Bridging the Military Technology Gap in the Sino - Indian Context

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Abstract

China, our main adversary, has moved closer to superpower status and has embarked on a military expansion by embracing high end disruptive technologies. It seeks parity with the United States of America (USA). It's military technology and capability building plan is generally outlined in the recently released White Paper titled 'China's National Defence in the New Era'. Analysis indicates that the plan, though credible, has issues and will hit implementation roadblocks. On the other hand, India's military strides have lagged in scale, pace, consistency and content. There is a military technology and capability gap opening between both nations in China's favour. However, it is to be understood that India needs to possess only such ability which deters China from any misadventure. It is, therefore, very important that the military technological abilities of both nations be compared, in various military domains, to identify the gaps. These gaps must be seen in the context of the Sino Indian military geography. Further, an examination is necessary as to what are India's options to bridge these gaps. It clearly emerges that due to the current slowdown in China, India has a time window to narrow the gaps provided it gets its act right, reforms its procurement process, starts harnessing its potential in disruptive technologies and most importantly, it is able fund the process adequately.

Background

Abrogation of Article 370 has reaffirmed that China is our main adversary. Reorganising Ladakh into a Union Territory (UT)

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was unacceptable[1] to China and it supported Pakistan in the United Nations Security Council (UNSC)[2]. The Sino-Indian relationship will remain adversarial, especially when seen in the continuum of the Doklam faceoff. While India has become one of the fastest growing economies, China has moved closer to superpower status. Accordingly, China has embarked on a military expansion of unparalleled proportions. It is embracing high end technology with single-minded devotion. On the other hand, military strides of a seemingly chaotic Indian democracy have lagged in scale, pace, consistency and content. Apparently, there is a military technology gap opening between both nations. In this context, it is important to examine where each nation stands in an era where new technologies are causing a Disruption in Military Affairs. It is more important for us to make a realistic assessment of the technological gap between Chinese and Indian Armed Forces with a view to bridge these gaps.

Cornerstones of Chinese Ambitions in Defence Technology

The Chinese have high aims. They intend to build the world's dominant military force and seek parity with the USA. As per estimates, the Chinese intend to achieve parity in the early 2020s and surpass USA after 2030.[3] The tangible ingredients of this ambition are outlined in the new White Paper titled 'China's National Defence in the New Era'.[4] The military technology content in the document is highlighted in succeeding paragraphs.

Timelines. The timelines for modernisation as per the White Paper are: -

> **(a) 2020.** Achieve mechanisation with significantly enhanced informationisation and greatly improved strategic capabilities.
>
> **(b) 2035.** Modernisation of military theory, organisational structure, military personnel, and weaponry and equipment.
>
> **(c) 2050.** Fully transform into world-class forces.

Technology Slant. The White Paper shows the technological slant in Chinese thinking, "Cutting edge technologies such as artificial intelligence (AI), quantum information, big data, cloud computing and the Internet of Things…New and high-tech military

technologies based on IT, prevailing trend to develop long-range, precision, intelligent, stealthy or unmanned weaponry and equipment. War is evolving in form towards informationised warfare, and intelligent warfare is on the horizon". Chinese defence spending has gone up by 7.5 per cent and research funding by 13.5 per cent. Additionally, Pentagon assesses that China has focused on five fields of military technology[5]:-

(a) **AI and Advanced Robotics.** China intends to deploy autonomous and semi-autonomous, manned and unmanned systems embedded with AI on the battlefield. It is also looking at employing the predictive capability of AI in battle.

(b) **Semi-Conductors and Advanced Computing.** This dual use technology was intended for the 'Made in China 2025' plan. Mastery of chip making technology frees China from import dependence which is critical to all fields of military computing.

(c) **Quantum Technology.** China has invested heavily in Quantum computing to process data at significantly higher speeds than at present. It will help China in AI, building global communication networks, improve computing and decryption facilities, assist in stealth detection and make underwater navigation accurate.

(d) **Hypersonic Weapons.** China is actively seeking hypersonic technologies which make missile/ anti-missile systems travel at 6-7 mach.

(e) **Advanced Materials and Energy.** China is investing a lot in developing a range of robust, light, flexible, stealth based and heat resistant materials for various military uses.

Domain Specialisation. The White Paper also lays down the domain domination it seeks. These domains are **Nuclear Capability** to "enhance strategic deterrence capability to protect national strategic security and maintain international strategic stability". **Outer Space** "is a critical domain which provides strategic assurance...develops relevant technologies and capabilities, advances holistic management of space-based information resources, strengthens space situation awareness and, safeguards

space assets". **Cyberspace** "is a key area for national security. Develop cyber security and defence means and build cyber defence capabilities consistent with China's international standing".

Command and Control and Reorganisation. Consistent with its global agenda, China has revamped its command and control systems. Its armed forces have adopted the joint theatre concept. They are reorganising their armed forces to cut down flab. In addition, they are reorienting from being a predominantly land based force to a force which is more oriented to the sea, air and space.

Global Competition / Adversaries. In the Chinese view the countries which matter militarily and find mention in the White Paper, ecomaps "The US...is engaging in technological and institutional innovation in pursuit of absolute military superiority. Russia...is advancing its New Look military reform. Meanwhile, the UK, France, Germany, Japan and India are rebalancing and optimising the structure of their military forces".

Analysis

China is putting together a modern military machine, driven by disruptive technologies, which will be a formidable challenge to all powers and specially to India. The Chinese aim is to seek parity with the USA. However, as a result, the gap between India and China will widen. That is a matter of concern for Indian planners. However, China tends to overstate its capabilities. Many of these technologies are in a nascent stage and bear a reality check.

Rand Study. Rand Corporation brought out a report titled 'The U.S.-China Military Scorecard: Forces, Geography, and the Evolving Balance of Power'.[6,7] It examined the United States (US) and Chinese military capabilities in ten operational areas involving two scenarios - conflict near the Chinese coastline (Taiwan scenario) and away from the coastline (Spratly Island scenario). As of 2017, Chinese ability in its periphery was formidable. However, its ability to project power to more distant locations remains weak. This will change as time passes.

Overview of Chinese Capability. A South China Morning Post report indicates that while the Chinese People's Liberation Army (PLA) is up in hardware technologies, its main problem is in software, which involves human expertise.[8] It amplifies that PLA

military equipment - aircraft carriers, strategic nuclear submarines, and strategic bombers - are at least two generations behind the US equipment. This is compounded by lack of combat experience with modern systems. As per this report, PLA is ahead of other countries in areas such as hypersonic weapons, electromagnetic rail guns, laser weapons and short and medium-range ballistic missiles. Lastly, PLA knows that it must keep pace with cutting-edge military technology like AI, quantum information, big data, cloud computing and the internet of things (IOT). These facts are corroborated by other reports which have surfaced. [9,10]

Dynamics of Transformation. China is downsizing its Army and is boosting its Navy, Missile Force and Strategic Support Force. Rebalancing, transformative changes like operating a blue water Navy with Aircraft Carriers and Submarines, building out of area capabilities, combat deployments at international scale are complex and time consuming. Equipping forces with new weaponry, logistics, infrastructure, training, deployment, rotation and gaining combat experience is complicated for China which has not experienced serious fighting since the Vietnam conflict.[11]

Contextual Reality. The military build-up and the technology drive of China must be seen in contextual reality. After the ban on Huawei by USA, China cannot carry out Intellectual Property Right (IPR) theft of high-end technologies with impunity anymore.[12] Advances in military technology will suffer since its military personnel / scientists can no more study in USA and the West easily.[13] The trade war with USA is debilitating China. Its economy has perceptibly slowed. The Belt and Road Initiative (BRI) is not going well. China might not be able to achieve all its goals set out in the White Paper. A window is opening which gives India some consolidation space. A relook at China's capability without hype is warranted.

The Diffusion of Indian Defence Technology

The Indian goals and achievements in defence technology appear diffused when compared to China. In the absence of a definitive plan, our strides in defence technology appear to be inorganic. However, a word of caution here. We tend to be critical about own under achievements as much as we hype Chinese achievements. Understand that China has global ambitions, whereas ours are regional and peripheral to our borders. We need defence

technologies to deter China from crossing red lines and give it a politico military defeat if it does so. In that context, it is very relevant to examine the areas where conflict can occur and carry out a relative military technology domain analysis.

Military Geography. Sino-Indian military conflicts are most likely to take place either in the high altitudes of Himalayas or in the open oceans of Indian Ocean Region (IOR). Both these theatres are away from mainland China. The significance of the Rand Corporation report[14] that the Chinese military prowess starts diminishing as it moves away from its core areas has its relevance. The Chinese threat to India needs a reality check.[15] An overstretched China[16] might not be able to deploy its full might without opening an unaffordable vulnerability window in the mainland defences. Also, many disruptive technologies might not work in the high-altitude environment till they mature. China has also to contend with the geography of IOR and the military significance of the Andaman and Nicobar Islands. Overall, the Sino-Indian military geography is a technology spoiler.

Domain Analysis. A realistic idea about the military technology gap between India and China emerges when a relative analysis is carried out in various domains. This is as under:-

(a) **Space, Nuclear and Missile Technologies.** In the strategic domains of space, nuclear and missile technologies, both countries have full spectrum indigenous know how. The only difference is of scale, pace and volume. Their capabilities are consistent with their intent and ambitions. China has exploited space for military purposes better. India needs to catch up on military exploitation of space.

(b) **Conventional Arms Technologies.** In conventional arms technologies, China has a clear edge. We lag due to our inability in design and development or defence procurement due to myriad procedures, lack of knowledge and lack of funds. The following merit attention:-

(i) **Aerial Systems.** The Chinese edge is most apparent in aerial systems - manned and unmanned. Where China has started deploying stealth technology and near space unmanned systems, India is still unable to design and develop its own

technologies or even procure them from abroad.

(ii) **Sea Based Systems.** China has increased its naval prowess considerably. It has an ambitious and proven indigenous naval expansion programme. On the other hand, India has the requisite technologies to build ships but lags in outfitting them.

(iii) **Land Based Weapons.** In weapon technologies which can be deployed in the Himalayan battle fields, both countries are at par. The difference is in variety, scale and numbers. As far as support technologies relating to communication, surveillance, electronic warfare and cyber systems are concerned, China has a clear edge.

(c) **Disruptive Technologies.** China started investing in new generation technologies about a decade back. The edge is in starting early, and they have their act together. However, it has a problem of lack of ability. The USA will not allow intellectual theft anymore. Russia might not sell it to them. On the other hand, India is just about recognising the multiplicative ability of disruptive technologies. It must get its act together since it has the human ability to develop high-end technologies. India must start seriously thinking about quantum technology, advanced materials and energy, advanced computing, semi-conductor technology and hypersonic systems through outcome related projects.

(d) **Combat Reorganisation.** The Chinese are carrying out combat reorganisation as well as transforming into theatre-based joint operations. India lags far behind in this regard. The appointment of Chief of Defence Staff (CDS) has just been announced. Jointness is some distance away. China has a clear edge in its ability to synergise its forces with the available technologies. India needs to catch up.

Bridging the Gap

Holistically viewed, there is a military technology gap which is widening in the Sino- Indian context. At present, India can get

away with it due to the military geography factor. However, that will be an unaffordable luxury as time passes. India needs to seriously think as to how it can close this gap. Some options are discussed in succeeding paragraphs.

Hybridisation. "Taiwan independence", "Tibet independence", "Hong Kong" and "East Turkistan" pose threats to China's national security and social stability. This is ideal terrain for hybridised asymmetric war. International experience suggests that technological edges are nullified by asymmetric hybrid options. A Sino-Indian conflict offers plenty of scope for hybridisation. It is up to the government and the military establishment to exercise the option through political will. General Padmanabhan has prophetically outlined this option in his book "Next China India War: World's First Water War 2029".

Exploit Technology Blind Spots. Cutting edge military technologies have blind spots which can be exploited. We were able to mask our nuclear tests in Pokhran from US satellites by exploiting a blind spot. Rather than creating new abilities in military technologies and trying to close gaps, it will be cost effective if we invest in countering the blind spots in Chinese military assets.

Alliance Strategy. A major method of bridging the technology gap is to form alliances. The Indo US Strategic relationship, the nebulous Quadrilateral Security Dialogue (QUAD), improved relationship with Japan are all manifestation of alliance strategies to nullify the edge which China enjoys. Alliances provide a ready-made hedge. This option is already being exercised.

Develop Own Conventional Technology. In the ultimate analysis we need to own conventional weapons technology either through import, which is a very costly option or develop them indigenously. India has had successful models of indigenisation in Navy and Artillery.[17] These need to be replicated. We need to carry out surgical strikes on our Defence Procurement Machinery as outlined in the box given at the end.[18]

Development of Disruptive Technologies. Big powers are focusing on disruptive technologies to win battles at least cost. It's an area where India has adequate talent. If our premier technical institutions are given the right opportunity, we could witness dramatic results. There should be a massive outreach consisting

of a series of seminars, demonstrations, competitions, focused workshops and promoting start-ups. Specialized defence research cells/centres should be established in Indian Institutes of Technology (IITs) / technical institutes of repute.[19] Incubation processes should be put in place. We must harness these technologies for military purposes with zeal. We have no choice.

Funding. To put into effect any of the available options, there is a need for adequate funding. Defence budgets need to be hiked. To put it simply, a five trillion-dollar economy will need more security/ protection than now. That will need greater degree of funding.

Conclusion

The Sino-Indian adversarial relationship will continue with their rise. Autocratic China, with global ambitions, is expanding its military aggressively by investing heavily in high end defence technologies to achieve its superpower status. This has widened the military technology gap in China's favour. However, the Chinese are slowing down due to many factors. It gives India time to set its systems and close the gap to the extent that it can deter China from any misadventure. India has multiple options to manage and nullify the Chinese edge. In a world of realpolitik, it should employ all options proportionately. Having said this, Indian strategists need to get their act together to achieve self-sufficiency in conventional weapon technologies and harness the potential of disruptive technologies. It demands a wise and knowledgeable leadership. Most importantly, it needs government commitment to adequately fund the plan.

SURGICAL STRIKES ON THE DEFENCE PROCUREMENT MACHINERY

The First Strike

Overhaul the overweight MOD so that the politician who faces the hustings and the servicemen who face the bullets drive the system and not let unaccountable bureaucrats brake it. The tail cannot wag the dog.

The Second Strike

Get naval and artillery experts to replicate their successful models. Eject tried, tested and failed, self-proclaimed experts who dominate the Delhi Talk Circuit.

The Third Strike

Reform DPSUs and DRDO and make them perform. We have invested in building their capacities for seven decades. Management must perform or be changed ruthlessly.

The Fourth Strike

Ditch hype. Get down to serious knowledge-based indigenisation which is inclusive in nature to public and private players.

The Fifth Strike

Create empowered commissions to get some critical equipment off the Intensive Care Unit (ICU) list.

The Sixth Strike

Look ahead. Disruption in military affairs is happening. Disruptive technologies are making the brick and mortar defence industry redundant.

The Seventh Strike

The defence budget must specially fund outcome-based time critical projects (beyond normal allocation).

The Eighth Strike

Develop a knowledge path for defence technology and management from grass root levels upwards. Our knowledge base must be deeper.

Endnotes

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