country or territory outside India of personal data processed by a Data Fiduciary—
> (a) within the territory of India; or
> (b) outside the territory of India in connection with any activity related to offering of goods or services to Data Principals within the territory of India, is subject to the restriction that the Data Fiduciary shall meet such requirements as the Central Government may, by general or special order, specify in respect of making such personal data available to any foreign State, or to any person or entity under the control of or any agency of such a State

Calling for information from Data Fiduciary or intermediary. (1) The Central Government may, for such purposes of the Act as are specified in Seventh Schedule,acting through the corresponding authorised person specified in the said Schedule, require any Data Fiduciary or intermediary to furnish such information as may be called for, specify the time period within which the same shall be furnished and, where disclosure in this regard is likely to prejudicially affect the sovereignty and integrity of India or security of the State, require the Data Fiduciary or intermediary to not disclose the same except with the previous permission in writing of the authorised person.[10]

While there is already some discomfort with the draft rules expressed in media, wherein there is apprehension of data localisation being introduced*"through the back door"*[11] the requirement of ensuring availability of this critical data in the context of individual privacy and national security cannot be over- emphasised. It is therefore suggested that this aspect may be more clearly laid down in the rules

Compensation and Damages

As provided for in Section 34 of the Act, the financial penalties for breaches do not go to the data principal in compensation for the losses and damages suffered. This aspect needs a review, and the present clause of the act is as under:

> 34. All sums realised by way of penalties imposed by the Board under this Act, shall be credited to the Consolidated Fund of India.

While penalties on the data fiduciary would serve as a deterrent for future breaches and assist in securing digital personal data, this does not benefit the victim(s) in any way.[12] After the entire process of complaints, investigations and inquiries by various witnesses/agencies, it may be considered logical that the victim should get some renumeration as compensation/damages. While there is no provision for such renumeration at present, there is an opportunity at this stage to introduce the concept of both compensation for actual loss, if any, and damages, which is commonly followed in other countries.

In pursuit of our goals envisioned in Digital India flagship program where the massive Digital Public Infrastructure has proved a gamechanger towards empowering citizens and we have the highest financial transactions under the United Payments Interface, the need to ensure security of personal data needs no emphasis. The sensitive nature of this data makes it imperative for us to take stringent steps to safeguard this information, giving priority to security over the functional costs that it might impose on data fiduciaries, under a robust regulatory framework.

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Repatriation or Resettlement—What Lies Ahead for the Rohingya Refugees?

ANJALI MANHAS

Abstract

Sheikh Hasina's 15-year regime ended in August 2024 and despite the change in leadership, Bangladesh has continued to express its desire on returning the Rohingya to Myanmar's Rakhine State. Their future presents two critical issues: whether they should go back to Myanmar or where they should go if repatriation and reintegration proves impossible. These question demands a thorough examination of difficulties, feasibility and consequences of both repatriation and resettlement to determine the most viable solution for the world's most persecuted community.

Introduction

The world's most persecuted minorities, the Rohingya are a stateless Indo- Aryan ethnic group, primarily Muslims, residing in Myanmar's Rakhine State. The Rohingya refugee crisis stems from decades of discrimination and repression, which escalated dramatically in August 2017, when widespread violence in Rakhine State drove over 742,000 individuals, mainly women and children, to seek refuge in Bangladesh. As of 2024, nearly 1 million Rohingya refugees live

in Bangladesh, most of them reside across 33 camps in Cox's Bazar, forming the largest refugee settlement globally.

Figure 1: Map showing the largest Rohingya Refugee camp

Source: The Economist.

Despite promises of respecting human rights by the current interim government, Bangladesh border guards have continued to forcibly return Rohingya refugees back to Myanmar by force. Multiple incidents have been recorded between August and October of 2024, where more than 400 Rohingya refugees were forcibly returned to Myanmar. The Foreign Advisor of the interim government, Mohammad Touhid Hossain speaking at the closing session of an international seminar held on 3rd February 2025, at the Foreign Service Academy (FSA), stated that Rohingya crisis is not solely Bangladesh's responsibility, but rather a global issue. He emphasized that Bangladesh cannot accommodate more Rohingya refugees, therefore the international community should increase their support for them.

Bangladesh has had a difficult time handling the Rohingya situation since the large-scale influx in 2017. Due to heightened fighting between the Arakan

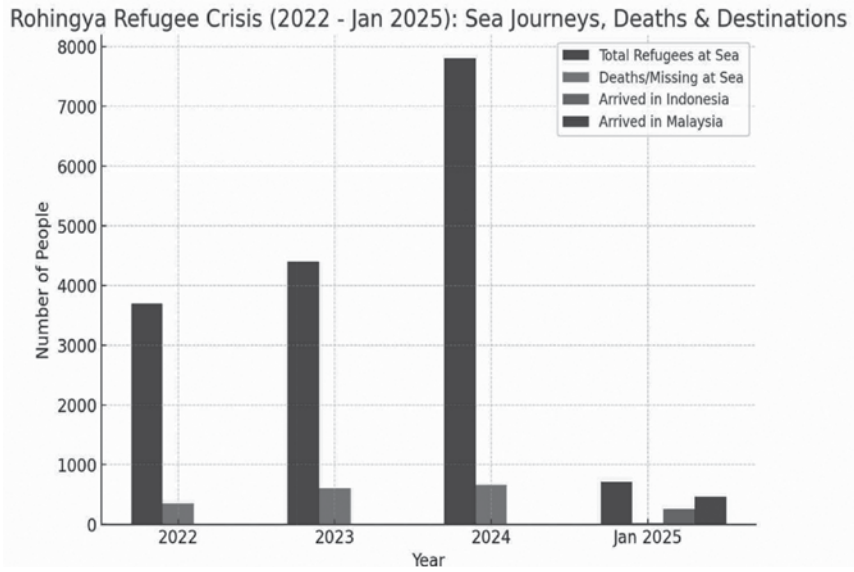
Army and the Myanmar military in Rakhine State, about 80,000 more Rohingya refugees have entered the country since July 2024, further taxing the already overcrowded refugee camps in Cox's Bazar. Both Bangladesh and Myanmar are changing, according to former Ambassador M Humayun Kabir, since younger generations are reassessing the situation from fresh angles. The conflicting geopolitical interests of regional and global powers have made the situation even more complex, according to Niloy Ranjan Biswas, a professor of international relations at Dhaka University.

However, the question remains that Rohingya have no permanent home. Can the Rohingya safely reintegrate into Myanmar society? and If not, where should they go? The consequences of both the options will only determine the future of Rohingya

The Rising Sea Voyages of Rohingya Refugees (2022-2025)

This graph highlights the worsening Rohingya crisis situation from the year 2022 to early 2025.

Figure 2: Comparative analysis of the number of Rohingya refugees undertaking sea journeys and the number of deaths/missing persons from 2022 to early 2025



In 2022, approximately 3,700 Rohingya refugees, undertook dangerous sea voyages, from both Bangladesh and Myanmar, primarily driven by the refugees'

search for protection, security, family reunification, and better livelihoods in other countries. The UNHCR in a report of 2023 stated that at least 348 individuals died or went missing at the sea, making it one of the deadliest years for Rohingya refugees since 2014.

In 2023, approximately 4,400 refugees undertook the perilous journey and around 600 Rohingya refugees were reported dead or missing at sea during these attempts, highlighting the extreme dangers and risks associated with these journeys.

In 2024, over 7,800 refugees undertook this dangerous boat journeys, marking an 80% increase compared to 2023. In January 2025, there were still a lot of Rohingya refugees trying to escape by sea, which indicates continued desperation and a lack of viable alternatives. 254 Rohingya refugees have already reached Aceh, Indonesia, by 5th January 2025, with 10 people reported missing or killed and over 460 Rohingya migrants arrived in Malaysia and Indonesia between January 3 and January 5, 2025.

This data raises a fundamental question about the future of the Rohingya's, as ignoring these trends will only lead to more continued displacement and deaths. However, the Rohingya people lacks citizenship, and the international community is debating on two solutions: First solution is to return the Rohingya to their homeland under an agreement with the Myanmar government. Second solution is to give permanent resettlement to Rohingya. This resettlement would occur in a nation offering them legal residency, along with fundamental human rights.

Many Rohingya people face a life-or-death decision between repatriation and resettlement; this is not simply a political issue, but a matter of survival. Three key factors explain this issue's urgency :

- Many Rohingya fear returning to Myanmar and this fear stems from a lack of adequate assurances that they will not face renewed persecution. The continued rule of the military junta has not brought improvements for minorities. Forced repatriation could easily result in a resurgence of violence. They may then face incredibly dangerous circumstances.
- Though they have lived in Myanmar for centuries, the Rohingya people are not legally recognized and are treated as illegal immigrants. Repatriation could return them to the oppression they escaped, as they lack citizenship, land rights and freedom of movement.
- Refugee camps are located in Bangladesh and other places. These camps offer no long-term solutions. Inadequate jobs, education and healthcare cause

a humanitarian crisis. Resettlement requires international cooperation to provide pathways to citizenship, education, as well as employment.

The Current Conditions in Refugee Camps: Global Challenges and struggles

a. Cox's Bazar is the largest refugee settlement in the world

There are currently a million Rohingya refugees living in Bangladesh, where they face numerous difficulties such overcrowding, poor access to basic amenities, and declining mental health. Many recent arrivals are still unregistered, which restricts their access to protection, food, and medical treatment. Armed groups like the Arakan Rohingya Salvation Army (ARSA) and opposing factions have made matters worse in the refugee camps, resulting in more bloodshed, murders, kidnappings, and forced recruitment. The anguish endured by the refugees is further exacerbated by reports of corruption and brutality by specific Armed Police Battalion (APBn) officers.

The scarcity of livelihood opportunities is among the most urgent issues. The inability of Rohingya refugees to work, pursue formal education, or leave the camps without government authorisation limits their capacity to support themselves. These travel limitations have gotten worse over time, which has made people feel more despairing and more likely to turn to unhealthy coping strategies. Given that Bangladesh is the third most natural disaster-prone state in the world, the migrants are also at risk from weather-related risks. Additionally, since 2021, between 30,000 and 35,000 refugees have been moved to Bhasan Char island in an effort to relieve the strain on the Cox's Bazar camps.

b. Malaysia: Battles for Healthcare Access and Survival

There are several difficulties being faced by the Rohingya refugees in Malaysia. The vulnerability of this group is highlighted by instances of child marriage, which happen when young females try to flee challenging situations. To meet the medical and psychological requirements of Rohingya refugees in Penang, doctors provides vital medical, mental health, and humanitarian assistance. An emphasis on healthcare inequities is evident in the research efforts devoted to comprehending the experiences of Rohingya women in Malaysia, particularly with regard to their access to public hospitals. Numerous Rohingya migrants fled an immigration detention centre in February 2024 after a riot broke out, illustrating the despair and possibly subpar circumstances there.

c. India: Strict Living Conditions and Detention

Interviews with Rohingya captives in India from May to November 2024 revealed the terrible conditions they face. A hunger strike was started by around 100 Rohingya refugees detained in a transit camp named Matia in Assam in September 2024 in protest of their prolonged imprisonment and the "abominable" conditions they endure. Rohingya refugees in India are subjected to limitations, harassment, and detention that are becoming more and more like the persecution they left behind in Myanmar.

d. United States: A Fresh Start with Persistent Difficulties

Relatively recent arrivals to Western civilisation, the Rohingya migrants have made their homes in places like Chicago, Milwaukee, Indiana, and Texas. In the United States, many refugees have difficulties, particularly while trying to obtain housing, education, and social and financial support; 62 refugees have been able to establish new lives in America thanks to a diplomatic gesture.

Repatriation—Returning to Myanmar

The political unrest and ongoing violence in Myanmar have made the return of Rohingya refugees there a complex subject. Due to opposition from various ethnic armed factions, Myanmar has been ruled by a junta since the military takeover in February 2021. As a result, ceasefires frequently break down, impeding efforts of repatriation.

A civil war has been active in Myanmar since February 2021, where a military junta is pitted against more than 2,600 rebel groups. In one of the analyses of a BBC World Service, it indicates that as of mid-November, the junta was only able to control 21% of Myanmar while the remainder was split between rebel groups and contested territory. This indicates that the military is considerably less powerful than previously thought. The realization that safe return of Rohingya refugees is far more complicated due to this lack of control which leads to sustained violence. The situation is made more difficult by the fact that rebel factions have political differences and face some degree of fragmentation.

Rohingya refugees have stated that in order to return, their citizenship rights, freedom of movement, freedom of religion, education, and equal rights should be restored. They also seek reparations for properties that were seized, and the ability to return to their former residence. The National Verification Cards (NVCs) given to the Rohingya minority by the Myanmar government are turned

down because they mark them as "illegal immigrants" instead of recognizing their ethnic identity.

By January 2025, the Arakan Army (AA), established in 2009, has consolidated control over 15 of Rakhine State's 17 townships. While the AA's stated objective is to "restore the sovereignty of the Arakan people," the AA has an ambivalent attitude towards the Rohingya, which is an undersupplied group of people in their territory. The AA has also indicated that it will protect all Rakhine people without consideration of religion and ethnicity. However, there are long-standing problems with trust between the AA and the Rohingya because of historical tensions and current occurrences.

Most of the Rohingya men and boys have been enlisted by Myanmar's military junta to fight against the Arakan Army. Human rights organisations have strongly denounced this practice, and since February 2024, more than 1,000 Rohingya have reportedly been conscripted. Some Rohingya are compelled to leave their homes in order to avoid conscription or the violence that follows, and the junta's actions further escalate already-existing tensions and cause more displacement.

Resettlement in a Third Country

Muhammad Yunus, the leader of Bangladesh's current interim government, has pushed for a simple, consistent, and seamless relocation procedure. Yunus's support for a simpler resettlement procedure stems from the difficulties Bangladesh has been facing in accommodating a high number of Rohingya migrants. The nation has been dealing with the long-term consequences of hosting so many refugees, such as threats of radicalisation and economic stress. Yunus has underlined the necessity of international assistance and a more efficient relocation procedure in light of these difficulties in order to lessen the strain on Bangladesh.

With over 27,000 submissions in 2023—including over 20,000 Rohingya refugees—there was a notable surge in the number of refugees from Myanmar seeking resettlement. These numbers show that resettlement is becoming more and more necessary as a long-term solution for Rohingya refugees.

The United States has reiterated its intention to relocate thousands of Rohingya refugees. The goal of the US and its partners in Fiscal Year 2024 was to increase the number of Rohingya refugees resettled from the region, particularly Bangladesh, so that they are able to begin new lives in the United States and other countries. Since 2017, the United States has made contributions of around

$2.4 billion to address the Rohingya problem in Bangladesh, Burma, and the surrounding area. This investment includes more than $129 million from USAID and almost $70 million through the Bureau of Population, Refugees, and Migration (PRM) of the Department of State. The United States has also demonstrated its leadership in addressing the needs of host communities and refugees by announcing 26 distinct commitments towards eight multi-stakeholder pledges.

Conclusion

Given the existing circumstances, repatriating the Rohingya to Myanmar is still not a feasible option. Returning is extremely risky due to the military junta's control, continuous ethnic tensions, and a lack of legal safeguards. Following the coup in 2021, Myanmar's security forces have persecuted Rohingya populations, restricted their travel, detained people, and blocked humanitarian supplies. Cyclone Mocha made matters worse by obstructing disaster relief operations, destroying shelters and seriously disrupting food and water supply.

Given that Myanmar's National Verification Cards (NVCs) do not confer full citizenship, the fundamental citizenship problem is still unsolved. The NVC process was widely rejected by the Rohingya community in 2019 because they believed it was a means of identifying them as outsiders in their own country. Their basic rights, such as the ability to travel freely, own property, and obtain healthcare and education, will be severely curtailed in the absence of full citizenship.

Many Rohingya say that they want to go back home, but before this can happen, they want assurances of safety, access to jobs, and full citizenship rights. However, there is little chance of a dignified return given the junta's animosity and Myanmar's continued turmoil.

Meanwhile, things are getting worse in the camps for refugees. Nearly half of the Rohingya families are suffering from severe malnutrition, which primarily affects women and children, as a result of the World Food Programme (WFP) cutting funds, which reduced monthly aid from $10 to $8 per person. The fact that just 28% of the necessary funds for humanitarian help have been received, puts further strain on host nations like Bangladesh, which is already finding it difficult to handle the situation.

Resettlement in Third World countries appears to be the most sensible option in light of these dreadful circumstances. Numerous Rohingya aspire to be resettled in nations where they can obtain citizenship, legal status, healthcare,

and education for their children. In order to prevent the Rohingya from being left in a situation of perpetual displacement and statelessness, the international community must intensify its efforts to find long-term solutions.

Any long-term solution to the Rohingya issue must ultimately address the underlying issues that led to their displacement, including Myanmar's rejection of their rights. Safe return will not be feasible until Myanmar agrees to acknowledge the Rohingya as equal citizens with rights. The only practical means of preserving their future and dignity in the interim are resettlement and more humanitarian assistance.

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Bollywood, Yoga, and Beyond: A Strategic Exploration of India's Soft Power

RAJ MONGIA

Abstract

This article traverses India's soft power, focusing on key elements such as Bollywood, yoga, cuisine, and the Indian diaspora, alongside India's strategic use of cultural initiatives. India's rich historical and cultural legacy, combined with modern adaptations, has made it a global soft power player. By analyzing regional and global influences, the article highlights India's ability to shape perceptions worldwide through entertainment, spirituality, and innovation. Despite challenges, such as stereotypes and geopolitical tensions, India's soft power offers strategic opportunities for further global engagement, emphasizing cultural diplomacy and digital platforms. The article concludes by underscoring the potential of India's soft power to bridge tradition and modernity.

Soft Power: Conceptual Framework

The concept of "Soft Power", articulated by Joseph Nye in the late 20th century, changed the comprehension of global influence. Nye (1990) characterized soft power as a nation's capacity to influence the preferences of others by attraction and appeal, rather than through coercion. Soft power functions on the principle

of voluntary acceptance of a country's values and practices by others (Nye, 2004). It thrives on cultural exports, intellectual contributions, and the ability to inspire through innovation and leadership. Countries with substantial soft power influence the global narrative, establish normative standards, and foster goodwill, which ultimately translates into strategic geopolitical advantages. Nye's framework remains relevant today, as it underscores the importance of cultivating intangible assets for achieving national interests. India's embrace of soft power exemplifies the growing recognition of its efficacy in global politics. India incorporates the principles of soft power into its foreign policy through the utilization of cultural diplomacy. The rise of globalization and technological advancements further amplifies the relevance of soft power, as nations compete to project their image and values on the global stage (Nye, 2011).

India's Unique Position in Global Soft Power

India holds an exclusive position in the global soft power hierarchy owing to its extensive and varied cultural assets. With a civilization that dates back thousands of years, India is a repository of ancient wisdom, including spiritual philosophies, holistic health systems like Ayurveda, and artistic traditions coupled with modern contributions such as Bollywood and technology-driven innovation, makes India a significant player in the global cultural and diplomatic landscape (Tharoor, 2012). India's democratic credentials and adherence to pluralism enhances its soft power appeal. The nation's position as the largest democracy globally and its capacity to uphold unity among variety is frequently referenced as a paradigm for harmonious coexistence in a progressively politicized world (Chaturvedy, 2018). India's soft power is evident not just in its cultural exports but also in its capacity to present itself as a responsible and inclusive global participant (Khilnani et al., 2015).

The Objective of the Article

This essay seeks to explore the adaptability of India's soft power and its strategic implications in the 21st century. The analysis of crucial aspects including Bollywood, yoga, cuisine, and the Indian diaspora underscores their role in enhancing India's global allure. Furthermore, it explores how these assets serve as tools for cultural diplomacy, fostering goodwill and shaping perceptions across diverse geographies. The report evaluates the obstacles India encounters in fully using its soft power potential. This article aims to elucidate India's soft

power landscape, highlighting its significance in tackling global challenges and fostering strategic relationships. The article emphasizes the significance of a holistic and progressive strategy for augmenting India's soft power.

Historical Account of India's Soft Power

Ancient India stands as the cradle of human civilization, contributing significantly to global philosophy, science, and culture. The foundational texts of Hinduism, Buddhism, and Jainism, such as the Vedas and Upanishads, have influenced thinkers worldwide. For instance, Indian philosophical concepts like "Dharma" and "Ahimsa" have shaped ethical discourses globally, influencing leaders like Martin Luther King Jr. and Mahatma Gandhi (Chakrabarti, 2018). Similarly, Indian mathematicians like Aryabhata introduced the concept of zero and advanced astronomy, which were later integrated into global scientific paradigms (Pingree, 1981). India's cultural legacy is further enriched by its profound contributions to spiritual and holistic well-being. Ayurveda, one of the oldest medical systems in the world, emphasizes preventive care and balance, resonating with contemporary interest in sustainable healthcare. Additionally, India's artistic traditions, including classical dance forms like Bharatanatyam and Odissi, along with architectural marvels like the Ajanta and Ellora caves, showcase the nation's aesthetic sensibilities and intellectual depth (Thapar, 2002). These historical assets amply reflect India's ingenuity and serve as enduring symbols of its cultural richness. Buddhism, which originated in India, became one of its most influential cultural exports. Emperor Ashoka's promotion of Buddhism facilitated its spread down the Silk Road, allowing the philosophy of compassion and mindfulness to permeate nations throughout Asia and beyond. Today, countries like Japan, Thailand, and Sri Lanka hold India in high regard as the birthplace of Buddhism, reinforcing the country's soft power through shared cultural and spiritual ties (Strong, 2015).

Cultural Legacy of Buddhism, Ayurveda, and Art

Buddhism exemplifies India's ability to harmonize spiritual wisdom with cultural diplomacy. The dissemination of Buddhist teachings through historical trade routes not only created a religious network but also strengthened India's cultural influence globally. Key sites such as Bodh Gaya and Sarnath continue to attract pilgrims and tourists, fostering cultural exchanges and economic benefits (Gombrich, 2009). Ayurveda, rooted in the philosophy of balancing mind, body,

and spirit, is increasingly recognized as a sustainable and holistic approach to health. Modern wellness industries worldwide draw heavily from Ayurvedic principles, with India seen as the authentic source of this wisdom (Frawley, 2010). India's art forms, including sculpture, painting, and music, transcend temporal and geographical boundaries. The vibrant miniature paintings of Rajasthan, the intricate carvings of Khajuraho, and the devotional music of the Bhakti movement have earned global appreciation. By preserving and promoting these art forms, India continues to project its cultural depth and diversity, fostering a soft power narrative that connects past achievements with contemporary relevance (Thapar, 2002).

Modern Evolution of the Attribute

In the transition from hard power to cultural diplomacy in the 21st century, India's foreign policy recognized the limitations of coercive strategies, India now relies more on its rich cultural resources to foster goodwill and build strategic alliances. Initiatives such as the "Incredible India" campaign and the International Yoga Day, introduced in 2015, reflect India's strategic branding of its cultural heritage (Tharoor, 2012). These initiatives have not only enhanced India's global visibility but also projected it as a nation capable of fostering unity through shared cultural values. India's aspiration to emerge as a "Vishwa Guru" (World Teacher) is rooted in its historical role as a knowledge hub. Ancient universities like Nalanda and Takshashila symbolize India's legacy of education and intellectual leadership. In the modern context, India leverages this identity by offering scholarships, educational exchanges, and collaborations with foreign universities. The "Indian Technical and Economic Cooperation (ITEC)" program imparts training to professionals from developing countries, emphasizing India's commitment to global capacity-building (Ministry of External Affairs, 2020).The digital revolution has further augmented India's soft power. Through Bollywood, yoga, cuisine, and technology, India has successfully reached diverse global audiences. Social media platforms and digital diplomacy initiatives, such as the MEA's "Digital India" campaign, allow India to connect with younger demographics worldwide, amplifying its cultural influence in a tech-savvy era (Chaturvedy, 2018).

Bollywood and Indian Cinema

Global Penetration: India's prolific film industry, have a vast international audience, particularly in South Asia, Latin America, the Middle East, and Africa.

Films like *Dangal* and *3 Idiots* have achieved record-breaking success in China, showcasing the global appeal of Indian storytelling (Kumar, 2019). Bollywood's narratives of familial bonds, love, and triumph resonate universally, transcending linguistic and cultural barriers. Moreover, the rise of streaming platforms like Netflix and Amazon Prime has enabled Indian cinema to reach new audiences in North America and Europe (Khanna, 2020).

Cultural Ambassador: Indian cinema is indeed a powerful instrument for cultural diplomacy. Through its vibrant storytelling, Bollywood promotes themes of diversity, unity, and resilience, creating a soft power narrative that aligns with India's global identity. Films like *Swades* and *Lagaan* highlight the nation's socio-political ethos, while movies like *Padman* address global issues such as menstrual health, and fostering cross-cultural dialogue (Tharoor, 2012). Bollywood's appeal extends far beyond entertainment, playing a key role in elevating Indian culture and values internationally.

Yoga and Spiritual Practices

International Yoga Day: India's proposal for International Yoga Day, adopted by the United Nations in 2014, stands as a landmark achievement in cultural diplomacy. Celebrated annually on June 21, it showcases yoga as a unifying global practice rooted in Indian heritage. This initiative not only strengthens India's global image but also underscores its leadership in promoting holistic well-being (UNESCO, 2016).

Global Adoption: Indian spirituality, particularly yoga and meditation, has profoundly influenced the West. Practices like mindfulness, derived from ancient Indian traditions, are now integrated into corporate wellness programs and healthcare systems worldwide. Yoga studios in cities like New York, London, and Sydney reflect the universal acceptance of Indian spiritual practices, demonstrating their ability to transcend cultural boundaries (Frawley, 2010).

Commercialization vs Authenticity: The extensive commercialization of yoga has raised apprehensions regarding the erosion of its cultural and spiritual integrity. Western adaptations often emphasize physical fitness, sidelining yoga's philosophical and meditative aspects. India faces the challenge of preserving the authenticity of yoga while catering to its global appeal. Initiatives like the certification of yoga teachers and the promotion of traditional practices aim to strike a balance between authenticity and accessibility (Ministry of AYUSH, 2020).

Cuisine

Indian Food as a Soft Power Tool: Indian cuisine, with its rich flavours and diverse regional variations, is a powerful element of India's soft power. The universal appeal of dishes like biryani, samosas, and curry highlights the adaptability and inclusivity of Indian flavours. The increasing popularity of Indian restaurants globally attests to the cultural influence of Indian food (Banerjee, 2018).

Role of the Indian Diaspora: The Indian diaspora significantly contributes to the advancement of Indian food internationally. Migrants introduce their native culinary traditions to host countries, creating opportunities for cultural exchange. Festivals like Diwali, celebrated with Indian food, further enhances its global appeal. Indian chefs and food bloggers also contributes to this narrative by showcasing regional specialties on international platforms (Khanna, 2016).

Indian Diaspora

Contributions to Politics, Business, and Culture: The Indian diaspora, significantly contributes to host countries' political, economic, and cultural spheres. Leaders such as Kamala Harris, Sundar Pichai, and Satya Nadella shows the worldwide impact of the Indian diaspora. Their accomplishments elevate India's reputation as a hub of innovation and talent (Lal, 2020).

Role as Informal Ambassadors: Diaspora communities act as informal ambassadors of Indian culture, fostering goodwill and strengthening bilateral ties. Through cultural events, festivals, and trade, they create a positive image of India globally. For instance, the Pravasi Bharatiya Divas celebrates the contributions of overseas Indians, reinforcing their role in enhancing India's soft power (Tharoor, 2012).

Technology and Innovation

India's IT Sector: India's IT sector is a cornerstone of its soft power, showcasing its technological prowess and innovation. Companies like Infosys, TCS, and Wipro have established India as a global hub for IT services. The success of Indian-origin CEOs in Silicon Valley further reinforces India's reputation as a leader in technology (Khilnani et al., 2015).

Emerging Areas: India's achievements in space exploration, such as the Chandrayaan and Mangalyaan missions, have bolstered its soft power, demonstrating its scientific capabilities. Additionally, digital diplomacy

initiatives, like the "Digital India" campaign, positions India as a leader in the digital era. By leveraging technology for development, India strengthens its appeal as a forward-thinking and innovative nation (Chaturvedy, 2018).

India's Soft Power in Action: Regional and Global Influence

South Asia: India's soft power plays a significant role in fostering cultural ties in South Asia, with Bollywood and cricket acting as universal languages that transcend political boundaries. Bollywood movies have a massive fan base in Pakistan, Bangladesh, and Sri Lanka, with their music and narratives often becoming a part of local culture. Similarly, cricket diplomacy, such as the India-Pakistan matches, serves as a unifying platform even amidst political tensions (Chaturvedy, 2018). However, India's cultural dominance often sparks debates within the region, with neighbouring countries fearing the overshadowing of their own cultural identities. Political tensions, particularly with Pakistan, also pose challenges, limiting the full potential of India's soft power influence in South Asia (Tharoor, 2012).

Global South (Africa and Latin America): In the Global South, Bollywood and yoga have emerged as key entry points for India's cultural influence. Bollywood enjoys immense popularity in Africa and parts of Latin America, particularly in countries like Nigeria and Brazil, where Indian films are celebrated for their vibrant storytelling (Banerjee, 2018). India's vaccine diplomacy during the COVID-19 pandemic enhanced its soft power by providing millions of vaccine doses to developing countries through the "Vaccine Maitri" project. This humanitarian gesture highlighted India's capability to lead with empathy and innovation, fostering goodwill across the Global South (Ministry of External Affairs, 2021).

Western Nations: In Western nations, Indian culture is increasingly adapted and celebrated through yoga, festivals like Diwali, and Indian cuisine. Yoga has become a global phenomenon, widely practiced for its tremendous health benefits, with International Yoga Day reinforcing its Indian origins (UNESCO, 2016). Additionally, festivals such as Diwali are now mainstream in countries that include United Kingdom and the United States, celebrated not just by the Indian diaspora but also by locals. Influential Indians, such as Rishi Sunak and Sundar Pichai, further shape global perceptions of India, showcasing the country's talent and leadership in diverse fields, from technology to governance (Lal, 2020).

Challenges to India's Soft Power

Stereotypes and Misconceptions: India's global image is often overshadowed by stereotypes perpetuated in international media, which overemphasize poverty, slums, and backwardness. Films like *Slumdog Millionaire* have shaped an incomplete narrative, failing to represent India's progress in technology, space exploration, and innovation (Tharoor, 2012). Moreover, the global perception of India is largely limited to Bollywood and yoga, which, while significant, do not encompass the nation's diverse cultural and intellectual contributions. To fully harness its soft power potential, India must diversify its global narrative by highlighting its achievements in science, art, and education, alongside its ancient cultural heritage (Chaturvedy, 2018).

Geopolitical Tensions: India's position on global conflicts often impacts its ability to exercise soft power effectively. For instance, its stance on issues like the Russia-Ukraine conflict or strained relations with neighbouring countries like Pakistan and China can complicate its cultural diplomacy efforts. Geopolitical tensions often detract from India's soft power message, as critics question its domestic and international policies. Balancing its strategic interests while maintaining a reputation as a peace-loving and inclusive nation remains a delicate challenge for India's foreign policy (Khilnani et al., 2015).

Internal Challenges: Religious and ethnic tensions within India pose significant challenges to its soft power. Incidents of ethnic violence and intolerance often attract global attention, tarnishing India's image as a harmonious and diverse society. Such domestic issues undermine its credibility when promoting values like pluralism and democracy abroad (Thapar, 2002). Additionally, India faces the challenge of balancing tradition with modernity. While its cultural heritage forms the backbone of its soft power, adapting these traditions to align with contemporary global trends is essential for sustaining relevance and appeal (Chakrabarti, 2018).

Strategic Opportunities for Projecting India's Soft Power

Expanding Cultural Initiatives: India has significant potential to expand its cultural diplomacy by establishing Indian cultural centres across the globe. Institutions like the "Indian Council for Cultural Relations (ICCR)" can play an important role by setting up centres that showcase Indian literature, art, dance, and music. These centres could be hubs for cross-cultural exchange and deepen India's engagement with local communities (Chaturvedy, 2018). Additionally,

promoting regional cinema and local art forms can diversify India's cultural narrative beyond Bollywood. Films in regional languages, such as *RRR* and *Kumbalangi Nights*, have gained global acclaim, proving that regional cinema can captivate international audiences while reflecting India's cultural diversity (Banerjee, 2018).

Leveraging the Digital Space: The digital space offers immense opportunities for India to amplify its soft power. Strategic social media campaigns can promote Indian culture to younger, tech-savvy audiences worldwide. Initiatives like "Incredible India" and "Digital India" have already demonstrated success in leveraging digital platforms to showcase India's heritage and innovation (Tharoor, 2012). Collaboration with global influencers and brands can further expand India's reach. For example, partnerships with internationally renowned wellness influencers to promote yoga or chefs to highlight Indian cuisine can help position India as a beacon in the digital age (Khanna, 2020).

Fostering Regional Partnerships: Strengthening cultural ties with regions like Latin America, Africa, and ASEAN offers significant vistas for India to enhance its soft power. In the LAC region, Bollywood and yoga have already found enthusiastic audiences, providing a foundation for deeper engagement through cultural exchanges and festivals (Ministry of External Affairs, 2021). Similarly, Africa shares historical ties with India, and initiatives like training programs, educational exchanges, and cultural festivals can reinforce these bonds. Through collaboration with ASEAN countries on mutual cultural heritage and commerce, India can establish itself as an outlet between the East and the Global South (Chaturvedy, 2018).

Role of the Government and Private Sector

The Indian government, through initiatives like ICCR, plays a vital role in promoting India's cultural and educational assets. Programs such as the Pravasi Bharatiya Divas and scholarships for international students build platforms for cultural exchange and goodwill (Khilnani et al., 2015). Public-private partnerships can further bolster India's soft power by involving Indian businesses in cultural promotion. Companies in the hospitality, technology, and entertainment sectors can collaborate with government bodies to support initiatives like film festivals, yoga workshops, and culinary events abroad, combining corporate resources with cultural diplomacy goals (Tharoor, 2012).

Conclusion

India's Soft Power Potential: India's soft power rests on its unique blend of ancient traditions and modern achievements, giving it unparalleled global appeal. From the universal resonance of yoga and Bollywood to the richness of its cuisine and spiritual philosophies, India has a wealth of cultural assets that transcend boundaries. India's diaspora also amplifies this influence by acting as informal ambassadors, showcasing the nation's talent and diversity in politics, business, and culture. As India continues to leverage these assets strategically, it stands poised to enhance its role as a global cultural leader (Tharoor, 2012).

The Way Forward: To maximize its soft power potential, India must focus on inclusivity, diversity, and innovation. Expanding cultural narratives beyond Bollywood and yoga to include regional art, cinema, and lesser-known traditions will help present a more comprehensive picture of Indian culture. Embracing innovation, particularly in digital platforms, will allow India to reach younger audiences and stay relevant in an evolving global landscape. By fostering partnerships with nations across South Asia, the Global South, and the West, India can establish stronger cultural and diplomatic ties (Chaturvedy, 2018).

Final Thoughts: The soft power of India exemplifies its capacity to integrate old wisdom with contemporary aspirations. As the world wrestles with challenges like climate change, mental health, and cultural polarization, India's values of unity in diversity and sustainable living offer a hopeful alternative. Through strategic initiatives, India can present itself not only as a cultural powerhouse but also as a nation capable of addressing global issues with empathy and leadership. By capitalising on its rich heritage and aligning it with present global needs, India can solidify its position as a beacon of cultural diplomacy and innovation (Khilnani et al., 2015).

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Impact of Space on Warfare

AK BHATT

Abstract

Space has evolved from a frontier of exploration to a critical domain in modern warfare. This paper examines the historical trajectory of space militarization, from Cold War reconnaissance satellites to contemporary counterspace technologies. It explores the strategic role of space assets in nuclear deterrence, precision warfare, and intelligence gathering, highlighting their impact on terrestrial conflicts. The paper discusses the emergence of counterspace capabilities, including anti-satellite weapons and electronic warfare, alongside the increasing reliance on commercial space technologies for military applications. The rapid expansion of the space defence sector underscores the growing integration of space-based intelligence, surveillance, reconnaissance, satellite communication, and navigation in modern military strategies. Additionally, the study addresses the emerging cislunar theatre, where strategic and economic competition is intensifying. Ethical and legal considerations surrounding space weaponization are also analysed, emphasizing the need for governance frameworks to balance military interests with global security and peaceful space exploration.

Introduction

As the famous saying goes, "He who controls the high ground controls the battlefield," highlighting the strategic importance of space superiority. Space

has emerged as a crucial domain in modern warfare, evolving from its origins as a frontier for exploration to a strategic arena for military operations. As nations have realized the potential advantages of space-based technologies, the focus has shifted towards leveraging these advancements for national security and defence.

Origins: The Dawn of Military Space (1950s-1960s)

The militarization of space emerged from the intense Cold War rivalry between the United States and the Soviet Union. This era saw both superpowers racing to establish dominance in the new frontier of space, thus recognising its strategic importance for national security and global prestige.

The development of reconnaissance satellites was a crucial milestone. The US Corona program and the Soviet Zenit program marked the beginning of space-based intelligence gathering. As President Dwight D. Eisenhower noted in 1958: "*Our satellites and our rockets will provide us with better knowledge of the Soviet Union than we have of any other country in the world*." These satellites provided unprecedented intelligence and treaty verification capabilities, fundamentally altering the nature of espionage and international relations.

Early warning systems, such as the US Missile Defense Alarm System (MIDAS), were developed to detect ICBM launches and prevent surprise nuclear attacks.

Communication satellites also played a crucial role in this era. The launch of SCORE (Signal Communication by Orbiting Relay Equipment) in 1958 marked the first military communication satellite. Navigation systems, such as the US Navy's Transit system, laid the groundwork for future GPS technology. These early military space applications set the stage for space's integral role in future conflicts and global security strategies, forever changing the landscape of warfare and international relations.

Space and Nuclear Strategy

The advent of military space capabilities had a profound impact on nuclear strategy and the concept of deterrence. Space-based assets fundamentally altered the calculus of nuclear warfare, introducing new variables and capabilities that both stabilized and complicated the strategic balance.

Early warning systems significantly reduced the risk of surprise attacks and increased decision-making time during crises. The integration of space assets

into command-and-control systems improved communication resilience for nuclear forces and enhanced the ability to maintain a second- strike capability.

Space-based intelligence gathering capabilities allowed for better assessment of adversary capabilities and intentions, as well as verification of arms control agreements. The increased accuracy of nuclear delivery systems, enabled by space-based navigation and guidance, had significant strategic implications. The integration of space assets into nuclear strategy influenced arms control negotiations and doctrines like Mutual Assured Destruction (MAD). This complex interplay between space capabilities and nuclear strategy continues to shape international relations and military planning to this day, underscoring the critical role of space in modern warfare and deterrence.

The First Counterspace Era (1960s-1980s)

As space became increasingly crucial for military operations, both superpowers recognized the strategic importance of being able to deny their adversary the use of space assets. This led to the development of counterspace capabilities, marking the beginning of what can be called the First Counterspace Era.

Anti-Satellite (ASAT) weapons were a primary focus during this period. The United States developed Program 437, that utilized nuclear-tipped Thor missiles to destroy satellites.

The Soviet Union, not to be outdone, developed their own ASAT system known as IS (Istrebitel Sputnikov) or 'Satellite Destroyer'. Ground-based electronic warfare capabilities were also developed during this era, focusing on jamming and spoofing satellite signals. These non-kinetic approaches offered a less destructive and potentially less escalatory means of countering space assets.

The development of these counterspace capabilities led to increased efforts in hardening and protecting space assets. This included the development of radiation-hardened components to withstand the effects of nuclear detonations in space, as well as incorporating manoeuvrability for evasion.

Despite the development of these capabilities, this era saw only limited testing of ASAT systems and no operational use in conflict. This restraint was partly due to concerns about escalation and the creation of space debris, which could harm both sides' space assets.

The First Counterspace Era set the stage for ongoing debates about the militarization and potential weaponization of space. It demonstrated that as space became more integral to military operations, it also became a potential battlefield itself. This tension between the military utility of space and the desire

to preserve it as a peaceful domain would continue to shape space policy and strategy in decades to come.

The legacy of this era is still felt today, as nations continue to develop and refine counterspace capabilities while simultaneously working to establish norms and treaties to govern military activities in space. The challenges first encountered during this period—balancing military advantage with international stability, managing the risks of space debris, and navigating the complex legal and ethical issues of space warfare—remain at the forefront of discussions about the future of space security.

The Current Space Era (1990s-Present)

The end of the Cold War and rapid technological advancements ushered in a new phase of military space utilisation, characterised by increased reliance on space assets and the emergence of new players in the space domain.

(a) **Precision warfare:** The Gulf War of 1991 is often referred to as the first "Space war", demonstrating the transformative impact of space-based capabilities on modern warfare. This conflict showcased the power of GPS-guided munitions and real-time battlefield intelligence from space, thus setting a new standard for military operations.

(b) **Network Centric Warfare:** The integration of space-based sensors, communication, and navigation systems led to the concept of network-centric warfare. This approach emphasizes information superiority and rapid decision-making. This integration has dramatically enhanced situational awareness and command & control capabilities, allowing for more efficient and effective military operations.

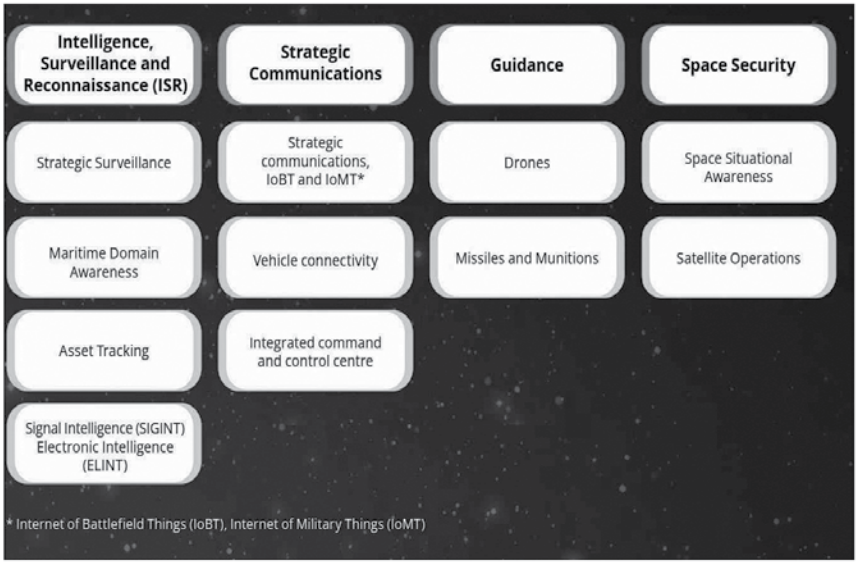
(c) **Commercial Space boom:** The current era has seen a significant increase in commercial space activities, leading to increased reliance on dual-use technologies and the rise of private sector space capabilities. Elon Musk, founder of SpaceX & Starlink, highlighted this trend in 2020: *"The intervention of Starlink in the Ukrainian War against Russian forces has put the satellite service at risk of not being allowed in the Russian market in the future. Russia has warned that Western commercial satellites used to help Ukraine could become a legitimate target for a retaliatory strike, describing such use of these satellites as provocative".* This has led to new partnerships between military and commercial entities, as well as challenges in regulating and securing space activities.

(d) **Space Situational Awareness (SSA):** The growth of space activities has necessitated improved tracking of space debris and potential threats, leading to the development of sophisticated Space Situational Awareness capabilities. These systems are crucial for protecting valuable space assets and managing the increasingly congested space environment.

(e) **Renewed interest in counterspace capabilities:** Recent years have seen a resurgence in the development of counterspace technologies, both kinetic and non-kinetic. China, Russia and the United States along with India have successfully shot down their own satellites in order to test their ASAT capabilities. These events have spurred a renewed interest in developing and countering such capabilities, including non-kinetic technologies like cyber-attacks and directed energy weapons.

The current space era is characterized by the critical role of space assets in military operations, the increasing commercialization of space, and growing international competition. As space becomes more crowded and contested, nations are grappling with how to secure their space assets while avoiding conflict.

Impact on Terrestrial Warfare



*Space Defence Sector: Key Strategic Use Cases

Space capabilities have fundamentally altered how wars are fought on Earth—revolutionising military operations across all domains. This transformation has been so profound that many military strategists now consider space the ultimate high ground.

(a) **Intelligence, Surveillance, and Reconnaissance (ISR)**: Space-based ISR capabilities have dramatically enhanced military decision-making by providing near-real-time imagery and signals intelligence. The ability to persistently observe areas of interest has changed the nature of battlefield awareness. This capability was strikingly demonstrated during the 2011 operation to locate Osama bin Laden. Satellite imagery was crucial in planning the raid on bin Laden's compound. It allowed them to build a precise mock-up of the site and rehearse the operation in detail, significantly increasing their chances of success. In recent times, during the Ukraine war, the complete visibility of the enemies' assets and capabilities is a testimony of the new environment of persistent ISR capability which, while providing better knowledge of the adversary, also creates a vulnerability, as the same is available to the other.

(b) **Satellite Communication (SatCom)**: Satellite communications have become the backbone of modern military operations, providing global connectivity and enabling command and control across vast distances. SatCom systems offer several critical capabilities:

  (i) **Strategic Communications**: Secure, high bandwidth satellite links enable real-time communication between military leadership and deployed forces, facilitating rapid decision-making and coordinated responses to evolving situations.

  (ii) **Tactical Communications**: On the battlefield, SatCom provides troops with beyond-line-of-sight communication capabilities, crucial for coordination in challenging terrains or when traditional communication infrastructure is unavailable or compromised.

  (iii) **Internet of Battlefield Things (IoBT)/Internet of Military Things (IoMT)**: SatCom is enabling the emerging concept of IoBT, where interconnected sensors, weapon systems, and personnel create a comprehensive, real-time picture of the battlespace.

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* ISpA-nasscom-Deloitte Report on "**Exploring opportunities for Indian downstream spacetech**".

(iv) **Unmanned Systems Control**: Satellites enable the operation of unmanned aerial vehicles (UAVs) and other remotely operated systems over vast distances, expanding the reach and capabilities of military forces.

(c) **Position, Navigation and Timing (PNT)**: PNT services, primarily provided by Global Navigation Satellite Systems (GNSS) like GPS, have become integral to modern military operations:

(i) **Navigation:** Precise positioning enables forces to navigate complex terrains, conduct operations in unfamiliar environments, and coordinate movements with unprecedented accuracy.

(ii) **Timing Synchronization:** Accurate timing is crucial for network-centric warfare, enabling the synchronization of complex military systems and operations.

(iii) **Precision Targeting:** PNT services are essential for the guidance of precision munitions, significantly enhancing the accuracy of strikes while reducing collateral damage.

(iv) **Force Tracking:** GPS-enabled systems allow commanders to track the positions of friendly forces in real-time, thus improving situational awareness and reducing the risk of friendly fire incidents.

(v) **Search and Rescue:** PNT capabilities greatly enhance search and rescue operations, allowing for quick location and retrieval of downed pilots or stranded personnel.

(d) **Precision Strike:** GPS-guided munitions have revolutionised warfare by dramatically reducing collateral damage and increasing the effectiveness of military strikes. This precision has changed military tactics and strategies, allowing for the engagement of high-value, time-sensitive targets with unprecedented accuracy.

(e) **Network-Centric Operations:** The integration of space-based assets has enabled improved coordination between Air, Land, and Sea forces, thus enhancing overall battlefield awareness and operational efficiency.

(f) **Weather Forecasting**: Advanced meteorological satellites have revolutionised weather forecasting capabilities, providing critical support to military operations across all domains. This capability has become an essential factor in military planning and execution:

(i) **Operational Planning**: Accurate weather forecasts allow military planners to optimise mission timing and resource allocation. As

retired US Air Force Major General Fred P Lewis stated "Weather has always been the third party in any war. It's the first thing you look at in operational planning."

(ii) **Aviation Operations**: Detailed atmospheric data enables safer and more efficient air operations—from fighter jet sorties to transport missions and aerial refueling.

(iii) **Naval Operations**: Oceanographic satellites provide crucial data on sea states, currents, and ice conditions, essential for naval operations and amphibious landings.

(iv) **Land Operations**: Weather forecasts impact everything from troop movements to equipment effectiveness, allowing commanders to anticipate and mitigate environmental challenges.

(v) **Space Operations**: Space weather forecasting, monitoring solar activity and its effects on Earth's magnetosphere, is crucial for protecting space assets and maintaining reliable communications.

(vi) **Chemical, Biological, Radiological, and Nuclear (CBRN) Defence**: Weather data is vital in predicting the dispersion of CBRN agents, aiding in both offensive planning and defensive measures.

The synergy between space assets and terrestrial forces has created a new paradigm in warfare, where information superiority often translates directly into battlefield superiority. The impact of space on terrestrial warfare continues to evolve, shaping military doctrine, technology development, and strategic planning for future conflicts. Any future ready force will have to adopt Space based capabilities/dimensions in the working out of their future battlefield war scenarios.

The Emerging Cislunar Theatre

As technology advances and our presence in space extends beyond Earth's immediate orbit, military strategists are increasingly focusing on cislunar space—the vast area between Earth's orbit and the Moon. The emerging cislunar theatre represents a new frontier in space strategy and operations, with far-reaching implications for national security, economic development, and international relations.

(a) **Strategic Depth**: Cislunar space offers an enormous area for manoeuvring and concealing assets, potentially changing the nature of space warfare. It is the next frontier for advanced space operations. The nation that establishes a persistent presence there will have a significant strategic advantage, both for space domain awareness and potentially for future space-based capabilities.

(b) **Resource competition**: The growing interest in lunar and asteroid resources has introduced a new dimension to space strategy. The Americans with the Artemis program and Artemis Agreement have indicated their aspirations for the moon and beyond while in 2021, China and Russia have announced that they will be building a Moon base together, as also formally invited more countries and international organisations to join their International Lunar Research Station (ILRS). This isn't just about scientific exploration; it's about securing strategic and economic advantage in the space domain.

(c) **Lunar outposts**: The potential dual-use nature of planned scientific and commercial lunar bases adds another layer of complexity to cislunar operations. As we venture further into cislunar space, the potential for conflict and the need for new governance structures become increasingly apparent.

Existing treaties, such as the 1967 Outer Space Treaty (OST), are increasingly inadequate to address new military space capabilities and are indeed testing the limits. The OST' principles of peaceful use and non-appropriation of celestial bodies are being challenged by the potential militarization. The vast distances and complex orbital dynamics of cislunar space makes it difficult to apply traditional concepts of national jurisdiction and liability as outlined in various treaties.

Challenges and Ethical Considerations

The New Space Age, characterised by the privatisation of space activities and the entry of prominent entrepreneurs like Elon Musk, Jeff Bezos, and Richard Branson, has indeed added a new layer of complexity to the militarisation of space. This trend has now reached India with its new Space Policy announced in April 2023, signaling a global shift in how nations approach space capabilities. The extensive use of commercial space assets in the Ukraine conflict has demonstrated the critical role private companies can play in national security.

India's Mission DefSpace, with its 75 Challenges, represents a forward-thinking approach of integrating private sector innovation into national space capabilities which also defines the way for growth of Space in the immediate future.

This approach aligns with global trends but also raises important questions about how to balance national security interests with international cooperation and the peaceful use of Outer space.

The militarisation of space is not just a technical or strategic issue, but a profoundly ethical one. How we choose to use and potentially weaponise space will have lasting consequences for global security, scientific exploration, and the future of humanity. We have a responsibility to approach these decisions with wisdom, foresight, and a commitment to the common good.

As we venture further into the space age, balancing national security interests with international cooperation, environmental stewardship, and ethical considerations will be crucial. The decisions made in the coming years regarding the military use of space will shape not only the future of warfare but also the trajectory of human civilisation's expansion beyond Earth.

This will require visionary leadership, international cooperation, and a commitment to preserving space as a realm of peaceful exploration and scientific discovery.

Lieutenant General **AK Bhatt** (Retd) is currently serving as the founding Director General of the Indian Space Association (ISpA), after serving in various leadership and management positions in the Indian Army for over 39 years. He has been Principal Staff Officer to the Chief of Army Staff as DGMO and MS and has commanded the prestigious 15 Corps in the Kashmir Valley. He is presently also the Chairman of Board of Governors of IIIT Kota and IIIT Ranchi. Views expressed are personal.

The Future of Infantry: Adapting to Emerging Threats and Technologies

VIPAN KUMAR RANA

Abstract

Infantry is the oldest fighting arm in human history. Armed previously with weapons like spears, axe and swords, infantry has evolved a long way into modern day's elite, agile and dynamic force. The term 'Infantry' began in 1570s, describing soldiers who marched and fought on foot. The word was derived from French word 'Infanterie, Italian word 'Infanteria' and Latin 'Infans'. The term 'Infantryman' was coined by British in 1837. Indian Infantry enjoys the oldest legacy in the Indian Army dating back to 1758 under the British rule and has evolved with blood and sweat into a lethal, experienced and adaptable arm. Infantry is the first line of defence in any conflict and should therefore be adequately organised and equipped to conform to contemporary doctrines and concepts. Warfare, over a period of time, has evolved through the 'Three Offset Strategies'; the first offset was nuclear weapons in 1950s, and guided munitions in 1980s; the second offset was precision. The third offset would bestow the promise of robotics and artificial intelligence in warfare. The changing characteristics of conflicts due to induction of niche technology and changing aspects of human resource, necessitates advancement of all arms. Keeping this in mind, there is a requirement of going for a holistic & adaptive review

for the infantry battalions. This is required to not only fill the technical voids but also the functional shortcomings that may arise due to the dynamic nature of today's warfare.

Introduction

Revolution in Military Affairs (RMA) in the fields of surveillance, network centricity, artificial intelligence, precision munitions and long-range vectors have shortened the Orient, Observe, Decide and Act (OODA) loop of infantry commanders, thus enhancing vulnerability and predictability of infantry operations. With the advent of technology and reduction in manpower, there is a need to evolve accordingly. This paper seeks to identify the challenges that an infantry battalion faces in today's conventional war scenario and taking lessons from the different wars being fought over the globe. It aims to propose structural transformation of infantry battalions in view of tactical & technological changes in the art of warfare.

Emerging Challenges for Infantry

The conflicts of Armenia-Azerbaijan, ongoing Russia-Ukraine and Israel-Hamas conflicts have provided an invaluable opportunity to assess the capabilities of our Infantry and implications of modern day battles. These conflicts demonstrated that success in battlefield would rest on superior and indigenous command, control, communication, computers, infantry formation, intelligence, surveillance and reconnaissance system (C4I2SR) integrated with all arms. It is therefore pertinent to identify threats which infantry had faced in these recent conflicts/battle fields and to learn new emerging developments.

The operational environment which infantry will encounter in future will be significantly influenced by technology. Enhanced precision and lethality of artillery and mechanised forces and revolution in ISR, Al and Long Rang Vectors (LRVs) have rendered infantry's mobility vulnerable to long range precision operational fire. Information voids and weak situational awareness at the tactical level due to adversary's Electronic Warfare (EW) supremacy in the battlefield and Information supremacy and information influenced operations for battle of narratives under media glare necessitates harmonising information and surveillance dominance.

Improved tactical intelligence, surveillance and reconnaissance (ISR) capability & drones have enhanced surveillance at the tactical level. Recent conflicts exhibited that conventional operations are more complex and hybrid.

Such operations demand precision to avoid collateral damage. Augmented reality combat goggles record everything a soldier sees thus providing an information overlay of navigational instructions, intelligence on enemy sites and real-time translation of local language enhancing the overall situational awareness. Vulnerability against Unmanned Combat Aerial Vehicles (UCAVs), swarm drone attacks and superior anti-tank resources have rendered active and passive armour protection ineffective. Nevertheless, low cost and deniable hybrid warfare/grey zone warfare/sub-conventional warfare are here to stay.

Desired Capabilities of Infantry Battalion

Disruptive technologies in warfare had enamoured the armchair strategists in declaring conventional wars obsolete but this hasn't happened. There is no doubt that these technologies have enhanced our war fighting capabilities but they are not persistent and cannot hold ground indefinitely. Wars are still very much concerned with seizing and holding ground, and to compete, infantry has to withstand the technological onslaught with innovative drills, structures and organisations. The future is of combined arms operations and infantry must evolve to meet the combat requirements.

The future soldier with his weapon and equipment will continue to form a single effective fighting element and Infantry Section will remain at core of it. Infantry battalion has to transform into an effective force as per threat and terrain imperatives. Section, platoon, company and battalion levels of command would remain the basis of structural construct. In the dynamically evolving battle field scenarios, force preservation/protection and enhanced standoff lethality, will be of prime importance for effect-based ops under intelligentised conditions; threat and terrain based tailor-made anti-tank, air defence and drones' capabilities at stand-off ranges would be required. The future combined arms environment would necessitate the ability to observe by day and night, immense situational awareness, two-way integration of surveillance resources, reliable radio and data communication under intense EW environment and systems. The speed and agility in deployment will be the driving factors for reorganisation. Focused logistics will be required for sustained and self-reliant ops and battlefield tactical mobility under protected environment will be a key factor for force preservation. Future infantry soldiers would be required to operate with autonomous weapon systems to achieve basic/company/Platoon level objectives. Developments in technologies like electromagnetics railguns, UCAVs and space-based threats

will reduce the possibility of hiding or camouflaging forces in the battle field requiring new means of protection for future soldiers.

A modernisation program of infantry cannot be considered complete till its ancillary services are equally modernised, trained and equipped. Infusion of tech will perforce entail an advanced services sector capable of managing and repairing these equipment. At present, the workshops are extremely hard pressed in terms of resources and finances. An additional function of maintaining new age equipment will require separate training and financial freedom. Second best option is seeking ancillary services from manufacturer or civil vendors, but in both the cases, a soldier's dependency on civil counterparts becomes a double-edged issue as we can't control the civil entities as Army workshops. Simultaneous application of several arms achieves a greater effect on the enemy, hence Infantry should be effectively able to integrate with other elements of the combined arms team. Also, countries facing conflicts learnt the importance of public perception and support for military engagements to shape international public opinion.

Theatre Command would lead to a Joint Operation Environment based on combined arms concept, the genesis of which was witnessed in the formation of Integrated Battle Groups (IBGs) on the western and northern borders. The offensive application of Mountain Strike Corps of the Indian Army in mountainous and high-altitude terrain is also visualised in IBGs. Infantry requires several capability enhancements for seamless transformation into combined arms outfit like interoperability with other arms and services in terms of communication, procedures and operations; flexibility and agility to transform into tailor-made battle groups as per operational requirements; weapons and equipment profiling for survivability and operational effectiveness under integrated as well as isolated conditions and C4I2SR capability for situational awareness and better integration with other arms and services.

Reorientation, Reorganisation and Restructuring

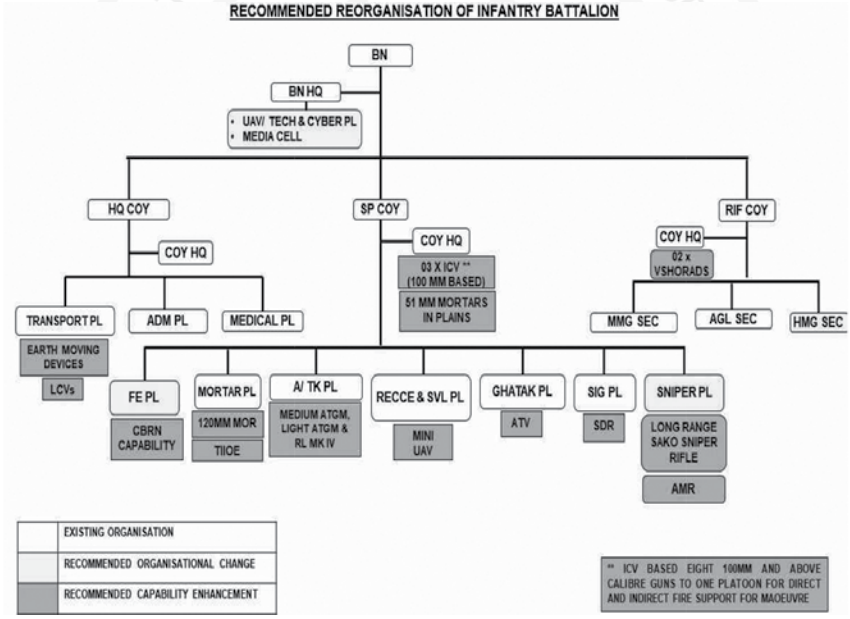
Infantry battalion needs to reorient as per threat profile, terrain configuration and effect-based ops with an overall aim of destruction of enemy's war fighting potential. This would require force survivability with enhanced lethality and reduction in lethal exposure to maintain intrinsic flexibility and adaptability in structural construct for effective employment in combined arms environment. Exploitation of 'Son of Soil' concept is required to reduce reaction time, enhance knowledge of the terrain & local customs and positively address physiological aspect of continued human endurance to hardships in difficult terrain and

weather. For optimal utilisation of human resources while retaining 'Boots on Ground' capability, it is pertinent to trade numerical potency with fire power and technology at all levels of Infantry Battalion.

The envisaged reorganisation requires a pragmatic approach and indigenous solutions for significant future application. The realignment aspects highlighted above thus requires due inclusion in the organisational and structural construct of an Infantry Battalion for transformation. The standard format of Infantry would still be relevant in the Indian context but with a different outlook. There is a need to induce greater firepower, lethality, survivability and network centricity to an Infantry Battalion for its optimal utilisation in mountains and other areas, as feasible. Some of the fundamental transformations envisaged are mobility and protection to key mobile elements of Infantry Battalion vulnerable to air and ground threats, enhanced range organic fire power for self-reliance and greater lethality, adaptability to combined arms and multi-domain operations across all spectrums of conflict, flexibility in employment across all spectrums of conflict, network centricity for better Identification Friend or Foe (IFF), combined arms situational awareness, multi-spectrum communication compatibility and Air Defence capability for independent operations in mountains and mutually exclusive valleys.

The suggested reorientation and reorganisation should manifest into restructuring, wherein the concepts and doctrines should transform into pragmatic outcome. Right equilibrium between standardisation and tailor-made structures require diligence to address human resource management and career progression. The structures so created should have inherent resilience to perform different roles with minimum turbulence and manpower accretion. The structural construct of the standard infantry battalion will remain light, flexible and self-reliant to suit air mobility and also expeditionary employment in combined arms environment. Addition of .50 Heavy Machine Gun (HMG) Section in Support Detachment of Rifle Company, 51 mm Mortar in Rifle Platoon Headquarters in plains and Infantry Carrier Vehicle (ICV) based eight 100 mm and above calibre guns to provide to one platoon for direct and indirect fire support for manoeuvre will enhance the lethality in a rifle company. Similarly, for mobility, Rifle Company should be reconfigured with one Assault Platoon with 100 mm Gun based three ICVs and the overall structural and equipment profile of Standard Infantry Battalion should permit air mobility including rotary wing. Ghatak platoon should be provided with organic All-Terrain Vehicle (ATV) based mobility to provide specialist offensive support at the tactical level. Owing

to the introduction of New Generation Equipment like mini-UAVs, there is a requirement to enhance the manpower of the platoon. Also, a cyber security team shall be introduced in platoon to cater for the cyber aspects of the battalion. It is felt that centralised pool of snipers and their training will accrue greater benefits and flexibility of their employment at battalion level. Thus, sniper detachments from rifle companies can form sniper platoon as part of Support Company. Assault platoon of the Support Company should be reorganised as Field Engineering Platoon to provide engineering support to battalion. It also needs to have the capabilities to carryout recce & surveillance and decontamination of personnel and vehicle during CBRN environment. Lastly, three-tiered anti-tank shield based on Medium ATGM, Light ATGM and 84 mm RL MK IV will enhance anti-tank capability of the infantry battalion.



Roadmap for Modernisation

Ongoing conflicts have not only demonstrated greater application of 'all elements of national power' but also advocated employment of hi-tech force multipliers and grey zone warfare. Infantry battalion therefore must be suitably equipped with requisite modernisation equipment and technology infusion. Infantry modernisation, introduced two decades back as Mod 4B, was based on previous studies incorporating operational experiences with particular reference

to fire power, surveillance, communication and night fighting capability in the backdrop of evolutionary concept like F-INSAS. The concept could not take off as desired due to heavy commitment of infantry in counter-insurgency operations, thus shifting the entire focus on its sub-conventional capabilities. If implemented in earnest, F-INSAS would have become the foundation for present re-organisational endeavour for combined arms capability with minimal budgetary requirements. Areas of improvement in this domain are enumerated in succeeding paragraphs.

List of Recommended Weapons/Equipment to be Procured

S. No.	Description of Equipment	Authorised to
1.	Infantry Combat Vehicle (ICV) with High Calibre Gun	One per company
2.	Light Armoured All -Terrain Vehicle (ATV)	Ghatak platoon
3.	Personnel protection kit to include bullet resistant helmet, jackets, gloves, elbow & knee guards	All individuals
4.	Modern camouflage clothing as per terrain & theatre	All individuals
5.	Modern bandages	Personal medicals kits with individuals
6.	CQB weapon and secondary weapon	Rifleman & specialist personnels
7.	120mm mortar system	Mortar platoon
8.	Long range SAKO sniper rifle	Sniper platoon
9.	Javelin or New Generation Light Anti-Tank Weapon (NLAW)	ATGM platoon
10.	VSHORADS	ATGM platoon
11.	Software Defined Radios (SDR)	Signal platoon
12.	Short Range Battle Field Surveillance Radar (SRBFSR) with detachment overlay on digital DSM	All rifle companies
13.	Image Intensifier (II) based night capability	All sections
14.	Thermal Imaging (TI) based night sights on Light Machine Gun (LMG) and RL/Light ATGM	Two per section
15.	Thermal Imaging and Image Intensifier based night goggle with laser pointers	Ghatak platoon
16.	Image Intensifier (II) and TI based binoculars each with calibrated reticular sights	Platoon HQ
17.	Augmented reality combat goggles	Company Commanders
18.	Thermal Image Intensifier and Observation Equipment (TIIOE)	Mortar Platoon
19.	Software Defined Radio (SDR) based Digital Inventory Demand Module	Quartermaster Branch
20.	Earth Moving Device	Mechanical Transport platoon

The main platform for infantry's Tactical Mobility should be based on wheeled armoured amphibious carrier, Infantry Combat Vehicle (ICV) with adequate protection against small arms and shrapnel threat. Modernisation aspects in this field would include Wheeled amphibious armoured ICV with capacity of ten men including crew along with autonomous turret with Heavy Machine Gun calibre automatic weapon and Thermal Imager based night capability. To promote commonality of platform, the assault version of the ICV should possess high calibre (100 mm or above) gun and a Light Armoured All-Terrain Vehicle based matching mobility for weapon and specialist equipment detachments.

The Survivability aspect needs to be addressed in three different domains. Firstly, modular personnel protection in terms of a bullet resistant helmets, jackets, gloves, elbow and knee guards as well as Field Scale Marching Order (FSMO) needs to be more user-friendly. Secondly, Infantry needs modern camouflage clothing which is breathable, easy-to-clean and have shades of camouflage terrain and theatre specific. Lastly, The Medical Platoon of Infantry Battalion should be empowered with modern equipment, training and expertise to provide better medical assistance and handle intense care casualty during operations.

Lethality component of the infantry can be augmented in both direct and indirect regimes of operations. In Small Arms (SA), the personal weapon of an infantry man should be light, robust, accurate and lethal. Carbine should be replaced with new Close Quarter Battle (CQB) weapons and CQB weapons should have very high rate of fire with up to 200 meters of range, with very low bulk and weight. Also, Infantry rifleman and specialist personnel should have a secondary weapon like 9 mm pistol for emergency situations. In Indirect and Direct Operational Fires, 120 mm mortar systems need to be introduced in the Mortar Platoon of Support Coy. The existing 81 mm mortars have been sub allotted to Rifle/Motorised Companies to enhance their integrated fire power especially during isolated and independent operations. The augmentation has to be sped with hi-tech Thermal Imagers Integrated Observation Equipment (TIIOE) night vision Binoculars, with reticules for correction and ranging. To enhance the sniping capability, a dedicated Sniper Platoon will facilitate accurate small arms lethality. Dragunov 7.62 mm Sniper rifle should be replaced with new long range SAKO sniper rifle. Sniper rifle and 12.7 mm/14.5 mm Anti Material Rifles (AMR) must be integrated with better night enabled observation, ranging and communication equipment. More advanced anti-tank

weapons such as New Generation Light Anti-Tank Weapon (NLAW) or Javelin to be inducted in Infantry battalion. For heavily armoured tanks, these anti-tank weapons should be used. For softer and less protected vehicle 84 mm RL is to be used. The air defence capability of Infantry should be based on short range infrared image homing Man-Portable Air Defence Systems (MANPADS) like Very Short Range Air Defence System (VSHORADS). The crew severed weapon system with organic ATV based mobility, will have appropriate robust radio communication with Electronic Counter-Counter Measures (ECCM) and data communication capability and will hook on to the nearest C&R network for efficient air support management.

To enhance Communication, Electronics and Network Centricity capability, a robust and stable communication forms an essential part of the Combined Arms Force for handling dynamic and fleeting opportunities in a fluid battlefield scenario. Network centricity demands data transmission through digitally networked radio equipment with inbuilt secrecy and adequate electronic counter measures. SDRs based communication should form the foundation of signal communication in Infantry. This would provide flexibility for interoperability in combined arms environment and also reduce signal inventory at various levels of an Infantry Battalion. Also, ground to air communication would provide Infantry with the capability to control own Counter Surface Forces Ops of the aerial platforms including attack helicopters. A well-trained crew in this domain would drastically reduce the requirement of Forward Air Controllers (FACs) and also enhances the effectiveness and timelines of offensive air support operations. It would also provide Infantry with the capability to link with the Air Defence C&R communication for air support management with the nearest Air Defence Command Post.

In a network centric and fast paced combined arms environment, dependence on external agencies for intelligence and surveillance would invariably delay the OODA loop of Infantry commanders. Therefore, infantry must possess homogenous capability to overcome the challenges of intelligence and surveillance. The existing SR BFSRs in Infantry are suitable for the intended role of surveillance. However, more research and development can be undertaken to make existing SR BFSR more user friendly with detachment overlay on digital DSM. The short reaction time of Infantry operations does not allow mere reliance on conventional centralised medium/long range UAV resources of the formation HQs. Therefore, organic quick launch and recoverable mini-UAVs are required for early warning and detection. In

defensive scenarios, inclement weather and rugged terrain conditions, unmanned sensors have proved their efficacy against digital line of sight-based sensors. The existing scaling of these sensors in an Infantry Battalion should remain as basic equipment at the Company level. All small arms should have Reflex/Telescopic/Laser/Red Dot/Holographic sights-based day sights; with adequate resolution as per role and employability.

As wars are transiting from conventional broad day light attacks to stealth night attacks, so should the technology to see better at night. The technology in this domain is expensive and intricate. Therefore, Infantry should have a right mix of night fighting capabilities. All weapon systems in a Section should have Image Intensifier (II) based night capability along with two Thermal Imaging (TI) based night sights on Light Machine Gun (LMG) and RL/Light ATGM. Ghatak Platoon and personnel authorised with Close Quarter Battle (CQB) weapons should be equipped with a combination of TI and II based night goggle with laser pointers. Platoon HQ should be equipped with II and TI based binoculars each with calibrated reticular sights.

Crew served weapons should be TI based night sights including Air Defence component and Mortar Fire Controllers (MFCs) should be equipped with TIIOEs for accurate direction of mortar fire.

The futuristic role and organisation envisaged for Infantry would invariably increase the logistics challenges of an Infantry Battalion. Supply and inventory management would form an essential component of Infantry for a seamless transition of stores from rear echelons to frontline troop. Supply of stores in the form of F Echelon, B Echelon and re-organisation stores constitutes an inseparable part of Infantry operations, both during offensive and defensive operations. Fast paced Infantry operations would necessitate quick resupply of expended stores to retain fighting efficacy. In this scenario, Software Defined Radio (SDR) based Digital Inventory Demand Module would prove extremely responsive and foolproof. Compatible software connected through SDRs at both ends of demand and supply would hasten the supply line though 'Push Model'. Technological advancement and intricacies of maintenance in combat zone may preclude forward repair echelons to deal with equipment maintenance in real timeframe. Frontline equipment and weapon system need to be based on 'Modular Design Concept' for easy replacement of defective components. Therefore, their scaling with the forward repair echelons should be based on enhanced scales of repair. Due to lack of equipment handling devices with Infantry, handling of heavy equipment

and stores in field condition is generally manual. For the ease of handling, heavy store and equipment including ammunition should be palletised into subunit loads for ease of handling and carriage. This would ease the inventory management departments of Infantry. Lastly, for creation of bunkers, obstacles & other such like tasks, there is a need to provide minimum one earth moving device like JCB to each battalion.

Conclusion

The Indian Army must undertake dedicated programs to support infantry modernisation. Thus, transform and elevate infantry to fight in complex combined arms environment with inherent flexibility, survivability and lethality to suit the security requirements of nation's borders with two diverse but collusively interdependent adversaries. Infantry must focus on indigenous and domestic weapon system designs and manufacturing, while importing minimal military products from foreign vendors to fill in the essential voids and deficiencies. However, such an approach must focus on indigenous support of and production under the Transfer of Technology (ToT) clause. Infantry must strive to achieve full integration of their weapon systems, optics, communications, electronics and ground combat elements with a vision to redesign the force to meet the challenges of a new age in the Indian subcontinent and Indian Ocean Region.

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Niche Technologies for Agile Military Supply Chains: A Comparative Analysis for Optimising India's Terrain-Specific Operations

AK CHATURVEDI AND BHARTI DAS

Abstract

The evolving dynamics of modern warfare demand agile and resilient military supply chains capable of adapting to diverse operational terrains and complex geopolitical landscapes. India, with its unique geographic diversity and strategic challenges, faces critical logistics hurdles in high altitude regions, arid deserts, and dense forests. This paper explores the transformative potential of niche technologies, including Artificial Intelligence (AI), the Internet of Things (IoT), Blockchain, Autonomous Systems, and 3D Printing, in revolutionising India's military supply chains.

Drawing on global best practices and case studies from leading defence forces such as those of the United States, Israel, and China, the paper analyses how advanced technologies are reshaping logistics operations. The integration of AI-driven predictive analytics, IoT-enabled

real-time monitoring, and autonomous systems enhances the precision, speed, and adaptability of supply chains. Drones and 3D printing further address the challenges of last-mile delivery and on-demand production in remote or high-risk areas, while Blockchain ensures transparency and security in supply chain transactions.

The study proposes a phased implementation framework for the Indian military, emphasizing pilot programs in critical regions like Ladakh and Rajasthan, scaling successful technologies across broader operational areas, and full-scale integration of these innovations into a unified logistics model. It also highlights the importance of inter-agency collaboration, public-private partnerships, and the development of a robust infrastructure to support technology deployment.

By leveraging niche technologies, India can achieve strategic advantage in military logistics, ensuring operational readiness and resilience across its diverse terrains. This research underscores the need for continuous innovation and adaptive logistics strategies to meet the demands of modern defence operations effectively.

Introduction

In modern warfare, agility in military supply chain has become an indispensable component of operational success. As battlefields grow more dynamic, unpredictable, and technology-driven, the ability to rapidly mobilise and sustain forces through efficient logistics is crucial. Military supply chains must be responsive, flexible, and capable of adapting to evolving conditions, ensuring the timely delivery of vital supplies such as ammunition, medical resources, and sustenance, even in the most challenging terrains. The speed and precision of logistics often determine the outcome of military engagements, with the ability to out manoeuvre adversaries relying heavily on the robustness of the supply chain (*Sadikoglu & Demirkesen, 2024*).

India, with its vast and varied geography, presents a unique set of logistical challenges for its defence forces. From the towering peaks of the Himalayas, where oxygen levels plummet and infrastructure is sparse, to the arid deserts of Rajasthan and the dense jungles of the Northeast—these terrains demand highly adaptive supply chain strategies. In addition, India's geopolitical landscape, marked by the potential for a two-front conflict with nuclear-armed neighbours, amplifies the need for a supply chain that is not only agile but also capable of delivering critical resources under extreme time and terrain constraints.

Traditional military logistics models, characterised by linear processes and slower response times, are increasingly proving inadequate in the face of such multifaceted demands.

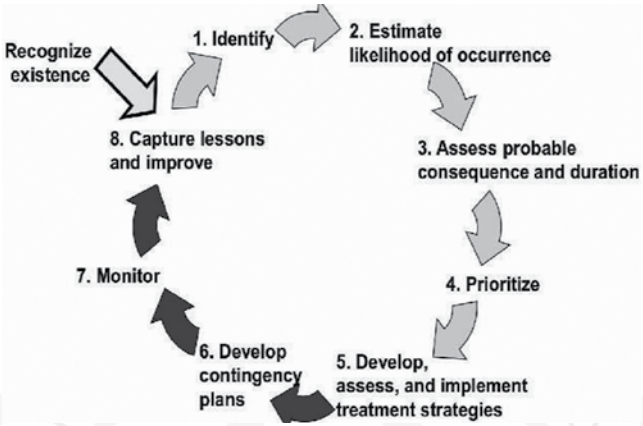
This article seeks to explore how niche technologies, such as Artificial Intelligence (AI), the Internet of Things (IoT), Blockchain, and Autonomous Systems, can be harnessed to revolutionise India's military supply chain, making it more agile and resilient. By drawing on global best practices and innovations from leading military forces around the world such as the United States, Israel, and China, this study will provide actionable insights for optimising India's logistics strategies. The goal is to create a framework that aligns with India's specific geographic and operational needs, enabling its forces to respond swiftly and effectively in diverse and demanding terrains.

Overview of Agile Supply Chain Management in Military Operations

In the modern defence landscape, an agile supply chain is critical for ensuring that military operations can sustain high levels of readiness and responsiveness, regardless of external disruptions or battlefield complexities. Agile supply chain management refers to the ability to adapt quickly and efficiently to changing demands, ensuring the seamless flow of goods, services, and information across the logistics network (*Sadikoglu & Demirkesen, 2024*). In the context of military operations, this means that the supply chain must be able to react swiftly to unpredictable conditions, whether they stem from environmental challenges, operational shifts, or adversarial actions (*Agile Supply Chains in Modern Warfare: Adapting to Dynamic Operational Environments, n.d.*).

The importance of agile supply chain management in military operations cannot be overstated. Warfare today is characterised by fluid, fast-paced engagements where the ability to mobilise resources rapidly can mean the difference between victory and defeat. Agility in the supply chain ensures that military forces can be resupplied with essential items such as ammunition, fuel, medical supplies, and equipment at the speed required by modern conflicts. Furthermore, an agile supply chain allows for more efficient resource utilisation, minimising overstocking and waste while ensuring that critical items are always available at the point of need. The unpredictability of combat environments demands a logistics system that is not only robust but also capable of dynamically adjusting to unforeseen challenges, thus making agile supply chains a cornerstone of modern military logistics strategy (*Sani et al., 2022*).

Figure 1: Process for managing supply chain risk



(*Sani et al., 2022*)

Analysis of India's Terrain-Specific Military Supply Chain Challenges

India's geographical diversity presents a unique set of logistical challenges that impacts the agility of its military supply chains. With terrains ranging from the icy heights of the Himalayas to the scorching deserts of Rajasthan and the dense, forested areas of the northeast, India's defence forces face a range of operational environments, each requiring tailored logistics solution. To maintain operational effectiveness in such challenging conditions, the Indian military must overcome terrain-specific hurdles that hinder the agility of its supply chains.

Figure 2: Depiction of logistical challenges

(***Rotational Duty Hours in Eastern Ladakh Performed by Indian Army***)

Terrain-Specific Challenges

The most prominent of challenges are found in three critical regions: high-altitude mountainous areas, deserts, and remote forested regions.

High Altitude Areas

India's northern borders, particularly Ladakh and the wider Himalayan region, present some of the most difficult terrain for military logistics. The high-altitude environment is characterised by extreme weather conditions, thin air, and rugged, inaccessible terrain. Snow, landslides, and sub-zero temperatures further complicate the movement of supplies, often cutting off traditional supply routes during harsh winter months. Transporting essential supplies like food, fuel, medical supplies, and ammunition to troops stationed at forward outposts becomes a monumental task, as both ground and air routes are frequently disrupted. The altitude also places additional strain on personnel and equipment, hence reducing operational efficiency and requiring specialised gear that is often in limited supply *(Challenges Of High Altitude Logistics / Rough Terrain Logistics - BW BusinessWorld)*.

Figure 3: Military logistics convoy: Zoji La Pass

(*Vehicles Indian Army Pass through Hi-Res Stock Photography and Images - Alamy*)

Deserts

The deserts of Rajasthan, located on India's western front, present a completely different set of logistical challenges. The extreme heat, vast expanses of sand,

and lack of permanent infrastructure make it difficult to maintain reliable supply chains (*Case Study - the Thar Desert, Rajasthan, India - Hot Deserts - AQA - GCSE Geography Revision - AQA - BBC Bitesize*). During desert operations, military units require large quantities of water, fuel, and cooling systems to ensure the well-being of troops and the functionality of equipment. Sandstorms and high temperatures can disrupt both ground and air transport, while the absence of natural cover makes supply convoys vulnerable to enemy detection and attack. Mobility is critical in desert warfare, and the Indian Army must ensure that its supply lines are agile enough to support the rapid movement of troops and equipment over long distances.

Figure 4: Deserts: Logisticians' Nightmare

(*The New Strike Strategy - India Today*)

Remote Forested Regions

India's northeastern region, home to dense forests and mountainous terrain, presents logistical challenges similar to those found in jungle warfare environments. The region's heavy rainfall, frequent landslides, and lack of developed infrastructure make it difficult to maintain consistent supply routes (*Bp-Role-of-Northeast-Indian-States-in-Shaping-Indias-Logistics-Performance*). Roads are often narrow and prone to washouts during the monsoon season, limiting the movement of vehicles and making it difficult to reach remote outposts. In addition to these environmental factors, the northeast is also marked by insurgency activity, further complicating logistics operations and

necessitating secure, rapid, and flexible supply chains. The need for stealth and the unpredictable nature of operations in these areas demand logistics solutions that can quickly adapt to changing battlefield conditions.

Figure 5: Connectivity Network in Northeast India

(*Bp-Role-of-Northeast-Indian-States-in-Shaping-Indias-Logistics-Performance*)

Current Capabilities and Gaps

The Indian Army has developed a robust logistics network over the years, particularly along its western front with Pakistan, where road infrastructure and supply routes are relatively well-established. However, there are still significant gaps in the military's ability to maintain agile supply chains in more challenging regions, particularly in the northern and northeastern sectors.

High Altitude Logistics

In high altitude areas like Ladakh, the Indian Army relies heavily on pre-positioned stockpiles to sustain operations, particularly during the winter months when roads are often blocked by snow. These stockpiles not only provide critical supplies for soldiers stationed in remote outposts, but also introduces the risk of overstocking and waste, as it can be difficult to predict exactly what will be needed over an extended period. Air transport plays a vital role in supplying these areas, but adverse weather conditions often limits the frequency and reliability of air deliveries. Furthermore, the Indian Army's reliance on manual

transport methods, such as mules, for delivering supplies to some of the most remote outposts highlights the logistical challenges posed by the rugged terrain and lack of infrastructure (*Challenges Of High Altitude Logistics/Rough Terrain Logistics - BW BusinessWorld*).

Desert Operations

In the desert regions of Rajasthan, the Indian Army has developed supply chains that rely on long-distance convoys to transport critical supplies like water, fuel, and ammunition. However, reliance on ground convoys can be a significant vulnerability, particularly in the event of enemy attacks or disruptions caused by environmental factors like sandstorms. The harsh desert environment also places a heavy burden on vehicles and equipment, which require frequent maintenance and replacement due to wear and tear caused by sand and heat (*Case Study - the Thar Desert, Rajasthan, India - Hot Deserts - AQA - GCSE Geography Revision - AQA - BBC Bitesize*).

Northeast Logistics

In the northeast, the Indian Army has developed a network of supply routes, but the region's difficult terrain and lack of infrastructure continue to pose significant challenges. Road access is often limited, particularly during the monsoon season, and insurgency-related security risks make it difficult to maintain consistent supply lines (*Bp-Role-of-Northeast-Indian-States-in-Shaping-Indias-Logistics-Performance*). The use of helicopters for delivering supplies to remote areas helps to mitigate some of these challenges, but air transport alone is not sufficient to meet the logistical needs of the region.

Niche Technologies Enabling Agile Military Supply Chains

In the ever-evolving landscape of military operations, logistics is no longer just about movement of supplies from one location to another. It has transformed into a complex, data-driven system that requires speed, precision, and adaptability to maintain operational efficiency. The integration of niche technologies has proven to be a game-changer, allowing defence forces to develop agile supply chains that can respond to the unpredictable nature of modern warfare (*TRIF, 2024*). The key niche technologies and their potential integration into the Indian Army Logistics paradigm aiming at making it more agile and responsive to the demands of varied terrains and combat scenarios are covered below (*The Rise of Niche Technologies: Embracing to Excel in Joint Warfighting – CENJOWS*).

Figure 6: Top Military Innovation Fields

(*The Rise of Niche Technologies: Embracing to Excel in Joint Warfighting – CENJOWS*)

Potential Technology Integration

AI and Predictive Analytics

AI-driven predictive analytics can help the Indian Army optimise its supply chains by forecasting demand based on real-time data and historical patterns. In high altitude regions, where weather conditions can change rapidly, AI can be used to predict disruptions in supply routes and recommend alternative delivery methods. In desert operations, AI can analyse environmental factors like temperature and sandstorm patterns to optimise supply convoy routes, hence reducing the risk of delays or equipment damage (*The Rise of Niche Technologies: Embracing to Excel in Joint Warfighting – CENJOWS*).

IoT for Real-Time Monitoring

The integration of IoT-enabled devices into India's logistics network can provide real-time visibility into the movement and condition of supplies, allowing commanders to make informed decisions about resource allocation *(The Rise of Niche Technologies: Embracing to Excel in Joint Warfighting – CENJOWS)*. For example, IoT sensors could be used to monitor the status of pre-positioned stockpiles in high altitude areas, ensuring that supplies are neither overstocked nor understocked. In the desert, IoT devices could track the location and condition of supply convoys, providing early warning of potential disruptions and allowing for rapid response measures.

Drones and Autonomous Vehicles

Drones and autonomous vehicles offer a significant advantage in overcoming terrain-specific challenges by enabling rapid, flexible deliveries to remote or inaccessible areas. In high altitude regions, drones could be used to deliver critical supplies to outposts that are difficult to reach by traditional means, reducing reliance on helicopters and mules. In desert environments, autonomous vehicles could transport supplies across vast distances without the need for human drivers, reducing the risk to personnel and improving the speed of logistics operations. In the northeast, drones could be used for reconnaissance and rapid resupply missions, helping to maintain a steady flow of supplies even in areas where roads are impassable.

Blockchain for Secure and Transparent Transactions

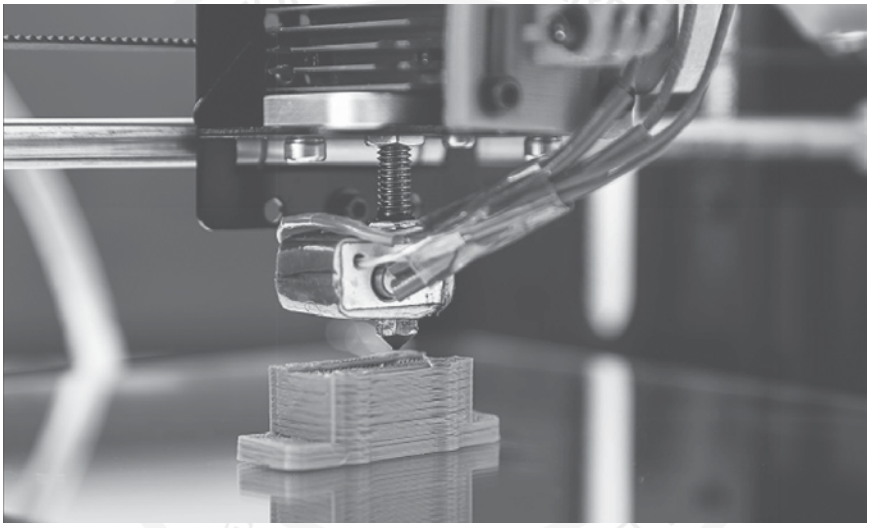
Blockchain technology could enhance the transparency and security of India's military supply chains by providing an immutable record of all transactions. This would be particularly useful in regions where insurgency activity poses a threat to the integrity of supply lines. By using blockchain to track the movement of supplies from procurement to delivery, the Indian Army could ensure that resources are not diverted or misused, thus improving the overall efficiency of its logistics network .

3D Printing for On-Demand Production

3D printing offers a solution to the logistical challenges of delivering spare parts and specialised equipment to remote areas (*The Rise of Niche Technologies: Embracing to Excel in Joint Warfighting – CENJOWS*). In high altitude regions,

where transporting heavy equipment is difficult, 3D printing could be used to produce critical components on-site, hence reducing the need for long supply chains. In desert operations, 3D printing could be used to create custom equipment that is tailored to the unique needs of the environment, such as cooling systems or sand-resistant parts. This capability would reduce the time and cost associated with traditional procurement processes, allowing the Indian Army to maintain operational readiness in even the most challenging environments.

Figure 7: 3D Metal Printing



(*3D Metal Printing: Alloys and Powder Types and Specs - Belmont Metals*)

Global Case Studies: Military Applications of Niche Technologies

The adoption of niche technologies for military logistics is not just fantasy now, with it being applied and tested by leading military forces around the world. Several nations have successfully integrated technologies such as AI, drones, and IoT to enhance the agility of their supply chains in challenging operational environments. Mentioned below are some global case studies which provide valuable insights into how these technologies are reshaping military logistics and how their applications might inform strategies for the Indian military.

Figure 8: TRV-50 Tactical Resupply Unmanned Aircraft System

(*Marine Corps Wants $13M for Automated War Zone Air Delivery Drones*)

Figure 9: Ghost Robotic Dog and the US Army Small Multipurpose Equipment Transport (SMET)

(*US Army Tests Robots for Future Combat*)

United States Military

The United States military has been at the forefront of adopting niche technologies to enhance its logistics capabilities. In conflict zones like Afghanistan, where the mountainous terrain and harsh weather conditions posed significant logistical challenges, the US military integrated AI, drones, and IoT into its supply chain management to improve efficiency, speed, and adaptability.

One of the most significant applications of AI by the US military has been in predictive analytics. This capability was particularly valuable in Afghanistan, where traditional supply routes could be disrupted by the Taliban or extreme weather. This use of AI significantly reduced lead times and improved the precision of supply deliveries, ensuring that US forces remained well-equipped in even the most remote locations.

Israeli Defense Forces (IDF)

IDF has also embraced niche technologies to create a highly agile and resilient logistics network, particularly in high-risk, urban, and desert environments. Israel's unique security situation, characterised by frequent military engagements in dense urban areas and arid desert regions, has driven the IDF to develop the field of military logistics.

One of the most notable technological applications by the IDF is the use of drones for rapid resupply in combat zones. In urban warfare, where traditional logistics routes are often obstructed by debris or enemy fire, drones have become an essential tool for delivering supplies to frontline units. The IDF has developed drones capable of carrying medical supplies, ammunition, and other critical items, allowing troops to remain operational even in the midst of intense urban fighting. These drones can navigate through narrow streets, avoid enemy fire, and deliver supplies directly to soldiers in need, hence reducing the risk of casualties and ensuring continuous logistical support in high-risk environments.

Other Relevant Militaries

China

China has invested heavily in the development and integration of advanced technologies into its military logistics network. The People's Liberation Army (PLA) has been at the forefront of using AI for predictive maintenance and supply chain optimisation. By utilizing AI algorithms to monitor equipment health and

predict when maintenance is required, the PLA has been able to reduce downtime and ensure that its forces are always equipped with operational vehicles and equipment. Additionally, China has employed blockchain technology to secure its supply chain transactions, reducing the risk of fraud and improving transparency of its procurement processes.

The PLA has also been exploring the use of autonomous vehicles for logistics purposes. In high altitude regions like Tibet, where traditional supply chains are often disrupted by harsh terrain and weather, China has deployed autonomous trucks to deliver supplies to military outposts.

Russia

Russia's military has long operated in some of the harshest environments on Earth, including the Arctic, where extreme cold, ice, and snow throws significant logistical challenges. To address these challenges, Russia has integrated niche technologies such as drones and autonomous vehicles into its Arctic operations. Drones are used to deliver supplies to remote outposts, while autonomous vehicles, specially designed for cold-weather operations, are employed to transport larger quantities of goods across the frozen landscape. These technologies allow Russia to maintain a continuous flow of supplies in regions where traditional logistics methods are impractical.

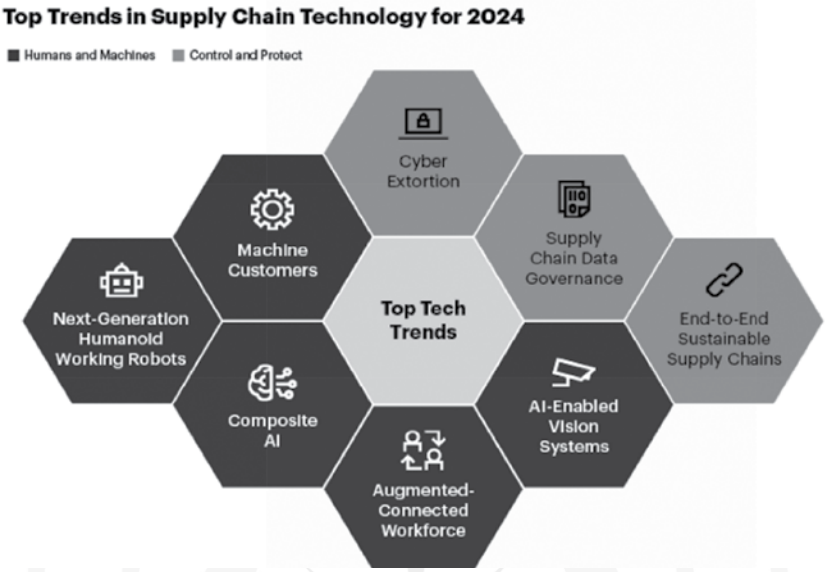
Proposed Framework for Agile Supply Chain Management in Indian Military Operations

To overcome the logistical challenges posed by India's diverse operational terrains, a technology-driven, agile supply chain framework is essential. The proposed framework for the Indian military integrates niche technologies into a cohesive logistics model designed to enhance speed, precision, and adaptability.

Technology-Driven Supply Chain Model

The proposed conceptual model for India's military supply chain is built around a central logistics command that leverages advanced technologies to monitor, predict, and optimise the flow of resources. This technology-driven model consists of three key components: predictive analytics, real-time monitoring, and adaptive distribution, each supported by AI, IoT, and autonomous technologies.

Figure 10: Top Trends in Supply Chain Technologies



(*Gartner Unveils Top Supply Chain Technology Trends for 2024 | Supply Chain Magazine*)

Predictive Analytics

At the core of this model is AI-driven predictive analytics, which can forecast demand based on historical data, environmental factors, and real-time battlefield intelligence. Predictive algorithms analyse logistical trends, identifying potential disruptions such as weather conditions, terrain difficulties, or enemy activities that could impact supply chains (*The Rise of Niche Technologies: Embracing to Excel in Joint Warfighting – CENJOWS*). This allows military planners to anticipate logistical needs and proactively adjust the flow of supplies, ensuring that critical resources are available before shortages occur. For example, during high altitude operations, predictive systems can forecast severe weather conditions and suggest alternative delivery routes or pre-position stockpiles in anticipation of road closures.

Real-Time Monitoring

IoT-enabled sensors and devices provide real-time visibility into the status of supplies, equipment, and vehicles (*The Rise of Niche Technologies: Embracing to Excel in Joint Warfighting – CENJOWS*). These sensors can be placed on vehicles, or even individual items, providing continuous updates on their location,

condition, and environment. The data from IoT devices feeds into a central logistics platform that tracks the movement of supplies across the entire supply chain, from procurement to delivery. In high-risk or remote environments, where supply routes may be prone to disruption, real-time monitoring ensures that logistics planners can make immediate adjustments to avoid delays or bottlenecks.

Adaptive Distribution

The adaptive distribution component of the model is powered by autonomous systems such as drones and unmanned ground vehicles (UGVs), which can deliver supplies directly to frontline units, bypassing traditional transportation challenges. In regions like Ladakh, where roads are often inaccessible during winter, drones can be deployed to carry essential supplies to remote outposts. Autonomous vehicles, equipped with AI-driven navigation systems, can traverse difficult terrain in deserts or forests, delivering larger quantities of resources without exposing personnel to risk. This adaptive capability allows the Indian Army to maintain a continuous flow of supplies, regardless of terrain or environmental conditions.

Blockchain for Security and Transparency

Blockchain technology will underpin the security and transparency of this technology-driven supply chain. Each transaction, from procurement to delivery, is recorded on an immutable blockchain ledger, reducing the risk of fraud, corruption, and diversion of supplies. Smart contracts—automated agreements that trigger specific actions when conditions are met—can streamline procurement processes, ensuring that resources are ordered and delivered efficiently. This level of transparency is particularly important in high-risk areas where insurgent activity could jeopardize supply chain integrity.

3D Printing for On-Demand Production

The final component of this supply chain model is the strategic integration of 3D printing capabilities at key military outposts. 3D printers allow the military to produce spare parts, equipment, and even specialised tools on-site, thus reducing the need to transport these items through long supply chains (*The Rise of Niche Technologies: Embracing to Excel in Joint Warfighting – CENJOWS*). This is especially valuable in high altitude or remote regions, where transporting heavy or bulky equipment is both costly and time-consuming. By using 3D printing,

the Indian Army can quickly produce the items it needs, hence minimising downtime and maintaining operational readiness.

Phases of Implementation

The successful integration of these niche technologies into India's military supply chain framework requires a phased approach, beginning with pilot programs and scaling up to full implementation.

Phase 1: Pilot Programs

In the initial phase, pilot programs are to be launched in selected high-priority regions, such as Ladakh (high altitude) and Rajasthan (desert). These regions represent the most challenging environments for supply chain operations and provide an ideal testing ground for the proposed technologies. AI-driven predictive analytics and IoT-enabled monitoring systems are to be deployed in select outposts to evaluate their effectiveness in real-world conditions. Small-scale trials of drones and autonomous vehicles for last-mile deliveries also needs to be conducted to assess their performance in challenging terrains. Blockchain technology needs to be introduced for secure procurement transactions, thus ensuring the transparency of the supply chain in these regions.

During this phase, military personnel should receive training on the new technologies, with a focus on system integration, operation, and maintenance. Feedback from these pilot programs could be used to refine the logistics model, addressing any challenges or inefficiencies encountered during the trials.

Phase 2: Gradual Scaling

Once the pilot programs have demonstrated success, the second phase should involve scaling the integration of niche technologies across broader geographic area. This includes expanding the use of AI, IoT, and blockchain technologies to additional regions including the northeast. The gradual rollout of drones and autonomous vehicles will be expanded to cover more ground, ensuring that last-mile deliveries are consistently executed in both peacetime and conflict scenarios.

3D printing capabilities will also be introduced at key military outposts in remote areas, enabling the on-demand production of spare parts and critical equipments. To support this scaling phase, the military should partner with private sector technology companies to ensure necessary infrastructure like communication networks for IoT and AI systems.

Phase 3: Full Implementation

In the final phase, full implementation of the technology-driven supply chain model will be rolled out across all major operational regions. By this stage, the Indian military's logistics network will have undergone a complete transformation, with AI-driven predictive analytics, IoT-based real-time monitoring, drones, autonomous vehicles, and 3D printing fully integrated into the supply chain. Military planners will have access to real-time data that allows them to optimise logistics operations, anticipate supply needs, and adapt to changing battlefield conditions.

At this stage, blockchain technology will be used across all procurement and logistics operations to ensure secure, transparent transactions. Additionally, inter-agency coordination and international collaborations will be fully established, supporting ongoing innovation and operational excellence.

Inter-Agency and Defence Industry Collaboration

The successful implementation of this agile supply chain model requires close collaboration between India's defence agencies, private technology companies, and global partners. This collaboration will be critical for ensuring that the necessary infrastructure, technology, and expertise are in place to support the logistics network's transformation.

Collaboration with Defence Agencies

India's defence agencies such as the Defence Research and Development Organisation (DRDO) and the Ministry of Defence (MoD) will play a key role in overseeing the integration of niche technologies into the military's logistics framework. These agencies will be responsible for coordinating pilot programs, scaling initiatives, and ensuring that the supply chain model aligns with India's broader defence strategy. Additionally, defence agencies will work with military commanders to ensure that new technologies are effectively integrated into day-to-day operations, addressing any logistical or operational challenges that may arise.

Partnerships with Private Technology Companies

To drive innovation and ensure the continuous development of cutting-edge technologies, India's military will need to partner with private technology companies. These companies, particularly those specialising in niche technologies will provide the expertise and resources needed to implement the

proposed technologies. Collaborations with Indian tech companies such as Tata Consultancy Services (TCS), Infosys, and L&T Infotech, as well as global defence contractors like Lockheed Martin, Boeing, and Thales, will enable the Indian military to stay at the forefront of logistics innovation.

International Collaboration

Given the global nature of military logistics and the lessons that can be learned from other nations, India will benefit from collaborations with international military forces and defence agencies. Partnerships with countries like the United States and Israel—both of which have successfully integrated niche technologies into their logistics operations—will provide India with valuable insights and best practices. These collaborations will enable the Indian military to leverage global expertise, while also contributing to the development of new logistics strategies that are tailored to India's unique operational needs.

Challenges and Recommendations for Implementation

While the integration of niche technologies into India's military logistics presents significant advantages, it also comes with several challenges that needs to be carefully addressed during implementation.

Figure 11: Major risks in the implementation of emerging technologies

(*TRIF, 2024*)

High Cost of Technology

One of the primary challenges is the high cost of acquiring and implementing niche technologies. Niche technologies like the ones covered above require substantial upfront investment, not only in the technology itself but also in the development of the infrastructure necessary to support their deployment. For example, IoT-enabled logistics systems require extensive networks of sensors, connectivity infrastructure, and data-processing centres to function effectively. The cost of establishing and maintaining such infrastructure in remote, high-altitude, or desert regions may be prohibitively expensive, particularly in the initial stages of implementation.

Additionally, specialised hardware such as drones and autonomous vehicles come with high procurement costs. While these technologies can reduce long-term operational costs, the upfront expenditure may place a strain on defence budgets, particularly if the full-scale rollout is pursued without proper phased implementation.

Training and Expertise

Another significant barrier is the need for specialised training and expertise to operate and maintain these advanced technologies. The successful deployment of niche technology systems requires personnel who are trained not only in logistics but also in the intricacies of these technologies. For example, military personnel will need to understand how to analyse and act upon AI-driven predictive analytics, monitor IoT-enabled logistics networks, and secure blockchain transactions. This will require concerted effort to upskill logistics teams, both in technical operations and data-driven decision-making. Furthermore, the maintenance of advanced technologies such as autonomous vehicles and drones requires highly specialised knowledge.

Infrastructure Requirements

The successful implementation of niche technologies also depends on the development of adequate infrastructure, particularly in remote and challenging operational environments. For IoT-enabled systems to provide real-time monitoring and data collection, reliable communication networks must be established across vast and often inaccessible regions. In addition to communication networks, the logistics chain will need physical infrastructure upgrades, such as advanced warehouses that can support 3D printing and other emerging technologies. Drones and autonomous vehicles will require dedicated

maintenance facilities and landing or charging stations. The establishment of these facilities, particularly in remote regions, will require significant planning, investment, and annual maintenance, all of which pose logistical and financial challenges.

Cybersecurity Concerns

As India's military logistics network becomes increasingly reliant on technology-driven systems, cybersecurity emerges as a critical concern (*The Rise of Niche Technologies: Embracing to Excel in Joint Warfighting – CENJOWS*). The use of AI, IoT, blockchain, and other digital technologies in logistics introduces new vulnerabilities that must be addressed to prevent potential cyber-attacks, data breaches, and other security risks.

Regulatory and Policy Framework

The successful implementation of niche technologies in military logistics also requires a supportive regulatory and policy framework. For India to fully realise the benefits of niche technologies, it must address regulatory barriers and implement policies that encourage innovation, streamline procurement, and foster collaboration between the public and private sectors.

Defence Procurement Reforms

One of the most significant regulatory challenges is the need for defence procurement reforms. Traditional procurement processes in India are often slow, bureaucratic, and ill-suited to the fast-paced nature of technological innovation. For niche technologies to be successfully integrated into the military's logistics network, the procurement process must be streamlined to allow for faster decision-making and more flexible contracting arrangements. This includes reducing the time required for tendering, evaluation, and contracting, as well as allowing for greater experimentation and pilot programs with emerging technologies.

To achieve this, the Ministry of Defence (MoD) must work closely with the private sector to establish clear procurement guidelines that facilitate the adoption of new technologies. This could involve adopting a more agile procurement model, where smaller contracts are awarded for pilot programs, allowing the military to quickly evaluate the effectiveness of new technologies before scaling them up. Additionally, the MoD should explore partnerships with start-ups and technology incubators to foster innovation

and support the development of niche technologies tailored to India's specific defence needs.

Partnerships with the Private Sector

Collaboration between India's defence agencies and private technology companies will be critical for the successful implementation of niche technologies. The private sector possesses the expertise and resources needed to develop, deploy, and maintain advanced logistics systems, making it an essential partner in the modernisation of India's military logistics network.

The Indian military could also establish dedicated innovation hubs or partnerships with academic institutions to foster the development of cutting-edge logistics technologies.

Conclusion

The integration of niche technologies such as AI, IoT, blockchain, drones, and 3D printing is transforming military logistics worldwide, thus enabling faster, more flexible, and adaptive supply chains. These technologies enhances operational efficiency by allowing real-time monitoring, predictive analytics, and precise resource allocation. India can draw valuable lessons from other Nation' examples to improve its own supply chain agility, ensuring the timely delivery of supplies across its varied and complex operational landscapes. To successfully adopt and integrate these technologies, India should implement a phased approach, starting with pilot programs in high altitude, desert, and remote regions to evaluate effectiveness.

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Strategic Ambiguities in Chinese International Dealings: Implications for South Asian Regional Stability

PIYUSH CHANDRA AND DEEPALI KHAIRE

Abstract

China's growing influence in South Asia is marked by strategic ambiguities that combine peaceful rhetoric with assertive actions, creating a dense and often contrasting presence in the region. This research tries to analyze those gaps and the tensions that surface between China's self-proclaimed strategic culture—the one that talks of cooperation and non-interference—and the very actions on the ground—engagements in substantial economic investments, military partnerships, and even occasional adversarial posturing. The present research unravels, through a comparative analysis of China's engagement patterns with Pakistan, Nepal, and India between 2020 and 2024, how certain dominant ambiguities effect the proper stability of the region. Although China throws open its public face as one of peaceful development ideology, its actions are often firmly rooted in a more realpolitik-based strategy designed to maximize influence while constraining any jeopardy to its strategic autonomy. While it

continues to invest hugely in Pakistan and assumes control of the political composition of Nepal, further straining tensions with India at the borders, it prepares to fall into a two-way street of its regional policy. The research concludes by emphasizing that China's regional strategy is a minefield that complicates the security environment and compels adaptive responses from South Asian states, especially India, in navigating the mazes of expanding Chinese influence.

Introduction

China's rise has defined a path for strategic culture that somehow converges contradictions, creating a multilayered and sometimes opaque posture unique to its international dealings, with extraordinary leeway in the South Asian region. As China's economic and military heft grows, so does the global scrutiny on its actions and policies. The Chinese leadership has repeatedly used "building a community with a shared future for mankind" to justify its actions. Although espoused as a doctrine promoting equality in international relations, this idea is interpreted as a mere disguise for pushing China into nurtured recognition of alignment with its national interests, such as global unity and harmony (Nathan & Zhang, 2021; Chen et al., 2022). China's strategic posture in South Asia leads to hierarchical and pliant approaches to bolster its influence without entering into formal alliances. This is reflected in its engagements with Pakistan to counterbalance Indian influence and engagement with the remaining other South Asia countries within BRI (Odgaard, 2023; Panda & Basu, 2022). The BRI has created a network of economic dependencies for China that consolidates its strategic position, usually leading to smaller countries becoming economically beholden to Beijing. This tension is manifested in countries like Sri Lanka, which entered financial arrangements that gave China leverage against sensitive infrastructure like the Hambantota Port (Giri, 2021; Rahman, 2023).

According to Beijing's official position, the strategic part of China's global engagement consists of establishing strategic ambiguity in foreign relations, notably informal alliances. China's rationale for being circumspect in this domain is a requisite for China in order to stay away from conflict, which would limit its strategic autonomy in this era of US-China competition. For instance, China's partnerships seek to avoid formal security commitments, preferring to craft flexible relations with other Global South states that provide them with some global heft without risking confrontation (Odgaard, 2023; Zhao, 2022). China's role in South Asia predominates with Pakistan, extending beyond economic ties

into a cooperative military arrangement. This relationship is one cornerstone of China's South Asian strategy; it has bolstered Pakistan's hand against India and ensured China's stable presence in strategically vital corridors of trade and energy security routes (de Castro, 2021; Singh et al., 2023). In addition to this, Beijing's foray into other South Asian states, such as infrastructure support given to Nepal and strategic investments toward Bangladesh, adds up to this larger narrative of hedging India's influence around its immediate neighborhood (Dahal, 2022; Liu & Sun, 2023).

However, mixed signals from China in its foreign policy leave one with disturbing questions about the ultimate intentions behind them. While Chinese leaders talk about peaceful development and cooperation, most strategists view the approaches, the latter takes, as part of a carefully played game to dominate Asia and the world at large. This strategic ambiguity has received a cautious response from ASEAN and South Asian countries, who often weigh the economic benefits accruing from Chinese ties against the potential for security risks emanating from these very same arrangements (Nathan & Zhang, 2021; Bajpaee, 2023). Within this subject matter, the several ambiguities inherent in China's dealings ring the bell for an in-depth examination of its working in South Asia, where its policy implications are fully fused with the stability in the region. This study attempts to bridge the gaps between China's rhetoric and its strategic realities—a move that would have other implications in bringing out how the influence of China shapes the geopolitical landscape of South Asia, especially in terms of security and regional dominance of India.

Materials and Methods

Research Design: It is in this qualitative design that a comparative case study is operated. The research invades how China's strategic ambiguities work through these contexts and impede regional stability through multiple case studies within South Asia, comprising India, Pakistan, and Nepal. The design will support a comprehensive understanding of the strategic approach adopted by China, and what that portends for South Asian geopolitics.

Data Sources: This study uses primary data consisting of governmental and diplomatic documents, such as those of official records, policy statements,

and strategic documents from various government sources in China, India, and Pakistan, thus providing direct insight into the strategic intentions and diplomatic actions of these countries. Other military and economic data have been extracted from various diplomatic and strategic documents, SIPRI database and World Bank reports on defence expenditures, military alliances, and transactions. Secondary sources of data mainly comprise scholarly journals and publications that speaks of either Chinese strategic culture, BRI, or Sino-South Asian relations, and has been accessed through databases like JSTOR, Taylor & Francis, or Elsevier. Media reports, expert articles, and commentaries are combined with secondary materials to offer contemporary views about China's manoeuvres in South Asia, so as to cross-check with its official documents and discern discrepancies between its stated intentions and undertakings. Finally, other open-source intelligence (OSINT) from various news media outlets, defence blogs, and international relations think tanks provides up-to-the-minute developments on critical diplomatic and military actions, especially in sensitive areas like the India-China border and the China-Pakistan Economic Corridor.

Selection of Case Studies: As a regional power and the leading adversary of China in South Asia, India provides a daunting perspective on how strategic ambiguities in China's foreign policy interfere with bilateral relations and regional stability in general. As an 'unwavering ally' of China and a crucial link for China through BRI, Pakistan provides insights into the extent of Chinese influence in South Asia. Being located between China and India, Nepal provides a necessary case to examine how China's economic and diplomatic actions influence Indo-Nepal relations and regional dynamics.

Data Collection Methods: Relevant documents—an array of official policy statements, military white papers, and diplomatic communications—are collected in a systematic process. Content analysis software, such as NVivo, assists in coding and categorizing data based on thematic relevance to Chinese strategic culture and ambiguities. Where feasible, expert opinions from scholars and diplomats, who are specialists in Chinese foreign policy, are obtained through semi-structured interviews. These interviews aim to clarify the ambiguities of China's actions and provide an insight regarding the perception of these actions in South Asia. Quantitative data on economic investments, military expenditures, and trade flows are collected from SIPRI, World Bank, and UN Comtrade databases. These data points are essential for identifying patterns in Chinese engagement and producing statistical representations.

Analytical Framework: The study adopts a comparative framework for analyzing the Chinese strategic ambiguities from different geopolitical contexts to seek patterns and variances in Chinese action towards India, Pakistan, and Nepal. Content analysis is employed to discuss the official statements and policy documents to arrive at recurring themes related to some distinct Chinese strategic goals and their ambiguities. Thematic coding is done using NVivo. Quantitative data on defence spending, trade volumes, and investment flows are analyzed using statistical software, such as SPSS. Statistically, the authors describe standards and trend analyses to develop a comparison of Chinese engagements in each study country through tabular and graphical presentations.

Validation and Reliability: Triangulation is employed on findings obtained from multiple data sources to ensure their reliability (governmental reports, academic journals, and media sources). By triangulating various sources of information, biases that would have been dominant if only one data source was used in acquiring the information, are countered with a broad vision of the attention to fact. Thematic coding and content analysis are performed by various researchers, when possible, to ensure an analytical consistency with which all the data can be understood. Any dispute in coding and the discrepancies thereof would be discussed to come along with solutions for stricter reliability. The authors also note some limitations: not being able to get primary data in Chinese and sole dependency on the translated documents might be quite constraining. In addition, the ability to obtain unbiased data is seriously hampered by the very politicisation of those bodies providing the information in these cases.

Results

Comparative Analysis of China's Strategic Ambiguities: China's economic ties with South Asia present distinct differences from its 'supposed' strategic belief of peaceful engagement and cooperative development. The data from case studies demonstrate that, while China projects its own image as a non-aggressive, harmonious power, its actions suggest a complex mix of economic and military power postures that are consistent with realist principles rather than Confucian ideals.

Economic Influence via Belt and Road Initiative (BRI): Chinese BRI projects in Pakistan, Nepal, and other South Asian countries are chiefly described by China as mechanisms for promoting regional growth and connectivity. Nevertheless, analysis shows that economic dependency created through BRI-funded investments tends to grant China greater leverage over other nations.

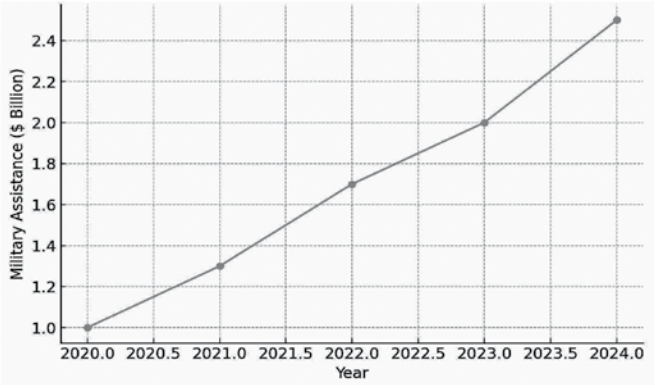
For example, in Pakistan, this entails a selling leverage tactic for the immense Gwadar Port that establishes an economic grip. Similar trends can be noted in Nepal, where Chinese infrastructure projects tie foreign investment to high-interest loans, thereby heightening concerns of debt dependency.

Table 1: Chinese Investments in BRI Projects across South Asia (2020-2024)

Country	2020 ($ Billion)	2021 ($ Billion)	2022 ($ Billion)	2023 ($ Billion)	2024 ($ Billion)
Pakistan	5.2	5.6	6.1	6.5	7
Nepal	1.1	1.3	1.4	1.6	1.8
Sri Lanka	2.5	2.8	3	3.3	3.5
Bangladesh	1.8	2.1	2.3	2.5	2.8
Maldives	0.9	1	1.1	1.2	1.3

Military Posturing and Strategic Ambiguities: Chinese military deals, especially with respect to Pakistan, reflects a strategic partnership aimed at counter-balancing the comprehensive Indian influence. Evidence indicates that military collaboration between China and Pakistan has been enhanced. Moreover, increase of arms sale to Pakistan can be viewed as China's indirect projection of power within the region. China has avoided formal military alliances but continues to provide significant military support under the guise of bilateral cooperation, highlighting its flexible approach to regional security dynamics.

Figure 1: Chinese Military Assistance to Pakistan (2020-2024)



Diplomatic Influence and Rhetorical Ambiguities: The study reveals that China's diplomatic rhetoric often contradicts its actions. Although, China favours the idea of mutual respect and non-interference in Nepal, however, data reveals that China's influence over Nepal's political decisions has grown especially as Nepal has to articulate itself on Tibet and Taiwan. It, therefore, implies that China subtly uses diplomatically coded language to position its strategic endeavours against its larger objectives while often masking coercive lead influence with cooperative language.

Table 2: Summary of China's Diplomatic Statements vs. Actions in Nepal (2021-2024)

Year	Statement Theme	Key Statements	Observed Actions
2021	Mutual Respect	China emphasized mutual respect for sovereignty.	Increased pressure on Nepal to avoid pro-Tibet actions.
2022	Non-Interference	China pledged non-interference in Nepal's internal affairs.	Influence on Nepalese government decisions about Tibetan refugees.
2023	Shared Development	Focus on shared development initiatives.	Loans tied to strategic infrastructure projects.
2024	Strategic Partnership	Mentioned strategic partnership without specifying scope.	Military aid offered to Nepal as part of strategic alignment.

Impact on Indo-China Relations and Regional Stability: This data indicates that China's strategic ambiguity aggravates regional tensions, especially along the India-China border. Examples of military tension, such as those in the Galwan Valley, show that aggressive actions often undermine China's peaceful rise rhetoric. Nepal's case similarly indicates that Chinese influence can lead to shifting alliances, thus creating a precarious situation for India's strategic interests within the neighborhood.

Thematic Analysis of China's Strategic Rhetoric: Content analysis of official Chinese statements reveals recurring themes of "mutual development" and "peaceful rise." However, qualitative coding identified a substantial mismatch between this rhetoric and actual actions perceived as 'expansionist'. Thematic mapping shows how strategic messages from China have shifted over time—closely responsive to geopolitical shifts and South Asian responses to Chinese engagement.

Figure 2: Border Incidents between India and China (2020-2024)

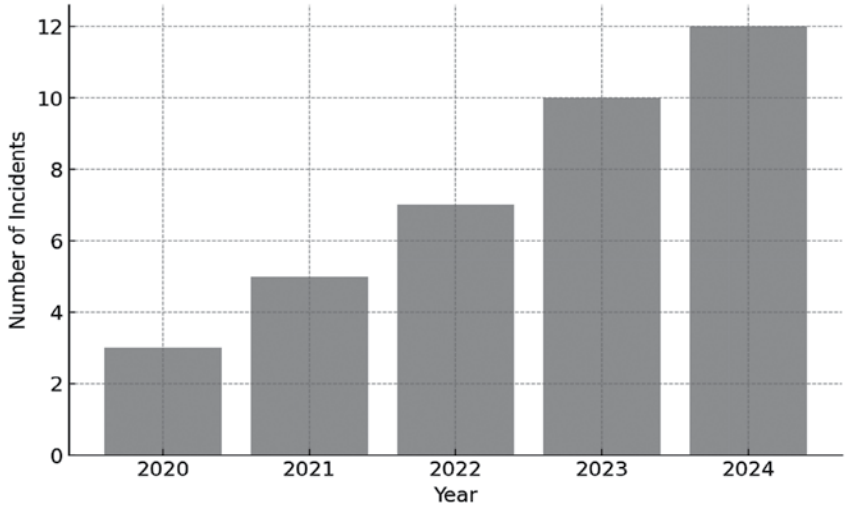


Table 3: Thematic Analysis of China's Strategic Rhetoric vs. Actions (2021-2024)

Theme	Rhetoric Frequency	Observed Actions (Instances)	Consistency Level
Peaceful Rise	30	15	Medium
Economic Cooperation	40	25	High
Non-Interference	25	10	Low
Strategic Partnerships	20	18	Medium

Discussion

China's strategic posturing in South Asia makes it clear that there are some rather unclear angles to be considered, which brings into focus a blend of strange rhetoric and actions that have resulted in instability in the region. Data indicates that China's dealings in the region are not merely inconsistent; they retain a strategic ambiguity. Such ambiguity is a valuable tool for China to gain influence, at once overtly unchallenging to the existing power balance while providing China with operational flexibility amid a tumultuous and changing geopolitical environment. Such strategic dealings usually involve projecting peaceful cooperation along the lines of economic development like the BRI (Belt and Road Initiative); however, as shown in Table 1, BRI in Pakistan and Nepal provides a much more calculated infusion of economic dependency. By tying

several large investments to critical strategic infrastructure projects, China has ensured that dependency of these countries on Chinese economic assistance increases. This dependence will allow China to exert considerable influence over these countries, potentially limiting their diplomatic and strategic options. Increased pressure against pro-Tibetan actions in Nepal, as evidenced and shown in Table 2, being the very example of what economic dependency translates to in terms of political influence.

In Figure 1, China builds strategic depth from its military relationship with Pakistan. By increasing military support to Pakistan and keeping this support active from 2020 to 2024, China has shown a growing willingness to invest in training and capabilities for Pakistan. Such assistance has strategically positioned Pakistan against Indian ties within the region while considering broader regional Chinese interests. Although China avoids formal military alliances, because of its support, Pakistan can extend its military influence in South Asia and indirectly contest India's approach towards traditional security. The strategic implications of such military support are enormous—it solidifies Pakistan as an ally of China; it puts pressure on India, in the long run, to adjust its security posture and regional alliances.

Until recently, there were numerous incidents at the contested borders between India and China. This reflects a tense situation contrary to China's rhetoric about "peaceful rise." Such incidents point to a far more aggressive side of China's strategic posture, especially in the context of Chinese military and economic investments in neighboring countries. The high incidence of border confrontations suggests that China's strategic ambiguities can extend from mere posturing to an open display of military might as an action that threatens India's security and position in the region. These confrontations strains bilateral relations and cast a broader regional tendency toward instability, forcing India and other South Asian countries to re-evaluate their security and diplomatic strategies.

Sino-Indian boundary incidents, sharply contrasts China's 'peace' rhetoric. At least a number of border intrusions could be viewed as an instance reflective of a rather aggressive strategic posture—a tilt towards Singapore and India's intents. To a fixed degree, such confrontations are almost always going to impact India's security as well as its influence in the region—softening the brutal anxiety of uncertainty that international politics entails. This step brings regional turmoil to the forefront and makes India and others from South Asia review their security and diplomatic strategies.

Chinese behaviour in South Asia reflects a multi-faceted engagement to secure regional influence. China ensures its strategic independent ventures while maximizing ground on influence by way of creating economic dependencies with avoidance of formal alliances. This tentative investment has implications for South Asia that further complicates the security surroundings with a whole new perspective for the already tense eastern balance of power. These uncertainties press India directly since this plunges the instability of those angles that matter to the formulation of the new canonical processes of caution and response building.

Conclusion

This study contains the intricacies of China's strategic presence in South Asia. Coupled with economic investments, military partnerships, and value-laden diplomatic seconding, China is able to exert influence over key South Asian countries, particularly Pakistan and Nepal. The recommendations generated in this paper suggest that the above activities are a contradiction to China's assertions concerning peaceful cooperation and non-interference; therefore, it reflects a bifurcated strategy to maximize regional influence without actual conflict with others. Notably, China's approach towards Pakistan and threats to Nepal demonstrate how economic dependencies can be manipulated into strategic footholds from which Beijing exercises its influence over others. A growing number of border incidents with India indicate that it wishes to assert its power against the regional hegemony of India, thereby contributing to regional instability. These strategic ambiguities permit China to style itself as a benign regional partner while engaging in acts consistent with more realist and self-interested ends. Therefore, these findings provide a pointer to a vital realization that neighboring states must tread softly and respect these ambiguities, especially regarding regional stability and security issues in South Asia. As China continues its expansion of influence, the future of South Asian states will be to fashion their foreign policies to the greatest extent in nuanced and adaptive manners so that the challenges of Chinese strategic behaviour, complex and often contradictory at the same time, can be dealt with.

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China's Techno-industrial Ascendance in the 21st Century

ASHU MAAN

Abstract

The rise of China as a techno-industrial power represents one of the most transformative developments in the 21st century—reshaping the contours of the global order. This paper examines the historical evolution, strategic policies, and key sectors that have propelled China's rapid technological and industrial ascent, from the economic reforms of the late 20th century to the ambitious initiatives of the 21st century such as Made in China 2025, the Dual Circulation Strategy, and China Standards 2035. By analyzing China's dominance in critical sectors like telecommunications, artificial intelligence, semiconductors, green technologies, and space exploration, the paper highlights how Beijing is leveraging its techno-industrial prowess to influence global economic structures, strategic alliances, and governance models. The paper further explores the geopolitical ramifications of China's technological rise, particularly the intensifying US-China tech rivalry, the reshaping of global supply chains, and the emergence of new techno-strategic alliances. While China's advancements pose challenges to the existing US-led international order, they also reveal internal vulnerabilities, including demographic pressures, technological dependencies, and external geopolitical pushbacks. The paper argues that China's rise is

not merely an economic phenomenon but a multidimensional shift with far-reaching implications for global security, economic governance, and the future balance of power. In conclusion, it calls for adaptive global strategies to manage the evolving dynamics of a world increasingly influenced by China's techno-industrial ambitions.

Introduction

Over the past few decades, China has redefined its position on the world stage, emerging as a leading techno-industrial power whose influence extends beyond traditional manufacturing to encompass high-technology sectors. The transformation, initiated by economic reforms in the late 20th century and accelerated by strategic policies in the 21st century, marks a critical turning point in global economic and geopolitical dynamics. As the world becomes increasingly interdependent through global supply chains and digital networks, China's rapid ascent in sectors such as telecommunications, artificial intelligence (AI), semiconductors, green technologies, and space exploration is reshaping international alliances and challenging the existing US-led order.

This research paper seeks to explore the multidimensional evolution of China's technological and industrial ascendancy. By examining historical trajectories, policy frameworks, and the evolution of key industrial sectors, this study provides an in-depth analysis of how Beijing leverages its techno-industrial capabilities to influence global economic structures and strategic alliances. Moreover, the paper investigates the geopolitical ramifications of China's rise, with particular focus on the intensifying US-China tech rivalry, the reconfiguration of global supply chains, and the emergence of novel techno-strategic alliances.

The scope of this paper is to provide a comprehensive account of the interplay between China's internal policy innovations and the external challenges that have arisen as a result of its rapid technological evolution. In doing so, it addresses critical questions regarding the sustainability of China's model, the balance between economic ambition and strategic vulnerability, and the adaptive measures required by other global powers in response to this transformative shift. This paper utilizes a combination of historical analysis, policy review, and sector-specific evaluation to paint a detailed picture of the current state and future trajectory of China's techno-industrial rise.

Historical Evolution of China's Techno-industrial Ascent

China's transformation from an agrarian-based economy to a global industrial powerhouse is rooted in the economic reforms initiated in the late 1970s under Deng Xiaoping (Congressional Research Service, 2019). The initial phase of these reforms was characterized by the introduction of market-oriented policies, the establishment of Special Economic Zones (SEZs), and gradual liberalization aimed at attracting Foreign Direct Investment (FDI) (Zebregs, 2002). This period laid the groundwork for an economic system that could eventually support advanced industrial sectors and high-technology industries. By the 1990s, with increased global integration and the advent of new communication technologies, China began to set its sights on upgrading its industrial base from low-cost manufacturing to high-value, technology-driven sectors.

The accession to the World Trade Organization (WTO) in 2001 further accelerated China's integration into the global economy (Lee, 2025). It facilitated technology transfers, encouraged the adoption of international standards, and provided a platform for domestic companies to compete on a global scale. The early 2000s witnessed a surge in investments in research and development (R&D) as well as in infrastructure projects that supported technological innovation (Lee Y. , 2018). This era was also marked by significant state support for emerging sectors, signaling a shift from a purely export-driven model to one that sought to harness domestic innovation and technological advancement.

During the mid-2000s and into the 2010s, China's focus on technology-driven growth became more pronounced (Atkinson, 2024). The government's proactive approach in setting national priorities led to the development of strategic policies and initiatives that targeted high-tech industries. This period saw the inception of ambitious programs aimed at reducing dependency on foreign technologies and fostering domestic innovation. Notably, the "Made in China 2025" initiative, launched in 2015, outlined a clear roadmap for transitioning from a manufacturing hub of mass-produced goods to a leader in innovative high-tech products. This initiative, along with subsequent policies such as the Dual Circulation Strategy and China Standards 2035, underscored Beijing's long-term ambition to not only catch up with but surpass western technological standards.

The historical evolution of China's techno-industrial capabilities is also marked by its strategic investments in education, R&D, and infrastructure. The government's commitment to funding universities and research institutions has produced a highly skilled workforce capable of supporting advanced

technological sectors (He, China's Techno-Industrial Development: A Case Study of the Semiconductor Industry, 2021). Additionally, extensive investments in high-speed rail, telecommunication networks, and smart cities have created an environment conducive to rapid industrial growth and technological innovation. These historical milestones provide the context for understanding the current state of China's techno-industrial power and highlight the continuity between past reforms and present ambitions.

Strategic Policies Driving Techno-industrial Growth

China's techno-industrial ascent is underpinned by a series of strategic policies that have been formulated and implemented over the past two decades. These policies are designed to not only enhance domestic capabilities but also to assert China's influence on global technological standards and supply chains. Three major policy frameworks stand out: Made in China 2025, the Dual Circulation Strategy, and China Standards 2035.

'Made in China 2025', is perhaps the most ambitious of these initiatives. Announced in 2015, this policy aims to upgrade China's manufacturing base by promoting high-tech industries and reducing reliance on foreign technology. The initiative identified ten strategic sectors, including advanced robotics, aerospace, and biopharmaceuticals, and set ambitious targets for domestic innovation and quality improvement. By channelling substantial state support into these sectors, Beijing seek to reposition its industrial base to compete with, and eventually surpass, established global leaders. Although the policy faced criticism from international partners concerned about unfair competitive practices, its impact on accelerating domestic technological advancement cannot be understated. Recent assessments suggest that sectors such as robotics and aerospace have witnessed significant growth, with domestic production increasingly matching international quality standards (Wübbeke, 2016).

Complementing this is the 'Dual Circulation Strategy', a policy framework introduced in 2020 to balance external trade with domestic consumption and innovation (Bleischwitz, 2022). Recognising the vulnerabilities exposed by global supply chain disruptions, especially during the COVID-19 pandemic, China has reoriented its economic model towards greater self-reliance. The strategy emphasizes boosting domestic demand, fostering local innovation ecosystems, and reducing overdependence on volatile international markets. As a result, policies under this strategy have led to increased investment in local R&D, expansion of domestic consumer markets, and enhanced integration of digital

technologies in traditional industries (Chu, 2023). The Dual Circulation Strategy also reflects a pragmatic approach to international economic uncertainties, positioning China to navigate external pressures while continuing its rapid technological development.

The announcement of 'China Standards 2035' in 2018 implicitly amalgamated the 'Made in China 2025' initiative (Koty, 2020). This initiative seeks to establish Chinese standards in emerging sectors such as the Internet of Things (IoT), quantum computing, and next-generation telecommunications. By actively participating and in some cases, leading the development of international standards, China aims to secure a competitive edge in global markets and ensure that its technological innovations are adopted worldwide. China Standards 2035 is not only a technical roadmap but also a strategic instrument of soft power, as it enables China to exert influence over international regulatory frameworks and drive global industry practices in its favor.

Collectively, these strategic policies have created a coherent framework that propels China's techno-industrial capabilities forward. They are supported by robust financial mechanisms, public-private partnerships, and targeted investments in human capital and R&D. For instance, the establishment of large-scale funds dedicated to semiconductor development and AI research has enabled China to make significant strides in these critical sectors (Bloomberg, 2024). The success of these policies is evident in the rapid development of domestic companies that are now global players, as well as in the increasing share of high-tech exports in China's overall trade portfolio.

Analysis of Key Sectors Driving China's Rise

China's techno-industrial transformation is characterized by its concentrated investments and rapid advancements in several critical sectors. This section provides a detailed analysis of the key industries that form the backbone of China's modern technological infrastructure.

Telecommunications

China's telecommunications sector has become a critical component of its technological strategy, driven by aggressive state-backed initiatives. The rapid deployment of 5G networks, led by companies like Huawei and ZTE, has positioned these firms prominently in global markets. Huawei, for instance, has allocated substantial resources toward R&D to dominate the 5G infrastructure

landscape (Statista, 2023). However, this growth has not been without controversy. Numerous western countries have raised concerns regarding security risks and the opaque nature of Chinese tech firms' operations. Restrictions and bans on Huawei's participation in critical infrastructure projects have been implemented in the US, UK, Australia, and other countries due to concerns about potential state influence and data vulnerabilities (Congressional Research Service, 2022).

Beyond legitimate investments in innovation, Chinese firms have also been accused of employing questionable tactics to advance their technological edge. Allegations of intellectual property (IP) theft, forced technology transfers, and industrial espionage, have surfaced repeatedly over the past decade (Wong, 2023). For instance, several lawsuits in the United States have highlighted patterns of IP theft linked to Chinese telecom firms, hence raising concerns about unfair competitive advantages in the global market (Congressional Research Service, 2020).

Moreover, China's telecommunications expansion has been heavily supported by state subsidies, favourable domestic policies, and export incentives (U.S.-China Economic and Security Review Commission, 2008). These measures have facilitated the acquisition of contracts in regions like Africa, Latin America, and Southeast Asia, often with financing terms that place recipient nations in long-term dependency. The development of digital infrastructure, such as smart cities and IoT networks, has been a key focus of these initiatives. With Chinese companies projected to influence up to 45% of the global 5G infrastructure, concerns persist regarding data security, technological dominance, and the broader implications of China's state-driven model of technological expansion (Endersen, 2021).

Artificial Intelligence (AI)

China's artificial intelligence (AI) sector has seen substantial growth, driven by significant investments from both government and private enterprises. In 2024, annual investments in AI exceeded US$50 billion, reflecting China's ambition to become a global leader in this field (Greven, 2024). This expansion is marked by a blend of state-sponsored research and private sector initiatives. Major technology companies, including Baidu, Tencent, and Alibaba, have developed AI platforms that are used in various applications such as facial recognition and autonomous vehicles. The integration of AI into sectors like public security, healthcare, and finance has led to the rapid accumulation of data, which is essential for advancing AI technologies.

However, China's AI development has been accompanied by allegations of intellectual property (IP) theft and other questionable practices. For instance, in 2024, former Google engineer Linwei Ding was charged with stealing trade secrets to establish a Chinese AI firm (Department of Justice, 2024). Additionally, Chinese startup viz. DeepSeek, has been accused of using a method known as "distillation" to replicate OpenAI's technology, thus raising ethical and legal concerns (Beres, 2025).

These incidents highlight the complex challenges associated with China's rapid AI advancement, including concerns over IP protection and the methods employed to achieve technological progress.

Semiconductors

Semiconductors are a critical component of modern technology, and China's efforts to build a self-sufficient semiconductor industry have been a major focus of its techno-industrial strategy. Historically reliant on imports for advanced semiconductor components, China has launched multiple initiatives aimed at reducing this dependency. The establishment of the China Integrated Circuit Industry Investment Fund, which has mobilised over US$ 47.5 billion since its inception, is a testament to Beijing's determination to foster a robust domestic semiconductor ecosystem (Reuters, 2024). Although the semiconductor industry remains one of the most challenging sectors due to its capital-intensive nature and rapid technological cycles, Chinese firms have made notable progress in areas such as memory chips and fabrication equipment.

Despite significant advancements, the semiconductor sector still faces hurdles, including technological dependencies on western equipments and expertise. Recent geopolitical tensions and export controls imposed by the United States have further complicated China's efforts to secure advanced semiconductor technology. Nonetheless, ongoing investments in research, talent development, and international collaborations indicate that China is methodically working towards mitigating these challenges. The gradual closing of the technology gap in semiconductors is critical not only for sustaining China's broader techno-industrial ambitions but also for ensuring national security and economic resilience.

Green Technologies

China's commitment to green technologies has positioned it as a global leader in renewable energy and environmental innovation. Over the past decade, the

country has invested heavily in solar, wind, and electric vehicle (EV) technologies, driven by both environmental concerns and strategic objective of reducing reliance on fossil fuels. China currently produces more than 70% of the world's solar panels and is home to the largest wind turbine manufacturing base globally (IEA, 2024). Moreover, domestic companies such as BYD and CATL have emerged as key players in the EV market, further contributing to China's ambitious plans to reduce carbon emissions and promote sustainable development.

Government policies that incentivize renewable energy investments, such as subsidies, tax breaks, and dedicated research programs, have accelerated the deployment of green technologies. In addition, integration of digital technologies, such as smart grids and energy storage systems into renewable energy infrastructure has enhanced efficiency and reliability. The dual goals of environmental sustainability and economic growth have converged in this sector, enabling China to export its green technologies and standards to other regions. This not only strengthens China's position in the global energy market but also reinforces its broader narrative of technological leadership and innovation.

Space Exploration

China's ambitions in space exploration have evolved from early satellite launches to a comprehensive program that includes lunar missions, space station construction, and plans for Mars exploration. The Chang'e lunar program, which achieved a historic soft landing on the far side of the Moon in 2019, and the construction of the Tiangong Space Station, are clear indicators of China's growing capabilities in space technology (Mukunth, 2024). These achievements are supported by substantial investments in aerospace research and a commitment to developing indigenous technologies. By advancing its space exploration program, China is not only showcasing its technological prowess but also establishing a platform for future scientific research, commercial satellite services, and potential strategic military applications.

Space exploration also serves as an important soft power instrument. By engaging in international collaborations and sharing its technological advancements with global partners, China is working to reshape perceptions and forge alliances in an arena traditionally dominated by Western powers. The emphasis on self-reliance and technological innovation in space-related endeavours further underscores the broader objectives of the 'Made in China 2025' initiative and the 'Dual Circulation Strategy', reinforcing the interconnected nature of China's techno-industrial policies.

Geopolitical Ramifications: US-China Rivalry and Global Supply Chains

The rapid rise of China as a techno-industrial powerhouse has not only reconfigured domestic economic policies but also significantly altered the global geopolitical landscape. Central to this reconfiguration is the intensification of the US-China tech rivalry, which now spans multiple sectors including telecommunications, AI, and semiconductors. As China continues to assert its technological capabilities, the United States and its allies have responded with measures such as export controls, restrictions on technology transfers, and calls for the diversification of supply chains away from Chinese dependency.

Technological competition between the two powers is further complicated by the strategic use of standards and regulatory frameworks. Through initiatives like 'China Standards 2035', Beijing aims to establish technical norms that align with its own interests, thereby challenging the long-established dominance of western standards. This standard-setting battle extends beyond technology into areas of cybersecurity, data privacy, and intellectual property rights. As global supply chains become increasingly integrated and technologically driven, the stakes of this rivalry continue to escalate.

Furthermore, the geopolitical ramifications extend to the emergence of new techno-strategic alliances. Countries in regions such as Southeast Asia, Africa, and Latin America are increasingly drawn into China's orbit through infrastructure projects, investment in digital networks, and partnerships in green technology initiatives (McBride, 2023). These alliances are often based on mutually beneficial economic terms and shared interests in accessing emerging markets and cutting-edge technologies. However, they also serve as a counterbalance to the influence of the US-led international order, creating a multipolar environment in which technology and industrial policy are key instruments of geopolitical power.

The reshaping of global supply chains is another critical outcome of China's technological rise. The disruptions witnessed during the COVID-19 pandemic highlighted the vulnerabilities inherent in heavily centralised and interdependent supply networks. In response, nations around the world are reassessing their supply chain dependencies, with many seeking to diversify and regionalise production networks. China's expansive investments in domestic production capacities and its strategic emphasis on self-reliance, epitomised by the Dual Circulation Strategy have further accelerated this realignment. The resulting geopolitical competition is not solely an economic contest but

also a struggle for influence over the rules that govern international trade and technological innovation.

Internal Vulnerabilities and Challenges

Despite its achievements, China's techno-industrial rise is accompanied by a range of internal vulnerabilities and challenges that could potentially impede its progress. One significant challenge is the demographic pressure resulting from an aging population. Although China has experienced rapid economic growth, its workforce is gradually shrinking, thus raising concerns about sustaining innovation-driven growth (Cheng, 2024). The potential shortage of skilled labour in advanced technology sectors poses risks to the continuity of R&D, especially as competition intensifies globally.

Another vulnerability is China's persistent technological dependency in key areas such as advanced semiconductor manufacturing equipment and high-precision components (Grimes, 2023). While substantial investments have been made to develop indigenous capabilities, the high-tech nature of these industries means that catching up with decades of expertise and innovation remains a long-term challenge. The impact of external geopolitical pressures, including export controls and sanctions from Western countries, further exacerbates these vulnerabilities by limiting access to essential foreign technologies and markets.

In addition, China's aggressive pursuit of international standards and global supply chain integration has elicited significant pushback from established economic powers. The measures taken by the United States and its allies to contain China's technological expansion, including blacklisting certain Chinese tech firms and imposing investment restrictions, have created an environment of uncertainty for domestic companies (Bateman, 2022). These external pressures not only disrupt supply chains but also compel Chinese firms to allocate considerable resources for navigating a complex international regulatory landscape, potentially diverting focus from innovation.

Moreover, environmental and sustainability concerns present additional challenges. While China has positioned itself as a leader in green technologies, rapid industrial expansion in other sectors has resulted in environmental degradation and resource depletion. Balancing industrial growth with sustainable practices remains a critical policy challenge, particularly as global expectations for environmental responsibility continue to rise. These internal and external challenges underscore the complexity of China's techno-industrial model and highlight the necessity for adaptive and resilient policy frameworks.

Conclusion

China's rapid technological and industrial ascent stands as a defining development of the 21st century, with profound implications for global economic governance and international security. The strategic frameworks viz., 'Made in China 2025', the 'Dual Circulation Strategy', and 'China Standards 2035' serve both as enablers of domestic innovation and instruments of global influence. They have accelerated China's industrial upgrading and fostered the development of critical technological sectors. Simultaneously, these advancements have sparked a competitive response from established powers, particularly in the realm of US-China technological rivalry, which is reshaping global supply chains and strategic alliances.

However, the ascendancy is accompanied by significant internal vulnerabilities such as demographic pressures, technological dependencies in advanced sectors, and the challenges posed by external geopolitical pushback. These vulnerabilities underscore the complex balancing act that Beijing must perform as it navigates between rapid technological advancement and the demands of global integration. The dual nature of China's rise as both an opportunity and a challenge necessitates adaptive strategies from international actors to manage the evolving dynamics of the global order.

In conclusion, while China's techno-industrial transformation has redefined global economic and security paradigms, it also invites a rethinking of international cooperation and competition. The future balance of power will likely be determined by the ability of global actors to develop resilient, cooperative frameworks that accommodate China's advancements while safeguarding against strategic dependencies and vulnerabilities. As the world adapts to these new dynamics, fostering dialogue and collaborative innovation will be essential for ensuring a stable and prosperous international order.

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Deterrence Through Multi-Domain Operations (MDO) in the Indian Context: Lessons From US & Chinese Approaches to MDO

MANISH BHAVE

Abstract

A cross-domain deterrence strategy for the Indian Armed Forces, as part of Multi-Domain Operations (MDO), would require a nuanced approach that integrates capabilities across various domains to deter potential adversaries. There are several key considerations and approaches to achieve this based on lessons learnt from the Chinese and US concepts. By implementing a suitable strategy, India can enhance its deterrence posture against both Pakistan and China—leveraging the full potential of MDO to safeguard its national interests. The emphasis should be on a flexible, adaptable, and integrated approach that combines military and non-military instruments of power.

Introduction

The evolving nature of warfare has shifted the paradigm from traditional physical battlegrounds to a multi-dimensional operational theatre. MDO have emerged as a cornerstone in modern military strategy, integrating actions across land, air, sea, space, cyber, and information domains. This transformation is driven by rapid technological advancements and the increasing complexity of geopolitical conflicts.

For India, the adoption of MDO is not only timely but essential, given the simultaneous challenges posed by its adversaries. Pakistan continues to sponsor cross-border terrorism while relying on hybrid warfare tactics, whereas China employs advanced technologies, asymmetric strategies, and aggressive posturing along the Line of Actual Control (LAC) and in the Indo-Pacific.[1] India must leverage MDO to create a robust deterrence framework that counters these multifaceted threats while safeguarding its sovereignty and strategic interests.[2]

This article explores the approaches of the United States and China to MDO, identifies lessons India can learn, and provides a detailed roadmap for implementing MDO as a core strategy for deterrence.

Preview

The paper will be covered under the following sub-heads:

- US and Chinese Approaches to MDO.
- Lessons Learnt.
- Recommended MDO deterrence strategy for the Indian Armed Forces and its Implementation.

US and Chinese Approaches to MDO

Both the United States and China are developing concepts for Multi Domain Operations (MDO), but their approaches differ in significant ways—reflecting their unique military cultures, histories, and strategic priorities.

US[3]

- **Motivation.** The US interest in MDO has grown out of a need to counter the Anti-access/Area Denial (A2/AD) capabilities of potential adversaries like China and Russia. The US military has recognised that its competitive edge has eroded across all domains and that it needs to integrate operations across air, land, sea, space, and cyber domains to regain its advantage.

- **Focus.** The US approach initially focused on integrating operations within each service. For example, the Army focused on using space, cyber, and electronic warfare to support the land operations, while the Air Force focused on integrating air, space, and cyberspace capabilities. However, the focus has shifted towards a more integrated joint approach, now referred to as Joint All-Domain Operations (JADO)[4] or Joint All-Domain Command and Control (JADC2), with the goal of seamless integration across all domains.
- **Command and Control.** The US military has been exploring how to adapt its command and control (C2) structures to enable MDO. This includes identifying potential impediments to MDOs in the current C2 construct and proposing alternative approaches. The goal is to develop C2 structures that allows faster decision-making, sufficient expertise & situational awareness across domains, and a mindset that emphasises domain-agnostic planning.
- **Technological Emphasis.**[5] The US approach has a strong emphasis on technology, especially to enable JADC2. This includes developing new networks and systems to share data across domains.

China

- **Motivation**. China's approach to MDO is driven by its desire to avoid direct military conflict while achieving its strategic objectives. This includes shaping the strategic environment in its favour, gaining dominance below the threshold of armed conflict, and ensuring it never needs to get to a point of full-scale conflict.
- **Focus.** China's MDO concept involves a "system of systems" approach[6]. It views modern military forces as interconnected networks rather than isolated units. China seeks to disrupt and ultimately prevail over an adversary's "system of systems". China also places significant emphasis on the information domain and considers it critical for shaping the strategic environment, as well as gaining an advantage against a militarily superior adversary.
- **"Informatized Warfare"**[7]**.** The People's Liberation Army (PLA) focuses on military operations under informatised conditions, which involves the acquisition, transmission, processing, and use of information to conduct joint military operations across domains. China is also evolving its concept of "informatized warfare" into "intelligentized warfare", using AI, data analytics, and cloud computing.

- **Asymmetric Approach.** China's approach seeks to exploit the vulnerabilities in its opponent's systems. China's approach is designed to undermine the advantages of a technologically superior adversary by targeting their vulnerabilities in information and communication systems.
- **Integration of Non-Military Means.** China integrates military and non-military means (economic, political, and informational) to shape the strategic environment.

This reflects a broader concept of multi-domain, which includes using all levers of power to position itself for advantage.

Similarities between US and Chinese Approach to MDO

- Both US and China recognises the importance of integrating operations across multiple domains.
- Both nations see the value of new technologies, especially in areas of C2, information gathering, and data sharing, to enable more effective MDO.
- Both emphasises the importance of the information domain in modern warfare.
- Both countries are investing in modernising their militaries to achieve a greater degree of integration between services and across domains.

Differences between the US and Chinese Approach to MDO

- **Operational Approach.** The US is focusing on "seamless integration across" all domains through a more collaborative, joint approach. While China is focusing on a "system of systems" approach to exploit vulnerabilities and gain information superiority over its opponent.
- **Strategic Goal.** The US seeks to regain a competitive edge and ensure it can project power against a range of threats, whereas China seeks to shape the environment to avoid direct conflict and gain advantage, while preparing for the possibility of future high-intensity warfighting.
- **Technology.** While both are technologically focused, the US emphasis is on enabling seamless data sharing, whereas China is focused on how information can be used to influence the cognitive functions of the adversary and degrade their systems of systems.

- **Historical Context.** The US approach is informed by a history of projecting power, whereas China's approach is shaped by its history of political warfare and a more defensive posture, while seeking to avoid direct conflict through asymmetric means.
- **Explicit Doctrine.** The US has more explicitly defined its concepts, like MDO and JADC2, whereas China's doctrine does not include explicit references to MDO, but rather concepts like "informatized warfare" and "systems confrontation".
- **Geographic Context.** The US approach is driven by the need to address challenges in multiple theatres, whereas China's MDO concept is more tailored to its regional strategic priorities and the specific context of the Indo-Pacific.
- **Operational Experience.** The US has extensive combat experience in modern warfare which has informed its approach, whereas China has less recent operational experience and is drawing on lessons from other people's wars.

In summary, while both the US and China are pursuing multi-domain integration, their approaches are shaped by their distinct strategic goals, operational needs, and historical experiences. The US aims for "seamless integration across all domains", while China focuses on "disrupting the opponent's systems". Both approaches, however, reflects the complex nature of modern warfare and the increasing importance of integrating operations across all domains.

Lessons Learnt for the Indian Armed Forces

While developing its own unique approach to MDO, the Indian Armed Forces can draw lessons from the experiences of other nations, in developing and operationalising similar concepts. However, the Armed Forces must take into consideration India's unique geostrategic location, force structure, military capabilities and finite resources. India must also develop its own approach by integrating conventional military capabilities with unconventional, information, and economic means.

The US has encountered several challenges in implementing MDO:

- **Command and Control (C2)**[8]**.** The C2 structure was not designed for continuous, widespread multidomain integration. There were concerns that the C2 structure was too slow and required too many approvals.
- **Interoperability**[9]**.** Integrating different systems across services and domains is a significant challenge. Issues include incompatible communication systems, different levels of modernisation, and the need to manually transfer information between systems.
- **Legal and Regulatory Framework.** The legal and regulatory framework is complex and can be an impediment to MDO implementation. There are numerous authorities relating to MDO assets, functions, and processes that had to be navigated.
- **Lack of a Joint Concept.** MDO was initially an Army concept, not a joint one, and there was a lack of unified concept of what MDO means. This had led to different interpretations and approaches across different services.
- **Vulnerable Communication Systems.** MDO increases dependence on vulnerable communication systems, making it susceptible to disruptions by adversaries.

While China is investing heavily in MDO, in addition to the above-mentioned challenges (less legal and regulatory frameworks), it also faces these challenges:

- **Lack of Combat Experience.** China has not engaged in large-scale combat since the Sino-Vietnamese war of 1979, making it reliant on "lessons from other people's wars".
- **Technological Limitations**[10]**.** Some of China's aspirations are not yet fully translated into capability and are not fully reconciled with current capabilities.

Identifying Drivers for India's MDO Concept. India needs to identify its drivers for MDO and leapfrog by circumventing problems and challenges faced by US and China. It needs to study how adversaries like China and Pakistan are adapting to the changing character of war and incorporate lessons learned into own MDO strategy. The Indian Armed Forces need to use their weaknesses to gain asymmetric advantage. India should adopt a hybrid approach that integrates elements of both the US and Chinese MDO concepts, while tailoring it to its unique needs and circumstances.

- **From the US.** Incorporate the US emphasis on creating multiple dilemmas for adversaries by integrating operations across all domains and achieving decision superiority. Adopt the US' focus on Joint All-Domain Operations to enhance data collection, analysis, and distribution. It should also learn how US has achieved integration across all domains. India must prioritize seamless integration of its armed forces. The US JADO model provides valuable insights into achieving interoperability.
- **From China.** Incorporate the Chinese focus on "systems confrontation"—to target the adversary's critical infrastructure and command and control systems. The Chinese focus on achieving Information and Cognitive Dominance. Drawing from China's emphasis on information warfare, India must enhance its cyber capabilities and strategic communication to counter adversary propaganda. It must emphasise the role of information in shaping the strategic environment and gaining a decisive advantage in the initial stages of conflict.

Addressing Specific Challenges. Both US and China have encountered a steep learning curve and similar challenges. Some of the specific challenges that the Indian Armed Forces need to address upfront are as under:

- **Interoperability.** The Indian Armed Forces must address the issue of disparate equipment and associated problems of interoperability. Commonality of communication equipment is essential for seamless exchange of data for successful operations.
- **Technology.** Assured connectivity and availability of strong networks are central to MDO. Next-generation command, control, communications, computers, intelligence, surveillance, and reconnaissance capabilities are at the core of this concept, but currently at an immature stage.
- **Cyber Security**[11]**.** Given the increasing reliance on technology and interconnected systems, the Indian Armed Forces must focus on robust cybersecurity measures to protect critical infrastructure and communication networks.

Pre-requisites for MDO

- **Cross Domain Synergy**[12]**.** Integration and convergence across all domains is of utmost importance. MDO for India should aim to achieve cross-domain synergy and exploit the interconnectedness of systems, identifying and targeting critical nodes. This will give the armed forces the ability to

operate effectively in any domains, and yet enhance the effectiveness of other domains thereby creating a cumulative effect that is greater than the sum of its parts. This would necessitate a single service having cross-domain capabilities, as well as joint forces that facilitate cross-domain synergy so as to integrate information from various sources including sensors, databases, intelligence, reconnaissance, and surveillance to enable a comprehensive and rapid response.

- **Adaptability and Flexibility.** We need to ensure that the MDO concept is adaptable and flexible to the changing character of warfare, emphasising the need for constant review and revision of doctrines and strategies. Patience is important, since there is no 'one-size-fits-all' solution and experimentation & adaptation would be mandatory. The United States took six years to formulate the MDO concept, indicating that India will also need time to go through a similar process.
- **Human Resources.** Implementation of MDO concepts requires significant resources, training, and a change in mindset. The Armed Forces need to focus on building a new kind of mindset and HR skills that thrive in ambiguity and chaos. We would therefore need to transform Professional Military Education (PME) and talent management models. Training should focus on achieving a fine balance between essential soldiering traits and technological aptitude/skills. A key challenge is that the 'technology cycle' is faster than the 'leadership-adaption cycle' and the 'doctrine change cycle' is even slower than the 'leadership-adaption cycle'. This means that there is a built-in reluctance to accept the role and primacy of machine learning especially where the commander's decisions take precedence.
- **Military-Civil Fusion.** Encourage military-civil fusion, inter-agency cross-pollination, strategic partnerships, and a whole-of-nation approach.

Recommended MDO Deterrence Strategy for Indian Armed Forces and its Implementation

Recommended MDO Deterrence Strategy

- **Motivation.** India faces unique security challenges, including a volatile neighbourhood with adversarial relations with both China and Pakistan. India must also balance its relationship with China and its participation in the QUAD. The threat of terrorism sponsored by Pakistan and unsettled borders with China are also major concerns. India's military objectives do

not require large-scale offensive operations. A strategy of deterrence is more suitable, aiming to deter Pakistan from terrorist attacks and China from asserting border claims through military force.

- **Focus.** A deterrence strategy, incorporating elements of graduated escalation, escalation control, etc., needs to be developed. This requires defining clear objectives at each stage of escalation and having the capability to control the escalation process to avoid unintended outcomes. This needs to be done by using newer domains such as cyber and information. Development of indigenous capabilities in line with the 'Atmanirbhar Bharat' initiative in all domains, particularly in space, cyber, and electronic warfare needs to be prioritised. The Armed Forces need to invest in technologies that enable rapid data sharing and integration across systems.
- **Deterrence by Denial and Punishment**[13]**.** India's strategy should encompass both 'deterrence by denial' and 'deterrence by punishment'.
  - **Deterrence by denial** aims to prevent an adversary from achieving its objectives by making it clear that any attack would be unsuccessful. This approach requires robust defensive capabilities across all domains and a posture that makes aggression too costly. This strategy should essentially be adopted against China.
  - **Deterrence by punishment** involves creating a credible threat of retaliation in response to aggression, inflicting unacceptable damage on the adversary. India needs to develop this capability to respond effectively and inflict heavy loss across multiple domains. This strategy will be adopted against Pakistan.
- **Technological Emphasis.** It would be imperative to harness disruptive technologies to create a combat cloud with integrated networks to aid decision-making. The nation would also need to invest in AI, secure data links and deep neural networks for decision support. The Armed Forces will need to develop a C2 system that can effectively manage multiple domains. Resilience in Armed Forces' ability to sense, communicate, attack and supply, would be essential. Undermining the adversary's command systems through cyber and other means would be equally important.
- **Integration of Kinetic and Non-Kinetic Means.** The Indian Armed Forces must integrate both kinetic and non-kinetic (cyber, information, etc.) means across all domains. This includes the development of capabilities in cyber and space, which are vital for achieving standoff deterrence. It also involves

leveraging the electromagnetic spectrum and information warfare to shape the strategic environment.

Implementing MDO Deterrence Strategy

- **Structures and Components.** To effectively implement MDO, the Indian Armed Forces need to establish integrated structures and procedures. These must be capable of managing military operations across all domains, including cyber, space, intelligence, and information operations. The key components are:
  - **Integrated, Combined Joint Force Structures**[14]**.** The traditional approach of separate service operations is no longer sufficient. The MDO concept requires each military service to fully embrace joint integration and collaboration. True effectiveness in MDO can only be realised once jointness is fully achieved. These forces should also consist of Cyber Warriors, Hacktivists, and Social Media Monitors.
  - **Tri-Service Command and Control (C2) Architecture**[15]**.** There is a need for comprehensive organisations and procedures that can manage military operations across various domains and dimensions including cyber, space, intelligence, and information operations. This includes integrating existing Decision Support Centres into a tri-service framework capable of supporting Multi-Domain Task Forces (MDTF). The architecture should include advanced tools and interfaces for processing data to generate actionable intelligence.
  - **Network-Centric Warfare Environment.** In a network-centric warfare environment, improved situational awareness is essential. A common Identification Friend or Foe (IFF) system between the three services will prevent fratricide and enable early detection of enemy actions.
  - **Enhanced Theatre Commands.** There is a need to inculcate cyber and space capabilities as part of the Theatre Commands. Disaggregation of resources, at least starting at the level of Theatre Command HQ, will be necessary to incorporate these capabilities into the Theatre Commanders' military plans.
  - **Enhanced Intelligence, Surveillance, and Reconnaissance (ISR).** Enhanced ISR capabilities will be essential for MDO. This includes integration of collection, analysis, and dissemination of information using advanced technologies.

- Key Steps for Implementation.
  - **Defining Domains and Establishing a Framework.** A fundamental step is to define clearly the domains relevant to India's strategic context. This framework should facilitate seamless information sharing and coordinated action across all organisational levels.
  - **Develop a Comprehensive MDO Doctrine.** The Integrated Defence Staff (IDS) needs to deliver an MDO Doctrine that will serve as the key guidance document for the Ministry of Defence (MoD) and the Armed Forces. This document should:
    - Offer guidance to the armed forces on aligning their capabilities with other instruments of national power.
    - Explain the operational and strategic approaches, outlining how they should be executed and how integration can be achieved.
    - Articulate the level of ambition for implementing MDO.
    - Provide an interpretation of MDO applicable to the Indian Armed Forces.
    - Be cognisant of India's geostrategic context, present and future force structure, military capabilities and finite resources.
    - The non-confidential portion of the document should be for adversaries to take note of, as perceptions matter for deterrence and strategic signalling.
  - **Establish a Technology Roadmap.** A roadmap for acquiring technologies, core to MDO, needs to be created. This roadmap should link to different force structures and focus on enhancing operational effectiveness through the deployment of autonomous systems, AI-enabled decision tools, and advanced data analytics. It should focus on creating a technologically superior force capable of maintaining dominance across all domains of warfare.
  - **Develop a Common Operational Picture.** A common operating picture is crucial for effective MDO. This means integrating data from all domains to ensure that commanders and staff have the necessary situational awareness.
  - **Conduct Joint Exercises.** It is essential to conduct joint training exercises that involve complex MDO scenarios. The joint force has not had experience in complex, high-intensity operational environments against a near-peer threat. This means that theory and implementation often diverge.

Conclusion

Implementing MDO is not optional but a necessary reality for the Indian Armed Forces. It requires a fundamental shift in thinking, integrating new technologies, and fostering collaboration across all domains and sectors. A phased and iterative & whole of the nation approach, guided by a well-defined MDO doctrine, will be crucial for success. By addressing the challenges and leveraging its unique strengths, India can develop a robust MDO capability that ensures its security and enhances its strategic position in the evolving global landscape.

Both the United States and China have been actively developing and implementing MDO concepts, albeit with different drivers and approaches. They have also encountered several problems in their MDO implementation journey. Given the experiences of US and China, the Indian Armed Forces should learn and leapfrog to a suitable and "Atmanirbhar" MDO strategy. This will require a fundamental shift in mindset, a willingness to embrace new technologies, and a commitment to achieving true integration across all domains. By focusing on these steps, the Indian Armed Forces can develop the capabilities needed to effectively operate in a multi-domain environment. The path to MDO will require constant evaluation, experimentation and innovation.

Brigadier **Manish Anand Bhave** is a graduate of the National Defence Academy and had tenanted various staff, Command and Instructional appointments. The Author is also a Ted Talk speaker. Views expressed are personal.

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SECTION II

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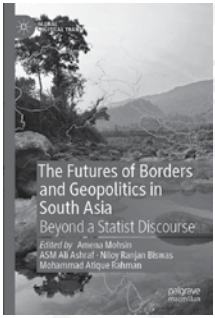


The Futures of Borders and Geopolitics in South Asia: Beyond a Statist Discourse

Edited by: Amena Mohsin, ASM Ali Ashraf, Niloy Ranjan Biswas, Mohammad Atique Rahman
Palgrave Macmillan Singapore. 2024, November;
INR 12,243/-, Hardback
ISBN 978-981-97-6594-2

Review by Nomita Chandola

Introduction

The engagements witnessed in South Asia stems from the impact of colonialism along with political and cultural confrontations, which inevitably result in conflicts. This book takes a deep look into how the borders operate beyond their simplistic portrayal as demarcations of line. It analyses how India's security, economic interdependence, and historical relations with its neighbours shape its policies toward them, also focusing on border politics and the life of border communities. Such practices can be seen as attempts to create knowledge about a region which is embroiled in geopolitics, migration, and international trade relations. As India navigates its connections with neighbouring countries like Pakistan, Bangladesh, Nepal, and China, it is crucial to understand the broader geopolitical and economic context.

Theme 1: Statist Discourse and Beyond: Post-Coloniality, Border Communities and Critical Geopolitics

This theme delves into the intricate geopolitical landscape of South Asia, examining different theories of International Relations while shedding light on both traditional and non-traditional security issues. This study examines how the Realist theoretical framework impacts our knowledge, emphasising power dynamics, disputes, and competitive relationships while considering other perspectives. The chapter discusses knowledge generation, themes, and methodological approaches, stressing a state-centric bias and the growth of identity, collaboration, and gendered security studies. It encourages a cross-disciplinary understanding of South Asian geopolitics.

To address the complexity of today's international affairs, the Anthropocene era requires going beyond the traditional concept of border and security and talk about human experiences of security. Due to reasons like conflicts, displacement and ecological concerns, border communities face "ontological insecurity" around identity and security. Climate change and ecological degradation in the Anthropocene era could harm border communities' livelihoods and increase their vulnerabilities. Changing flows of Ravi and Sutlej river around Punjab border increases border porosity, which may generate border population conflict. The psychological impact on border communities due to continuous surveillance, lack of services and instability is also highlighted.

The theme further examines the localised economic initiatives like Border haats at the India-Bangladesh border, focussing on the interaction between national security and cross-border trade. This analysis looks into the importance of implementing policy reforms to improve trade balance, regulation, and governance. Field visits reveal various operational challenges, highlight inequities in trade that benefit one party, and underscore the significance of informal markets. It views border haats as tools for fostering regional economic connections instead of complete integration.

This theme also highlights the various dynamics at play along India's borders, emphasising the ongoing interactions that occur across these boundaries, even with governmental interventions. This discussion explores the historical as well as contemporary sides of boundary building, unofficial markets, cultural ties, and safety concerns in South Asia. While areas have restrictions, communities preserve their relationships in the social and economic domains. Emphasising

the need of economic agreements like South Asian Free Trade Area (SAFTA) and Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), informal contacts, and cultural linkages in shaping interactions and efforts for regional unity.

Theme 2: Power Politics in Historical and Contemporary Perspectives—Role of Regional and Extra-Regional Actors

This theme opens with the examination of behavioural arms control dynamics in the Exclusive Economic Zones (EEZs) of India and Pakistan and delves into military cooperation and remaining unaddressed challenges. It discusses the issue of arms control as a conflict prevention strategy, looks at the legal framework of exclusive economic zones according to international law, and investigates the diverse global perspectives on military operations in those zones. This section examines the military exercise agreements between India and Pakistan, focussing on ISR operations and emphasising the potential for escalation associated with agreements regarding submarine activities. The chapter emphasises that a codified code of conduct is necessary to ensure peace and stability while preventing the militarisation of exclusive economic zones.

The theme continues with a case study on Afghanistan, which has struggled with nationhood, governance, and external pressures. National identity was lacking owing to ethnic diversity. Focus on one national identity has marginalised other ethnic groups, generating social divides and conflict. Afghanistan is a major actor in worldwide power dynamics due to its strategic location. Due to US engagement after 9/11, the country had unstable governance. Recent transfer of leadership has reinstated governance norms that restricted inclusion and favoured a particular ethnic group. Numerous regional governments have collaborated with Afghanistan on matters of security and economic development. Engagement with regional commerce networks reveal challenges such as cross-border crime. The nation confronts intricate international, economic, and security challenges at a pivotal juncture.

Further, a case study looks into Nepal's unique position in the ongoing competition between India and China. Rivalry between the two countries is driving growth in infrastructure, investments, and economic opportunities in Nepal. Nepal benefits from meaningful support and connections. This rivalry enhances Nepal's strategic standing by fostering connections and reducing its reliance on one neighbour. However, the country faces challenges that make it hard to achieve self-sufficiency. The economic boundaries of one nation,

combined with the active participation of another in the political affairs of a third, creates a complex web in international relations. Nepal faces the challenge of navigating political instability and external financial pressures while striving to maintain its independence in decision-making.

Theme 3: Emerging Issues: Ethnocracy, Energy Trade, and Geoeconomics

This theme examines the South Asian region, which faces substantial challenges stemming from the interaction of governance, energy commerce, and economic strategies. The circumstances in Sri Lanka have resulted in heightened political instability, attributed to the marginalisation of specific groups, which has exacerbated corruption and strained relations with neighbouring countries. The dynamics of the region are increasingly influenced by the strategic interests of major powers, as demonstrated by the financial difficulties encountered by one nation and the shift of another from traditional conflicts to an emphasis on economic objectives.

The persistent challenges in energy trade underscore the obstacles encountered by South Asia in attaining security and sustainability. Despite advancements in energy access, reliance on specific energy sources and inadequate regional collaboration present obstacles to achieving enduring stability. Energy collaboration across borders, especially within the framework of BIMSTEC, is still in its early stages of development.

Pakistan and other nations face tremendous obstacles as they prioritise economic integration. Their decisions are still influenced by territorial conflicts and security concerns, especially with bordering countries. Economic cooperation gets complicated by trade policies and international alliances. It is necessary to establish regional organisations and encourage renewable energy initiatives to promote regional stability. However, deep-rooted national interests and global rivalries impede progress.

Strengths

Emphasis on practical policy recommendations: This book discusses South Asian border and geopolitical management policies. It recognises South Asian Association for Regional Cooperation's (SAARC) relevance for regional collaboration in traditionally divided and conflicted South Asia. It addresses how SAARC is failing to encourage cooperation owing to persistent disputes, especially between India and Pakistan. Conflicts and a poor institutional

framework make SAARC's agreements and programs hard to implement. The Book is futuristic and sees SAARC's resurrection. Bilateral energy trade agreements can promote regional collaboration in South Asia's energy industry. The Book mentions how Bangladesh supports energy cooperation within SAARC and BIMSTEC. It also supports the SAARC Framework Agreement for Energy Cooperation (2014). Bangladesh aims to meet its growing electricity demand with 40,000 MW by 2030 and 60,000 MW by 2041 and to achieve this, it focuses on diversifying its energy source. Therefore, Bangladesh has the potential to establish a regional energy market with bilateral trade and broader regional frameworks.

Inclusion of various theoretical approaches: As mentioned in the book, most of the discussions on great power politics are from realist perspective. Global affairs discussions on strategic rivalries, military confrontation, refugee crisis, national security are all dominated from a realist point of view. However, other theories like Constructivist and Feminist theories are gaining relevance and provide new perspective in changing times. For instance, a feminist viewpoint might make geopolitics more comprehensive, the author claims. South Asian women's issues are significant but are often ignored. Muslim women in India and the Western portrayal of Afghan women as passive victims to justify intervention, are few examples of women's marginalisation in security narratives. Moreover, from borderland studies perspective, security checkpoints in Pakistan negatively affects women's safety. These checkpoints often lead to harassment and violence against women. Hence, alternative perspectives are significant in security studies and there is a need to go beyond traditional explanations of power politics.

Data-driven analysis: The chapters are divided into various case studies covering a range of countries in South Asia. The analysis is based on actual data, thus enhancing the credibility of analysis and recommendations made. For instance, the case study on India-Bangladesh border haats shows the complexities of South Asian borders. The author compares South Asian economic interactions with European integration models and concluded that South Asian economic trade are largely based on informal networks. Some important on-ground challenges were observed during field visits like securitisation of the border hampering with economic integration and logistical issues in official haats. The result of these field visits and overall case study led to policy recommendations by authors which include better monitoring, balancing trade flow and integration of unofficial haats.

These recommendations provide an outline for future cross-border trade, reinforcing the notion that adjustments in policy are essential alongside security measures.

Weaknesses and Points to Improve

Limited discussion on Climate Change and Security Nexus: The South Asian Region faces significant challenges including rising sea levels, extreme weather events, water scarcity, and displacement caused by environmental changes. Some nations face significant challenges due to flooding, while others faces challenges of droughts and extreme heat, which affect their agricultural productivity and food availability. Changes in climate are influencing population movements and contributing to rising tensions between nations. The Book addresses important themes but could have placed greater emphasis on the connections between climate and security, particularly regarding regional collaboration, water disputes, and strategies for adaptation. Incorporating environmental considerations into geopolitical discussions would enhance the understanding of future border and security challenges in South Asia.

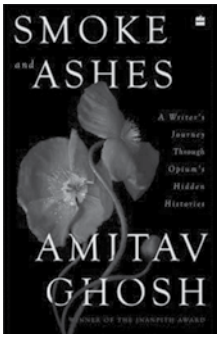
Limited coverage of smaller South Asian States: Focus on particular nations prevents an in-depth knowledge of the diverse political forces within the larger region. Smaller countries make major contributions to economic integration, climatic resilience, and regional security. Due to regional conflicts, some countries' strategic placement between large powers and their cooperation in energy resources are often overlooked. One country's economic difficulties and another's security concerns highlight broader regional trends. A wider variety of viewpoints would improve the book's analysis of South Asia's geopolitical environment.

Conclusion

The Book provides a thorough analysis of South Asian borders and geopolitics from strategic, economic and cultural perspective. The Book goes beyond traditional security concerns and underscores the importance of geoeconomics and connectivity. By discussing various theoretical approaches, the Book highlights the complexity of South Asian borders and encourages settling of border tensions by promoting regional cooperation and embracing inclusive policies. The Book concludes by highlighting as to how, despite of political tensions, the relationship between South Asian nations is influenced by economic interdependence and cultural ties, hence creating opportunities

for collaboration in a region that often feels divided. This work is important for scholars, policymakers, and anyone looking to gain a better understanding of the changing geopolitical landscape in South Asia.

Nomita Chandola is a Research Assistant at the Centre for Land Warfare Studies (CLAWS), New Delhi. Views expressed are personal.



Smoke and Ashes

Amitav Ghosh
HarperCollins, 2024, June
Paperback, Rs 324/-, pp. 416.
ISBN-13 978-9362136220

Review by Tanya Nagar

An Inquiry into Colonial Narco-trade and Its Blossoming Legacies

Amitav Ghosh's *Smoke and Ashes: A Writer's Journey Through Opium's Hidden Histories* offers a thoroughly researched and compelling examination of the opium trade as a central mechanism of colonial economic expansion. Emerging from his past research on the lives of soldiers and sailors governed by the political economy of the Indian Ocean, *Smoke and Ashes* is a curious dive into the flourishing of opium poppy and its role in the making and unmaking of nations. Ghosh interrogates the historical entanglements of British imperialism, Indian agrarian economy, and Chinese socio-political transformations, before ultimately positioning the opium trade as a paradigmatic case study of extraction. His analysis extends beyond historical reconstruction; it underscores the enduring consequences of colonial economic structures, drawing thought-provoking parallels to contemporary global financial systems, transnational monopolies and international trade asymmetries.

Rather than treating opium as merely a lucrative commodity within global trade, Ghosh reorients the discussion towards its function as a fundamental pillar of British imperial economic policy. He illustrates how the British Empire systematically leveraged opium cultivation in Bihar and Bengal to generate revenue, sustain colonial governance, and counterbalance its trade deficit

with China. Ghosh's argument aligns with existing scholarship on mercantilist strategies of economic subjugation, further reinforcing the centrality of controlled narcotics production in colonial statecraft (Frank, 2018; Wong, 1998).

Ghosh's analysis of the coercive mechanisms underlying opium cultivation highlights the profound structural violence embedded within imperial economic mandates. He presents empirical evidence of agrarian distress, land dispossession, and the destruction of subsistence economies as direct outcomes of forced monocropping. These dynamics resonate with broader theoretical critiques of colonial economies, which emphasize the systemic displacement of indigenous economic systems in favour of profit-driven extractive industries (Bose & Jalal, 2017). By synthesizing these perspectives, Ghosh takes the reader on a journey where opium flower emerges as the central character through the sweeping tides of history. It proves potent enough to both cure and kill. As kingdoms are toppled, fortunes made and wars caused, colonial myth-making obfuscates the expansive role of opium in building colonial wealth at the cost of death and despair in India and China.

Smoke and Ashes introduces and even harks back to a variety of fascinating, historical characters who sink and surface as opium makes its voyage through time and space. Ghosh enumerates figures ranging from colonial administrators and Indian opium cultivators to Chinese traders and British merchants, each serving as a conduit for exploring the moral ambiguities of the empire and its drug trade. George Orwell and Rabindranath Tagore make an appearance and so do Dadabhai Naoroji and Lin Zexu. The Book humanizes historical processes by focusing on the live experiences of individuals caught in the machinery of colonial ambition. These historical characters illustrate how economic imperatives dictated personal fates and beliefs of different hierarchies among the populace, reinforcing the broader themes of agency, coercion, and resistance. Through his evocative, pictorial narrative, Ghosh gently brings depth to his historical critique, making the opium trade not merely an abstract economic phenomenon but a deeply personal and human tragedy.

Ghosh also delves into biopolitical conflicts that influence plant-man interaction as imperial forces gained control over what native populations could cultivate and consume. Through forced labour in Bihar and Malwa regions of India, and widespread addiction in Indonesia, China and several other Global South countries, Dutch and British imperial ranks secured massive fortunes for themselves in a very short span of time.

One of the Book's most salient contributions is its engagement with the environmental ramifications of opium cultivation. Ghosh documents in detail how the Dutch and British-imposed focus on opium led to soil degradation, water resource depletion, and long-term ecological imbalances in South Asia. His discussion draws on environmental history to demonstrate how colonial agricultural policies were not only exploitative in economic terms but also ecologically unsustainable. Of course, Ghosh isn't the first to say this. Numerous studies in environmental history have long argued that colonial agricultural interventions systematically prioritized short-term economic gain over ecological stability (Gadgil & Guha, 1992). What Ghosh achieves, in his characteristic way, is to enable readers to recognize such patterns and parallels for themselves.

By situating the environmental impact of opium cultivation within a larger continuum of colonial extractivism, *Smoke and Ashes* bridges economic history with ecological critique. Ghosh unveils the parallels between colonial patterns of resource depletion and contemporary agri business models, which continue to prioritize profit maximisation at the expense of environmental sustainability. In doing so, *Smoke and Ashes* engages with present-day debates on ecological imperialism and the Anthropocene, offering a historiographical perspective on how colonial policies continue to shape present-day environmental vulnerabilities.

Beyond its economic and environmental dimensions, the book also provides a nuanced exploration of the socio-political ramifications of the opium trade. Ghosh examines how opium dependency in China precipitated widespread social collapse, culminating in the Opium Wars and the broader destabilisation of the Qing governance. Scholars have previously argued that the Opium Wars were not merely trade disputes but were orchestrated as economic warfare designed to maintain imperial dominance (Brook & Wakabayashi, 2000). In a similar vein, Ghosh offers a detailed analysis of how opium addiction was weaponized as a tool of imperial strategy, effectively undermining Chinese economic autonomy and exacerbating internal political strife.

However, Ghosh's analysis does not remain confined to the British-Chinese dyad. He extends his inquiry to the local intermediaries, traders, and political actors within India and China who facilitated and profited from the opium economy. By acknowledging their agency and roles, Ghosh complicates the standard binary of colonial oppressors and subjugated subjects, instead of

presenting a more layered understanding of complicity and resistance within imperial economic networks.

Ghosh further deepens the narrative by drawing on an impressive array of colonial-era paintings and prints from multiple geographies. These visual sources provide a vital glimpse into the past. The artworks capture bustling opium factories, godowns, patrons, and poignant scenes of cultural interaction and conflict. Such illustrations function as historical documents that bring to life the cultural landscape of the era.

What distinguishes *Smoke and Ashes* from similar economic histories is Ghosh's integration of personal narrative into his scholarly inquiry. Drawing from his own experiences as a researcher and traveller, as well as anecdotes from his own family history, Ghosh constructs a narrative that is both deeply historical and profoundly personal. It undeniably enhances the accessibility of his work, making complex economic and political histories more tangible to a broader audience who is unfamiliar with the subject. His interdisciplinary methodology—melding archival research, economic history, environmental studies, and literary analysis, renders his work a vital contribution to international scholarship.

Perhaps the most striking aspect of *Smoke and Ashes* is its insistence on the continued relevance of colonial economic structures in shaping the modern global economy. Ghosh draws illuminating parallels between the colonial opium trade and modern-day corporate practices, particularly the pharmaceutical industry's role in the opioid crisis of America. He challenges readers to consider how historical patterns of economic exploitation manifest in present-day financial structures, from predatory lending practices to resource extraction in the Global South.

This comparative approach situates *Smoke and Ashes* within a broader intellectual tradition of scholarship which examines long-term repercussions of colonial economic policies on present-day economic disparities. By highlighting the continuities between imperial trade mechanisms and neoliberal economic policies, from Mumbai and Singapore to Hong Kong and Shanghai, Ghosh extends his critique beyond the historical realm, positioning it as an urgent commentary on global economic justice. This isn't surprising for an author, who in 2019, was named by *Foreign Policy* magazine as one of the most important global thinkers of the past decade.

In interlinking the disparate experiences of India, China and Britain, Ghosh offers a cohesive tapestry which can enliven many discussions. Through rigorous archival research and insightful storytelling, it reconstructs the economic,

environmental, and socio-political dimensions of trade, offering critical insights into both its historical significance and its contemporary resonances. *Smoke and Ashes* thus, proves to be a masterful interrogation of the opium trade as a vehicle of imperial economic exploitation. The Book's interdisciplinary scope, rich geopolitical details, and thought-provoking analysis makes it a seminal contribution to studies of colonial economy, environmental history, and global trade networks.

Ultimately, *Smoke and Ashes* compels scholars and general readers alike to ponder upon the historical roots of modern economic inequities. It is not merely a history of opium—it is an indictment of the structures of power, trade, and exploitation that continue to shape the narco-character of wars, from Vietnam to Afghanistan, as well as our world at large today.

Tanya Nagar is a Research Assistant at the Centre for Land Warfare Studies (CLAWS), New Delhi. Views expressed are personal.

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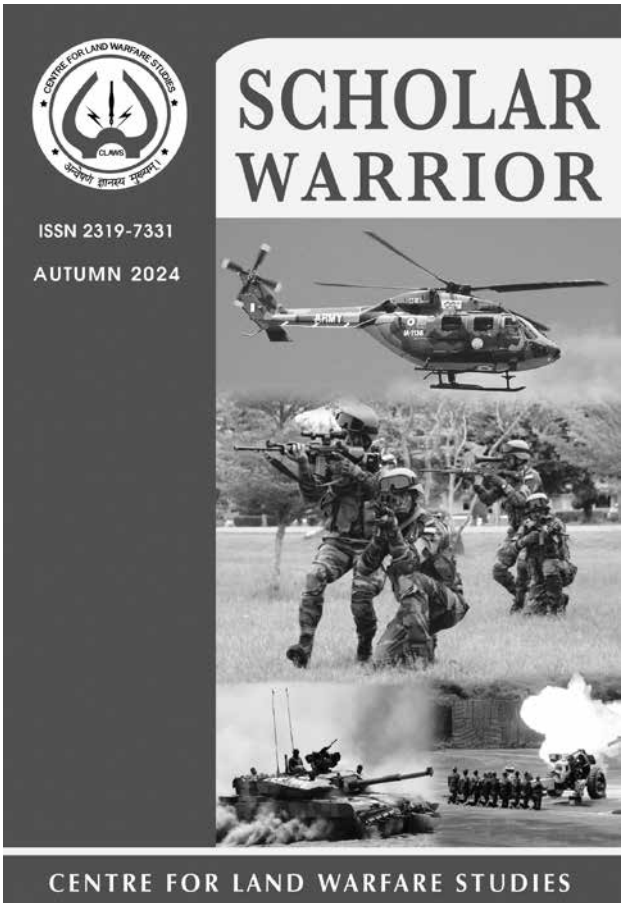

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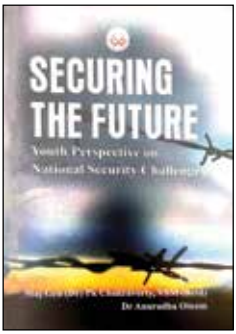

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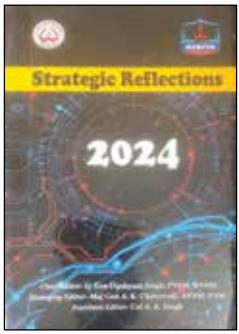

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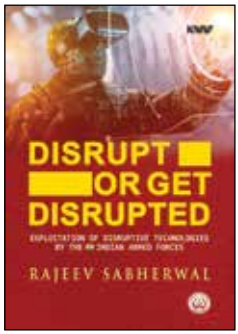

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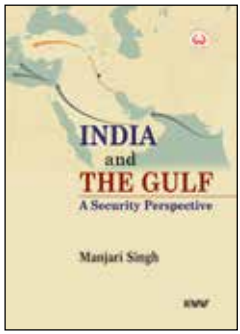

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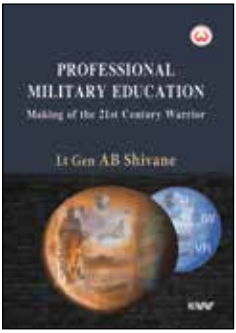

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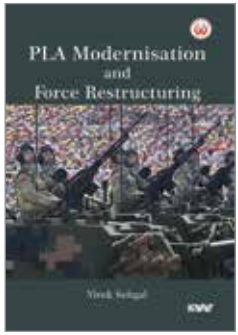

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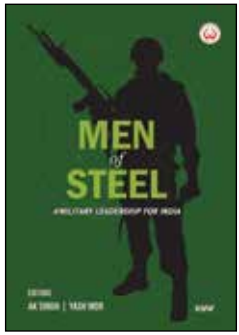

Men of Steel
#Military Leadership for India

AK Singh | Yash Mor (Eds.)

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In an interconnected world marked by dynamic geo-political shifts, rapid technological advancements and pressing environmental challenges, the role of comprehensive security in nation-building has never been more critical. As nations navigate the international coliseum, they must balance national interests, security imperatives, and sustainable development. India's geopolitical journey is multifaceted and transcends borders and historical epochs. As a nation poised for greater influence, India must pave the way for a future that nurtures sustained growth and nation-building. The Indian Army, uniquely positioned as a key driver of nation-building, has been instrumental in this journey through its tangible contributions and by ensuring a secure environment that fosters growth. Recognising and furthering the multifaceted dimensions of security, its impact on national growth and the pivotal role played by the Indian Army in achieving the Government of India's vision of '**Viksit Bharat**' will assist in paving the way for such endeavours.

In keeping with this journey, the Centre for Land Warfare Studies, collaborating with the Indian Army, conducted the **Chanakya Defence Dialogue 2024**. Based on the theme '**Drivers in Nation Building: Fuelling Growth Through Comprehensive Security',** this dialogue saw many distinguished luminaries, both national and international, over the course of the 24th and 25th of October 2024, ideate on many pertinent and long-term issues plaguing the Global South, and the solutions which can be undertaken to mitigate these issues. This dialogue, serving as a platform for cooperative exchange of ideas between the Indian Army and the various stakeholders of India's national security, endeavoured to bring about multi-faceted solutions and ideas to solve the many multi-faceted problems of the world. This, and future editions of the Chanakya Defence Dialogue, will serve as yearly gathering of the best and brightest minds of the worldwide strategic community, helping enhance the ideation and creation of long-term solutions for the South Asian region, and the wider world beyond.

Fuelling Growth Through Comprehensive Security
