

MARITIME PERSPECTIVES 2025

HARD SECURITY ISSUES

Edited by

Vice Admiral Pradeep Chauhan
Captain Kamlesh K Agnihotri



MARITIME PERSPECTIVES 2025: HARD SECURITY ISSUES

Editors: Vice Admiral Pradeep Chauhan and Captain Kamlesh K Agnihotri

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Foreword

Regional security within the Indo-Pacific presently stands uncertainly poised on the edge of what appears to be a geopolitical precipice. After almost three-quarters of a century of comparative stability, if not absolute peace, which characterised the post-World War-II period, tectonic transformations are currently underway across much of the global security landscape. There is a discernible sense of hegemonism, an unhealthy focus on narrow-minded national interests with zero-sum outlooks, unethical power politics, and non-adherence to previously binding commitments, amongst many others. As a result, many countries face stark choices between survival and annihilation, confrontation and subjugation, and indeed between warfighting and surrender. The ongoing Russia-Ukraine war of attrition and the extremely volatile situation in West-Asia — with the Israel-Gaza conflict at its centre — are grim examples of this unenviable scenario.

In such a dynamically surcharged environment, countries that had gotten used to the comparative safety from threats to their national security, and allowed themselves to push issues of hard security well down their ladder of priorities, have been rudely woken up to the imperative of facing near existential challenges. This has forced them to reaffirm the need to rebuild their ‘hard security’ preparedness in order to maintain their territorial integrity, sovereignty and independence. Offensive and defensive facets of hard security now incorporate operations embracing both, cyberspace and outer space, as also the adoption of increasingly novel measures, in addition to the more conventional ones involved in land-, sea- and air-centric warfare.

This volume of “*Maritime Perspectives*” accordingly focuses upon this broad-based interpretation of national security issues with which nations must now contend. It is divided into four sections, somewhat distinct from one another in theme and scope, but each highlighting in its own way, the ‘all-encompassing’ nature of the hard

security dimension. The first section examines the evolving concept of contemporary warfare, which includes the interplay between geography, economics, and maritime trade, which nations seek to leverage to meet their hard security aims. Within this section, the first article offers nuanced insights into the propensity of certain nations to weaponise maritime trade and the consequent hard choices that affected littorals of the Indian Ocean are forced to make towards preservation of their developmental interests. The second piece highlights the vital role of narrative warfare — including cognitive influence operations that exploit social media — to supplement regular hard security measures. The article also postulates that “targeted assassination” has long been an acceptable way of gaining asymmetric advantage, especially in cases where the centre-of-gravity of an adversary is a single leader or a small, finite set of decision-makers. The third article of this section argues that globalisation-driven economic growth across geographies is tending to challenge the US hegemony and its status as the world’s sole superpower. This, in turn, is compelling Washington to act in a peculiarly abrasive manner, leveraging its undoubted industrial heft, market power, and the predominance of the US Dollar as a global currency — including the ramping-up of tariffs and the establishment of non-tariff barriers — in what is being perceived as a desperate bid to retain its pre-eminence. The lessons for India arising out of these often-irrational measures being resorted-to by the current US administration, and a possible plan-of-action to mitigate their adverse impact on India’s economic and security wellbeing, have also been suggested.

The second section concentrates upon the complex maritime security paradigms in the Indo-Pacific region, wherein many littorals, particularly those of the Western Pacific, are employing a variety of competitive strategies. These often include the promulgation of multifarious instruments to support their unilateral positions and the pursuit of narrow, one-sided agendas. The first article accordingly highlights that the 2025 Chinese White Paper on national security has come up with a highly expansive interpretation of “holistic national security” by subsuming virtually all elements of national development within its ambit, thereby implying that any external action that appears to obstruct any element of such national development, could be construed as a hostile act. The second paper dilates upon the various provisions contained in the “Comprehensive Archipelagic Defence Concept” (CADC) promulgated by the

Philippines in January 2024, and explores the consequential opportunities created for India to support the concept of “free, open, and secure seas” against the backdrop of developments in the South China Sea. The third piece explains various facets of the tenuous maritime security situation in the Taiwan Strait, largely borne out of Chinese scaremongering by way of the repeated conduct of military exercises all around Taiwan, with progressive increases in scale and intensity. The fourth and final article of this section suggests measures for making the QUAD-driven Indo-Pacific Partnership for Maritime Domain Awareness (IPMDA) more effective through the inclusion of datasets generated by multiple information-fusion centres such as the IFC-IOR.

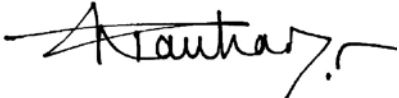
The articles comprising the third section focus sharply upon China’s aspirations for great power status, through its ongoing naval modernisation and the building of a supportive maritime ecosystem. The section begins with an overview of the frenetic capacity-building and capability-enhancement within the PLA Navy and attempts to identify the implications of these upon India. The next two articles provide a factual update on China’s ongoing aircraft carrier programmes: the first related to the PLA Navy’s third carrier, the *Fujian* — the first Chinese flat-top equipped with an electromagnetic aircraft launch system (EMALS) — which is undergoing final trials before induction; and the second being a facts- and indications-based assessment that the fourth carrier could possibly be nuclear propelled. Three short articles also provide satellite imagery-based pointers to the rapid progression of Chinese naval infrastructure such as the construction of a new nuclear submarine base, the expansion of another one in Guzhen Bay, as also addition of new drydock facilities in the existing shipyards to compress warship-building timelines. A brief assessment of the Chinese heavy-lift vessels and *Zubr* Class hovercraft as force-multipliers for the PLA Navy, as also the progress of the *Yuan* Class submarine construction project for Pakistan, too is to be found in this section. The section additionally provides valuable, facts-based insights into the elaborate plans of China to expand its maritime frontiers through the establishment of associated infrastructure, the building of special purpose vessels, and the technological developments to support this vision. These include the construction of ice breakers and rocket-transport vessels, the setting-up of deep-sea research institutions at a variety of locations, the establishment of new stations in

Antarctica, and also the commissioning of an ultra-modern satellite-launch centre at Wenchang on Hainan Island, which would ultimately be capable of launching rockets with a wide spectrum of payloads.

The fourth section comprises two interesting book reviews, which cover the evolving nature of hard power dynamics over the last century. The first succinctly reviews the book, *“Modern Psychological Warfare: A Case Study of India”*, authored by Arun Kumar Bhatt, which flows from a reflective premise that *“wars are born in the human mind”*. The reviewer highlights the relevance of the book by positing that India’s vast digitally-enabled population is rendered highly vulnerable to psychological warfare through social-media manipulation, fake news, and cyber espionage; and that a whole-of-nation approach is required to build resilience against this imminent national security threat. The review of the second book entitled, *“Gallipoli Memories”* written by Compton Mackenzie in 1965, offers pathos-laden glimpses into the emotional make-up of troops deployed in the First World War, and their trials and tribulations, duly interspersed with dark humour and irony.

All in all, this volume of *“Maritime Perspectives”* provides a holistic overview of evolving warfare, with several conceptual additions to the commonly understood idea of hard security. Further, the Indo-Pacific has been identified as the proverbial experimental arena in which the application of so-called agglomerated hard power is sought to be applied by various players. Finally, the unrelenting effort of a resurgent China to become the prime contender for control the Indo-Pacific region through the establishment of its comprehensive maritime and naval primacy has been reiterated.

Happy Reading! Sam no Varunah!



Vice Admiral Pradeep Chauhan
AVSM and Bar, VSM, IN (Retd)
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*Evolving Concepts of Warfare:
From Readiness to Preparedness*

Weaponisation of Trade: The Indian Ocean Dilemma

Vice Admiral Pradeep Chauhan (Retd)

The fifth of April of each year is commemorated as National Maritime Day and seeks to draw global attention to issues principally related to the multiple facets of mercantile shipping and fishing. This article seeks to draw the attention of its readers to a somewhat lesser known phenomenon that is nevertheless intimately related to the mercantile trade and the merchant marine of various countries. This piece was first published in the Spring 2025 issue of “The Chanakya Diaries” (Issue 2) and is reproduced here with the permission of the Chanakya Forum.

Columbia University’s Capstone Report of 2020 entitled, “*The Weaponisation of Trade: A Study of Modern Trade Conflicts from the mid-1900s to [the] Present*” defines the weaponisation of trade “*as the employment of trade tools to induce a trade partner to change its practices in any issue-area (including economic policy and diplomatic relations) by exploiting its economic vulnerabilities*”¹. Drawing from this definition, the weaponisation of *maritime* trade (which is a subset of trade *per se*) would incorporate the weaponisation of any of the various tools of this trade, such as ships and their navigation and machinery systems, their crew, the cargo that they carry, the maritime trade routes that they follow, the ports and port-facilities that they use, the space-based and internet-based monitoring and control mechanisms applicable to them while at sea as well as their shore-based management, and the regulatory regimes that apply to maritime trade as a whole.

Implicit in international trade (most certainly including maritime trade) is the notion of “interdependence”. However, this does not imply “symmetry” in the degree to which interdependence is created. In fact, more often than not, international

trade is asymmetric.² This means that in case economic ties are partially or entirely suspended, one party may lose more than the other. It is this very feature that makes the weaponisation of trade possible.

Historically speaking, the option to weaponize trade has been exercised either by the less vulnerable party or by a State that holds a dominant position in the market of certain strategic goods, such as crude oil or critical raw materials (CRMs) including Rare Earth Elements (REE).³

Within the context of the Indian Ocean (better thought of as the western segment of the Indo-Pacific), the 1973 oil embargo⁴ offers a good example of the weaponisation of maritime trade. Here, the objective of the Arab States of OPEC was to coercively alter the international behaviour of countries that were supportive of Israel in the Yom Kippur War of 1973. Since the international transportation of crude oil is overwhelmingly by means of shipping, the greatest impact of this weaponisation of trade was upon its *maritime* segment.

This led (and continues to lead) countries such as India, which are increasingly supportive of Israel but are hugely vulnerable to manipulation of crude-oil-availability by oil-supplier States of West Asia, to one facet of what New Delhi understands to be the “Indian Ocean dilemma”. This is an expression that receives far less global attention than does China’s oft-touted “Malacca dilemma”, which was first articulated by the then President Hu Jintao some thirty years later, during a Communist Party of China Economic Work Conference in 2003.⁵

However, even though both dilemmas relate to maritime trade by way of ships and shipping, the one is, in actual fact, quite different from the other. In the 1973 example, India’s dilemma stemmed from the “weaponisation” of maritime trade by the Arab States of OPEC. The Malacca dilemma, on the other hand, relates to the vulnerability imposed upon the import by the People’s Republic of China (PRC) of critical cargo (chiefly crude oil) as a result of geographical choke points. It is important to bear in mind that the Malacca dilemma is NOT about the Strait of Malacca alone. It is actually a generic dilemma that stems from China’s vulnerability to any of the chokepoints (straits) that connect the Indian Ocean to the Pacific. Quite unlike the geographic conformation of the Pacific and the Atlantic oceans, which

stretch from north to south like vast highways with neither ceiling nor floor, access-into and egress-from the Indian Ocean is limited by nine maritime constrictions or chokepoints. These are (1) the Strait of Hormuz, which does not actually provide ingress-to or egress from the Indian Ocean *per se* but is nevertheless critical in that it connects the Persian Gulf and the Gulf of Oman and thence the Arabian Sea; (2) the Suez Canal, which connects the Mediterranean Sea and the Red Sea; (3) the Strait of Bab-el-Mandeb, which connects the Red Sea to the Gulf of Aden and thence to the Arabian Sea; the (4) the Mozambique Channel which provides *enroute* access to and from the Atlantic Ocean; (5) the weather-determined chokepoint of the Cape of Good Hope connecting the Atlantic Ocean to the Indian Ocean; and the chokepoints connecting the Indian Ocean to the South China Sea and thence to the Pacific Ocean, namely, (6) the Straits of Malacca and Singapore; (7) the Sunda Strait, the (8) Lombok Strait, and the (9) Strait of Ombai-Wetar. It is these straits through which global shipping is forced to go that generate what is now being termed the “Indian Ocean dilemma”.

A particularly thought-provoking question that arises is: Given the fact that Japan and South Korea are equally dependent upon the transportation of crude oil from West Asia as is the PRC, why do we not hear Japanese or South Korean articulations of a similar “Malacca dilemma”? The simple answer is because these countries, unlike the PRC, have “friends”. Not only does China suffer from a particularly unfavourable *maritime* geography but its international behaviour has imposed upon it one the worst *strategic* geographies in the world.

But to return to examples of the weaponisation of maritime trade in an Indian Ocean context, we can jump to the early years of the next decade and arrive at the “Tanker War”, which was a subset of the Iran-Iraq armed conflict of 1980-81.⁶ It is, of course, true that in terms of reportage, the “Tanker War” was often overshadowed by the often-bloody fighting on land. Importantly, the “Tanker War” did not involve solely shipping of the belligerent States (had it done so, it could hardly have been included as an example of “weaponisation”). Iraq began the “Tanker War” in 1981, initiating attacks on ships steaming to or from Iranian ports at the extreme northern end of the Gulf. Iran then destroyed Iraq’s oil terminals early in the war and Iraq’s oil exports began to move entirely by overland pipelines. Iraq continued these attacks

into 1984, initially without any Iranian response at sea. In March of 1984, however, Iraq expanded the geographic scope by attacking ships serving more southerly Iranian points, particularly the oil-loading complex at Kharg Island. Thereafter, Iran waged its own war on tankers largely to coerce and intimidate the Gulf States supporting Iraq — a clear case of the weaponisation of the maritime trade in oil. By 1987, attacks were carried out against ships flying the flags of 12 countries whose shipping had not previously come under attack, including those of the US, the erstwhile Soviet Union, and the People’s Republic of China (PRC). Thus, given that it involved the shipping of multiple countries and was a clear case of politico-economic coercion and intimidation, the “Tanker War” exemplifies the weaponisation of maritime trade. These lessons were not lost upon the PRC and what is sometimes called the “Hormuz nightmare” has, ever since, become part of the PRC’s own “Indian Ocean dilemma” — which further exacerbates its “Malacca dilemma”.

A more recent phenomenon, and yet, one that once again has received relatively scant attention from Indian maritime analysts, is the weaponisation of maritime transponders.⁷ This principally involves the transmitters-cum-transponders of the “Automatic Identification System” (AIS). Originally introduced by the International Maritime Organization (IMO) as a maritime safety measure to help prevent collisions at sea between large commercial vessels plying the high seas, the AIS has, especially after the terrorist attack suffered by the US in September of 2001 (commonly known as 9/11) and that suffered by India in November of 2008 (commonly known as 26/11), become an indispensable tool in the national and regional endeavours to obtain and sustain “maritime situational awareness” (MSA),⁸ which is, more often than not, albeit incorrectly, referred to as “maritime domain awareness” (MDA). The fitment and automatic transmission of data by AIS transponder-cum-transmitters is mandated by the IMO for all ships above 500 gross tonnes, as also for any ship over 300 gross tonnes on an international voyage, and on all passenger vessels such as cruise ships and ferries. Individual countries and supranational entities can also mandate AIS for smaller ships within their own maritime zones. However, AIS data is transmitted over unprotected very high frequency (VHF) radio bands, making the system susceptible to deliberate manipulation. Not only are criminal actors manipulating their ships’ AIS signatures to hide or fake their locations and disguise

illicit activities, increasingly State actors, too, — such as Russia, China, and Iran — have also been weaponizing AIS with increasing technological complexity. State actors now have an established capacity and capability to fabricate potential *casus belli* in disputed maritime regions.

AIS spoofing or manipulation describes broadcasting an AIS message with fake position or identity data to disguise a ship's identity or location. A good example is the motor vessel MV *Kingsway*, which evaded international authorities for over four years, successfully evading sanctions imposed by the UN Security Council (UNSC) on oil trade with North Korea (DPRK), not only by repeatedly changing its vessel identification number, name, flag, and paint scheme, but also by continually spoofing AIS to avoid being tracked.⁹ Today, however, AIS spoofing is hardly the most pressing of concerns in respect of this form of weaponisation of maritime trade.

Increasing evidence is surfacing of State-actors engaging in “AIS hijacking” wherein AIS data packets from another party's vessel are “hijacked” by a malevolent actor to present its vessel as the one whose data packets have been “hijacked”. In one well known example, a private individual, Dr Mario Balduzzi (a Senior Research Scientist with Trend Micro Research) was able to conclusively demonstrate that it was eminently possible to hijack an AIS transponder. He did so with the AIS of the US-flagged tug, the *Eleanor Gordon*, and falsified its position, making the vessel apparently appear in the middle of Dallas, Texas!¹⁰ An even more dangerous weaponisation technique used by State actors involves overwhelming rate-limited AIS receivers with random data.¹¹ This approach renders AIS receivers onboard ships and at ground stations unusable, as they would be unable to distinguish real AIS reports amid the influx of fake signals. This sort of “AIS availability disruption” is technologically challenging to accomplish as it requires sophisticated programming skills and is hence used by State actors rather than criminals. However, the gallop of technology has shown us repeatedly that what used to be thought of (either by virtue of cost or restricted availability of technological sophistication) as the preserve of States has, in fact become commonplace amongst criminals and other non-State malevolent actors as well as State-sponsored non-State ones. It may, therefore, be seen that the ongoing weaponisation of AIS transponders is an excellent example of the weaponisation of maritime trade.

Perhaps the most recent and well-publicised examples of the weaponisation of maritime trade within the Indian Ocean are the actions of the Houthi rebels in Yemen in terms of specifically targeting commercial shipping to coerce nations that are supporting (or at least not overtly condemning) Israel for its sustained and determined (often brutal) military response in Gaza and beyond to the terrorist attacks mounted on the State of Israel by Hamas militants on 07 October 2023. Although a ceasefire deal was concluded on 15 January 2025, and took effect days later (on 19 January), the conflict continues to have significant regional and international repercussions. A major spin-off of this armed conflict has been the Red Sea crisis.¹² While the crisis began on 19 October 2023, with the Iran-backed Houthi movement in Yemen launching missiles and armed drones at Israel and demanding an end to the invasion of the Gaza Strip, the maritime coercion began in mid-November and accelerated rapidly thereafter. In mid-December of 2023, major global shipping companies such as the Mediterranean Shipping Company (MSC) — the world’s largest container-shipping company, Maersk, CMA CGM — the French shipping giant, COSCO, Hapag-Lloyd, Evergreen Marine Corporation, and BP (the British multinational oil and gas company) all suspended shipments through the Red Sea and began re-routing their ships via the Cape of Good Hope.

Heightened rates of marine insurance are another fallout of this weaponisation of maritime trade. By January of 2024, most marine insurers required a warranty of “*no Israeli involvement*” before they would insure vessels for the Red Sea route, with some also requiring warranties of no US or UK interest and no calls to Israeli ports in the last 12 months.¹³ Much of the Red Sea has been designated a “listed area” by the Joint War Committee of Lloyd’s and London companies market insurers, giving underwriters the option — but not the obligation — to levy additional premiums over and above the basic annual rate for war risk cover. Even in cases where insurance cover is, indeed, available, rates remain at up to 1% of hull value. As David Osler of Lloyds states, “*On paper, the pricing represents an additional \$1.3 million on the cost of a single trip for a brand new VLCC booked to load a consignment of crude from a Saudi west coast port. That is around 100 times higher than where they were before Houthi missile and drone attacks on merchant shipping began last November.* [emphasis added] ... *The cost of going the long way round typically adds up to 11,000 nm and a*

week to 10 days' transit time to east/west voyages. The extra fuel and crewing costs can come in at as much as \$2 million. But the outlay is mitigated by the savings on war risk premiums and Suez Canal transit fees. In some cases, there may be little in it either way in simple dollar terms."¹⁴

A far more literal example of the weaponisation of maritime trade is the alleged use of commercial ships to deliberately drag their anchor with a view to damaging undersea cables and pipelines. While incidents of this sort that have occurred in the Baltic Sea have received a great deal of publicity from the investigative print- and electronic media in the West, investigative journalism in maritime matters in India and in countries of the Indian Ocean is practically non-existent. Therefore, the lay public in India is largely deprived of awareness and has yet to register the enormously adverse ramifications of this direct form of weaponisation of merchant vessels that are the carriers of mercantile goods of trade. The Baltic Sea witnessed two such incidents in the last two years alone. The first was in October 2023, when the Hong Kong–flagged, Chinese-registered vessel, the *NewNew Polar Bear* dragged its anchor for over 100 kilometres and damaged two subsea data cables and a gas pipeline in the Baltic Sea. The second incident occurred in November of 2024, when the *Yi Peng 3*, a Chinese cargo ship, similarly dragged its anchor over a very large distance, and severed two undersea communications cables connecting Germany and Finland, and Lithuania and Sweden, respectively. A number of Western analysts believe that both these were deliberate and premeditated actions involving Russian and Chinese intelligence agencies. Is the Indian Ocean affected by such direct weaponisation? The answer, unfortunately, is yes. In late December of 2023, a post in a Houthi-allied Telegram channel suggested that submarine cables, too, could become targets of the Houthi attacks on behalf of Gazans — a threat that was widely reported in Western mainstream and social media. Almost immediately thereafter, however, the Houthi-controlled Yemen Ministry of Telecommunications published a statement disavowing any targeting of submarine cables. Nevertheless, on 24 February 2024, the increasingly indiscriminate attacks by Houthi rebels on shipping in the Red Sea, severely damaged the Belize-flagged, UK-owned cargo ship, the *MV Rubymar*. The crew dropped anchor and abandoned the crippled ship. The general consensus in the particular instance is that the *Rubymar* began to drift, dragging

its anchor and ended-up severing as many as four undersea cables — SEACOM, TGN, AAE-1 and EIG. The impact was grossly underestimated according to globally renowned network-services provider, RETN. The company has asserted, quite unequivocally, that the Red Sea cables that were damaged affected close to 70% of Europe-Asia data traffic flow, not the 25% initially reported.¹⁵ While in none of these instances, whether in Baltic Sea or the Red Sea, has it been proven that State-actors were behind these undersea cable disruptions, it may safely be assumed that the enormous potential spin-off impact has not been lost upon either State actors or malevolent non-State ones — especially upon State-sponsored non-State actors.

Given that the oceans connect rather than divide, the weaponisation of maritime trade in any one of the four ocean basins which together constitute the “world ocean”, has effects that are felt in other ocean basins as also in their respective fringing seas. Thus, when China weaponizes maritime trade in the South China Sea, for example, the adverse impacts of the coercion are felt upon maritime trade in the Indian Ocean as well. The case of Australia in this regard, which suffered coercive actions by the PRC, is an excellent case in point.

Finally, it is important to consider how navies such as the Indian Navy could best contribute. Here it is important for readers to remind themselves that insofar as India is concerned, the Indian Navy has, in fact, been particularly and remarkably proactive. On 14 December 2023, India initiated Operation SANKALP to ensure the security of the regional maritime domain, deploying the guided missile destroyer INS *Kolkata* to supplement another guided missile destroyer of the same Class, INS *Kochi*. By 26 January 2024, the Indian Navy had deployed additional ships in the area, including the guided missile destroyer INS *Visakhapatnam*. The Indian Navy has garnered extremely well-deserved praise worldwide for its actions against a whole slew of illicit maritime activities. Every navy engages in four types of actions at sea — dissuasive actions, deterrent actions, preventive actions, curative actions, and punitive actions. Although the various forms of weaponisation of maritime trade *per se*, seem relatively impervious to naval curative actions, such weaponisation is quite vulnerable to dissuasive, deterrent, and preventive ones. In dealing with coercion designed to force a State to take certain actions or to desist from certain actions for fear of punishment imposed upon its maritime trade, there is certainly a very

major role that navies can and must play. While the Indian Naval deployments in support of Operation SANKALP offer an excellent example of dissuasive, deterrent, and preventive actions, there is much that might additionally be gained through international cooperation with other likeminded navies, such as those of Japan and Australia. This does not require any treaty alliance but simply a maritime leveraging of the comprehensive strategic partnerships that have been concluded by India with each of these countries. This would also be entirely in keeping with the lines of maritime thrust identified by the Indo-Pacific Oceans Initiative. Once dyadic cooperation is in place, the Indian Ocean Naval Symposium (IONS) construct offers a number of extremely promising cooperative pathways for executive action designed to resist coercion within the Indian Ocean and to contribute to the resolution of the Indian Ocean dilemma. India will resume the Chairmanship of IONS from 2025 to 2027 and standing up to the challenge posed by the weaponisation of maritime trade might be an excellent example of regionally beneficial maritime leadership by India.

03 April 2025

ENDNOTES

- 1 Lukas Feldhaus, Yuxin Huang, Sherry Kim, Wonjae Kim, Joon Sung Lee, Daniel Marechal, Xinyi Sun, Samantha Weiss, Markus Jaeger, “The Weaponisation of Trade: A Study of Modern Trade Conflicts from the mid-1900s to Present”, *Columbia University Capstone Report*, Spring 2020 <https://www.sipa.columbia.edu/sites/default/files/migrated/downloads/Capstone%2520Report%2520%2528Eurasia%2520Group%2529.pdf>
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How Assassinations and the Virtual Narrative are Changing the Shape of Warfare

Dr. Amit Gupta

The continuing wars in Ukraine and Gaza, coupled with the India-Pakistan military skirmish of May 2025, have shown that not only has warfare changed but older forms of military attacks are once again back in fashion. Assassinations, once thought of as taboo, are back as a preferred tool for nations to use. Further, as countries have learnt to their cost, not being able to control the media narrative has made their efforts to prosecute a war difficult as both domestic and international public opinion turns on them. The United States, despite its huge advantage of controlling both the print and visual media, squandered its edge in Iraq when it became clear that there were no weapons of mass destruction in that country. Nations need to figure out the diplomatic, military, and technological implications of these trends.

The Shifts in Warfare: Targeted Assassinations

Throughout history, assassinations of the political leadership have been used as a means to defeat the enemy or to try and get a change in policy in the targeted State—after all, there was a reason the term regicide was coined in the lexicon of political action. The problem has been two-fold: decapitating leadership means you lose the people to talk to so as to bring about war termination or a political settlement; and there is the more obvious problem that the leadership that replaces them may be both more radical and far more dangerous to deal with.

Such concerns, however, have not stopped nations from carrying out assassinations, albeit with mixed results. In World War II, the United States successfully assassinated

Japanese Admiral Yamamoto who had masterminded the attack on Pearl Harbour.¹ Yamamoto's assassination was a morale booster for the Americans because of the outrage in that country against the Japanese attack. But Yamamoto's death did not hasten the end of the American campaign in the Pacific. Incidentally, Yamamoto, before the war, had been the Japanese naval attaché in Washington and had toured the country and seen its formidable industrial capacity. Thus, when asked by the Japanese military if he could carry out Pearl Harbour he famously replied, "*Yes, but then what?*"

In the Cold War era assassinations were carried out by both sides against political figures and dissidents and this approach was adopted by nations across the world who sought to assassinate their rivals, very often on foreign soil. If such assassinations were not carried out directly, they had the blessings of the intelligence agencies and political leadership of the superpowers. Thus, the assassination of President Diem of South Vietnam was carried out with the blessings of the United States² and in the 1960s the CIA sought to assassinate Fidel Castro including such bizarre plans as attempting to poison his cigars while another plan was to harpoon him while he was scuba diving.³

In recent times, Saudi Arabia (with the murder of Jamal Khashoggi)⁴ and the Iranians (killing dissidents in Europe) have carried out such actions. The United States itself, under Trump, ordered the killing of the Iranian general Qasim Sulemani and retains the right under its military doctrine to carry out targeted killings.⁵ But the wars in Ukraine and Gaza have taken targeted assassinations to a completely different and more lethal level.

Ukraine recognised early in the war that the rigid Russian command structure could be hurt by decapitating parts of the Russian General Staff, and it was able to do so with some success. After that, the Russians smartened up, stopped putting all their generals in the same room, and made themselves less easily detectable by Western intelligence and surveillance systems.

But it was Israel's wars with Hamas, Hezbollah, and Iran that brought assassinations to a new level in the pursuit of modern warfare. The Israelis have long used assassinations against non-State actors that challenge their security, particularly in the case of both the Palestinians and Hezbollah. Various Palestinian leaders have

been gunned down and in the recent war against Hamas; the Israelis have killed its leadership both in the Gaza Strip and in other countries, by going after Hamas negotiators.

Against Hezbollah, the Israelis discovered where a major meeting of the leadership was taking place and reportedly hit the target with eighty-six bombs, killing the organisation's leader Hassan Nasrullah.⁶ Coupled with the earlier attack on personnel with the exploding pagers,⁷ the decapitation of Hezbollah was fatal because its numbers are small and losing the leadership meant losing the chain of command and took away its ability to successfully wage war against the Jewish state. Not surprisingly, they had to sue for a ceasefire with Israel.

Similarly, the Israeli strikes on Iran targeted both civilian and military personnel who were vital to the country's warfighting capabilities and its nuclear program. The Israelis used precision strikes to kill Iranian nuclear scientists and to take out several generals of the Iranian Revolutionary Guard.⁸ The idea was to degrade Iran's nuclear program and to disrupt the military decision-making process in Tehran.

Again, the assassinations hurt Iran's war efforts but not to the extent that is claimed in the western press. The Iranians were able to launch salvos of missiles on Israeli targets to the extent that Israel's much vaunted Iron Dome and David's Sling anti-missile systems were degraded to a 65% level of effectiveness and politico-military targets within the country including air bases were successfully attacked.⁹ One unconfirmed report states that the headquarters of Mossad was attacked and destroyed (although the Israelis have never confirmed this). Worse, the three Iranian missile strikes on Israel, of 2024 and 2025, led the Israeli government to depend on the United States, Britain, and other nations for its security. The Americans provided an anti-missile system but also used \$500,000 Sidewinder missiles and ship based anti-missile defences to shoot down \$20,000 Iranian cruise missiles, drones, and older ballistic missiles. For the first time in its proud military history, Israel had to depend on other nations to secure itself. This, then, brings up an important issue: what are the lessons for the rest of the world militaries from this new emphasis on assassinations in warfare?

For several reasons, thinking that the Israeli and American use of targeted assassinations has opened up a new form of warfare is incorrect. Instead, both

countries have used their preponderance of military power to engage in such actions. First, the Israelis were fighting non-State actors— Hamas and Hezbollah—who had no air power, no air defences, no armour or artillery. Israel had all of these, and nuclear weapons, too. In such circumstances, using eighty-six bombs to kill the Hezbollah leadership is far easier to do. Any other nation trying to do this against a State actor with air defences and air power would find it difficult to achieve such an outcome. The fact is that the Israeli strikes benefitted from western sanctions against selling weapons to Iran and that the two-armed non-state actors, Hamas and Hezbollah, were never going to be allowed to acquire air defences.

It is important to note that Hamas and Hezbollah are not State-created militaries but, instead, relatively small insurgent groups. Before the attack of 07 October 2023, Hamas was estimated to have about 20,000 fighters which is somewhat larger than a standard military division. Killing even ten per cent of such a small force, which the Israelis have successfully done, deals a significant blow to the war-making capabilities of these non-State actors.

Similarly, in the case of Hezbollah, it was estimated before the war that the organisation had a force of between 50,000 to 100,000 fighters. These numbers are generally considered to be exaggerated, since they may include those in the administrative, humanitarian, and educational wings of the organisation. Again, therefore, selected killings or the mass attack on Nasrullah's base would create disproportionate damage on the enemy.

The other thing to keep in mind is that what the West has permitted Israel and Ukraine to do, it will not allow most nations in the world to carry out. The Iranians have killed their dissidents who now live in European countries, and their justification has been that even if these people got another citizenship, they remain Iranian nationals (you cannot renounce your Iranian citizenship even if you acquire that of another State). The reaction of Western governments has been to label these as terrorist attacks.

In contrast, when the Israelis used Australian passports to go to the UAE and assassinate various people, it led to an angry debate in the Australian parliament but no serious action was taken by the Australian government. When Benjamin

Netanyahu, along with leadership of Hamas, was indicted by the International Criminal Court (ICC)¹⁰, the government of Poland asked for a waiver from the ICC ruling so that the Israeli prime minister could attend the anniversary of Auschwitz.¹¹ The implications of such actions are clear: the West will allow you to bend the rules if it suits its interests. This is what makes most nations in the world very sceptical of the “*rules-based international order*” for, as the Russian Foreign Minister Sergey Lavrov argued when dismissing the validity of this order, “*The rules were never published, were never even announced by anyone to anyone, and they are being applied depending on what exactly the West needs at a particular moment of modern history.*”¹² So, what are implications of this trend for India’s political and military leadership?

India has already faced a serious attempt on its political leadership, because in 2001, the Indian parliament was attacked to try and assassinate India’s top politicians including the Prime Minister.¹³ Pervez Musharraf, the then military dictator of Pakistan, called it a dirty business which suggested that rogue elements within ISI had given the green light for the attack (Western intelligence agencies have long argued that the ISI has an active and enthusiastic alumni association which can be used to ensure plausible deniability for the Pakistani State).¹⁴ Of course, this begs the question of the extent to which Pakistan is in control of its intelligence assets.

The West’s reaction to the crisis was telling. The United States, in particular, asked New Delhi to exercise restraint much in the same way that during Operation SINDOOR, India was asked to tone down its attack strategy and not risk a nuclear war. Neither Trump nor Biden have asked the Israelis to exercise restraint. One can, therefore, only imagine what the reaction would be if India was to engage in targeted assassinations.

Secondly, assassinations are not part of Indian military strategy or its ethos about the use of force. Operation SINDOOR was not initiated against the Pakistani military or the Pakistani people but against terrorist targets. Nor did the Indian prime minister suggest at any time that the military carry out operations against civilian targets.¹⁵ This was in stark contrast to the Israel-Hamas war where it is now estimated that over 50,000 civilians have been killed. It is highly unlikely, therefore, that Indian military would be allowed to bring about such a seismic change in its doctrine and its strategy.

In fact, since the first war against Pakistan in 1947-1948, successive Indian governments have refrained from attacking civilian targets like cities and, instead, focused on military targets like air bases, tank formations, and against military troops. On a separate level, it might even be argued that India's nuclear posture should have as its primary mission the destruction of Pakistan's military and nuclear facilities rather than to attack the civilian population of that country. However, given its existing ethos, the Indian government is unlikely to change its approach to the pursuit of war.

Thirdly, there is the more fundamental question of who loses more in a war in which such non-traditional tactics are used? India is a democracy with a growing economy. If a country was to attack India's soft underbelly— its open society, cities that are not heavily surveilled, as was the case with Mumbai in 2008, and the country's pool of scientific personnel— then the loser is New Delhi which views all these factors as crucial to the country's long-term growth.

There are those in India who favour the Israeli approach but, in the opinion of this writer, do so without any understanding of the political and military blowback such actions would lead to. The West would not grant leeway to India in this matter making it difficult for the Indian government to carry out such actions. It is far better, therefore, for the country to continue its current military strategy which is grounded in international law because that gives New Delhi the moral high ground in any future war.

The Tik-Tok War

The other big change that has come with modern warfare is that the media is no longer the monopoly of governments and instead has been taken over by citizen journalists. Traditionally, the global media has been dominated by the West, which invested the resources in building up its own media outlets so that they could monopolise the flow of information. It was quickly recognised that creating such a monopoly was in itself a form of power so erstwhile colonial powers such as Britain and France would beam their broadcasts globally to reach listeners in their far-flung colonies.

During the Cold War, both the Soviet Union and the United States invested in radio broadcasts that covered the world— Voice of America, Radio Free Europe, Radio Liberty, and Pravda— to disseminate the message to global audiences that were considered receptive to such information. Thus, the fact that these countries had the technology and the resources allowed them to secure the largest broadcast bandwidths to transmit their version of current affairs around the world and attempt to create a political environment that was favourable to them.

What also added to the media strength of the West (the Soviet Union could not do this) was the fact that the Western media was willing to criticize its own governments and institutions and that added to the authenticity of its newscasts to the rest of the world, particularly the Soviet Union and the nations of Eastern Europe.

The aftermath of the Cold War left the West in a militarily, economically, technologically, and ideologically advantageous position. Western soft power was boosted by the advent of modern technology— particularly the internet and satellites— which allowed the West to dominate the global media sphere. Satellites allowed for 24/7 news channels such as CNN, BBC, Sky, and DW, to monopolise the global airwaves and drown out non-Western voices in the media sphere. The rise of the internet, by the early 2000s, led major Western papers-of-record, such as *The New York Times*, *The Washington Post*, and *The Wall Street Journal*, to have far more global subscribers and, therefore, increase the ability to spread their particular message.

This became particularly apparent during the second Iraq war where the American Administration of George W Bush claimed that Saddam Hussain had weapons of mass destruction and posed a clear and present danger to the United States.¹⁶ The American media was complicit as *The New York Times* and *The Washington Post*, helped make the case for invading Iraq on spurious grounds. This subsequently led the editors of *The New York Times* to issue a public apology for their poor coverage of the Iraq war:

“Over the last year this newspaper has shone the bright light of hindsight on decisions that led the United States into Iraq. We have examined the failings of American and allied intelligence, especially on the issue of Iraq’s weapons and possible Iraqi connections

to international terrorists. We have studied the allegations of official gullibility and hype. It is past time we turned the same light on ourselves... In some cases, information that was controversial then, and seems questionable now, was insufficiently qualified or allowed to stand unchallenged. Looking back, we wish we had been more aggressive in re-examining the claims as new evidence emerged -- or failed to emerge."¹⁷

While the West's soft power was boosted by its media monopoly, challenges emerged to this packaging of news and information. Qatar funded the creation of *Al-Jazeera* with the objective of having an alternative media presence. The goal of *Al-Jazeera* was to balance the flow of information from the South to the North and to provide "*the opinion and the other opinion*". Being well-funded by the Emir of Qatar, the new news channel quickly established a global presence and became a force in broadcasting¹⁸ and it was helped by the wars in Afghanistan and Iraq. Especially in the case of Iraq, *Al-Jazeera* presented an alternative set of facts from the carefully packaged news that came from Western news outlets, often at the behest of the Pentagon with its policy of having embedded journalists. Not surprisingly, the United States military was particularly hostile to *Al-Jazeera* since it repeatedly contradicted the canned narrative that the Pentagon was selling to the world through its embedded journalists.

In the post-Cold War world, the media monopoly of the West should have grown because new technologies allowed for global coverage at a significant reduction of prices. While this did happen, something quite significant happened, too. These very technologies created alternative news voices for the world. In the United States, the mainstream papers began to lose readership to websites such as the *Drudge Report* and later, online magazines such as *Slate*, *The Daily Beast*, and *Politico*, as the traditional news sources did not provide the type of news and analysis that specific audiences wanted and their credibility was increasingly being questioned by the very audience they sought to influence.

American media support, however, was crucial in the way the war was presented in the international print and broadcast media. *The Intercept*, a small independent media outlet, which is supported by the donations of its readership, made the case that, "*The New York Times, Washington Post, and Los Angeles Times' coverage of Israel's war on Gaza showed a consistent bias against Palestinians.*"¹⁹

The Intercept, whose data is available online,²⁰ examined over 1,000 articles from *The Washington Post*, *The Los Angeles Times*, and reached the conclusion that these newspapers had an imbalanced coverage of Israeli and pro-Israeli voices and downplayed Palestinian and pro-Palestinian coverage. But perhaps the most egregious example of biased media coverage was the story that 40 Israeli babies had been beheaded in the Palestinian attack.

By any standard, the story, if true, would have been major violation of international law and something that no normal human being could have justified. It would have led to a substantial lowering of support for the Palestinian cause among the global public. *Le Monde*, however, did a careful analysis to show that the story was actually a rumour that had gained credence and been widely circulated by the global media.²¹ So, why does the mainstream media work to project a particular image of the Gaza conflict rather than attempt to show both sides of the conflict?

Similarly, on Ukraine, the stated policy of Western governments became the narrative of the mainstream media which tended to overhype Ukrainian progress and to paint Russia as having suffered staggering losses of over a million troops. The reality on the ground has come from non-traditional media sources, which can be found on YouTube, who have debunked much of what the Western press has put forward as the actual casualty rate and pointed out how high Ukrainian casualties actually are. So, once again, the question is: why did the mainstream media work to project a particular image of the Ukraine and Gaza conflicts rather than attempt to show both sides of the conflict?

The answer to the nature of both coverages is that newspapers-of-record essentially frame their writings to support the foreign policy objectives of the American government. Yet, in doing so, they forget that modern media has bypassed them to present an alternative version that makes their print or broadcast pronouncements less authoritative. This was particularly the case with Gaza. Additionally, there was a generational difference in the view on Gaza in the United States.

By the spring of 2024, a series of pro-Palestinian and to a lesser extent pro-Israeli demonstrations broke out at campuses across America. The largest ones, as *The Wall Street Journal* documented, were along the north-east coast at prestigious

schools Harvard and Columbia but there were also significant protests in Chicago, Los Angeles, and San Francisco.²²

Universities had a tough task ahead of them since they had to balance between the right of their students to freedom of speech, protecting Jewish and Muslim students from harassment, and dealing with the angry calls and public pronouncements of some wealthy donors who felt that campuses should not be permitting pro-Palestinian demonstrations. Yet the anger of the younger generation about events in Gaza was obvious.

The “Pew Research Center” conducted surveys to gauge generational attitudes towards Gaza and the Palestine issue and what it found was that the attitudinal divisions on the Palestine issue were, indeed, generational. Thus, a third of the adults under 30 said that their sympathies were entirely or mostly with the Palestinians while 14% said their sympathies were with entirely or mostly with the Israelis. In contrast, in the age group 65 and over, 47% were entirely or mostly with Israel while only 9% were sympathetic to the Palestinian cause. Six in ten adults under 30 had a positive view of the Palestinian people and 46% of that age group felt the Israeli response was unacceptable. 34% of those under the age of 30 felt Hamas had legitimate reasons to fight, and in the same age group around 47% felt that discrimination against both Muslims and Jews had increased since the start of the war.²³

While the Israelis succeeded in getting the mainstream media to buy and propagate their narrative, there was also the failure of the mainstream media, both print and broadcast, to adequately cover the war and to present a balanced and objective analysis. Most young people were getting their information from their chosen social media platforms be it Tik-Tok, Telegram, WhatsApp, Instagram, or YouTube. These sites had certain advantages against which mainstream media could not compete. They provided tailored content that suited the preferences of their younger users. They were not beholden to corporate and political interests and, most importantly, the content was cheap to produce and easy to upload to a platform where they could reach millions.

All this has serious implications for any nation’s decision to go to war and on how to pursue the conflict. Since the first Gulf War of the 1990s governments have sought

to embed journalists in their military units so as to accurately portray their version of events. We are past the era of embedded journalism, since Tik Tok and associated social media make it impossible to control the narrative anymore. Independently uploaded video is both authentic and powerful and negates the canned attempts of governments to shape the narrative.

Further, as Operation SINDOOR showed, a country's public will be turned off by the excessive jingoism of the domestic media because truth becomes a casualty in the process. By the third day of the confrontation with Pakistan, Indians were complaining about how their domestic media had moved away from a balanced coverage to sensationalism. Sections of the Indian media ignored the careful statements being made by the Indian government and military and, instead, spread stories like Karachi had been attacked by the Indian Navy and that the Baluch Liberation Army had captured Quetta. Retired Indian Navy officers had to go on talk-shows to point out that if the Navy went into action, it would be in a declared war and not in the type of skirmish that Op SINDOOR was being limited to.

One should add, however, that the much-vaunted CNN and *Al-Jazeera* hurt their own reputations by spreading the fake news that an Indian woman fighter pilot had been shot down and captured by the Pakistanis thus leading India to sue for a ceasefire. Neither news organisation issued an apology for the inaccuracy of their story.

The other thing that became clear in the aftermath of Op SINDOOR was that initially, Pakistan was able to better wage the information war against India due to its more skilful use of the international media, as it was able to make the unverified claim that three Indian Rafale fighter jets had been shot down. The story of the success of Chinese weaponry over western systems also quickly gained credence. It was only after the Indian defence forces were permitted to present their own evidence that an information balance was restored in respect of the conflict.

What must be understood, therefore, is that in a future war, one should expect a lot of video clips and commentaries on social media that will go against the narrative that a country proffers. The best way to do that is to be truthful and measured in one's comments. Once, the Chief of Defence Staff, General Anil Chauhan, accepted

that India had lost aircraft but that it was a normal course of war, the domestic and international media became less obsessed with the issue. Also, the Pakistanis had nothing else left in their quiver in terms of propaganda to shoot at the Indians.

The lessons to be learned from the new information wars are simple. Expect a very high level of disinformation or even information that nevertheless does not fit into the country's stated narrative. What is needed, therefore, is the ability for the country's defence forces to react effectively and quickly to provide alternative evidence and quash rumours. To do that, India has to move away from its idea of letting its creaky, secretive, and inefficient Victorian bureaucracy try and shape a narrative. The government would do well to bring in journalists and advertising executives so as to learn how to successfully wage an information war.

A serious attempt should also be made to cultivate the traditional foreign press, since it still has influence in the corridors of power of the western world. This means giving access and being willing to take difficult questions that go against Indian policy. Such openness and frankness are appreciated and it raises the country's standing as one with an open society.

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About the Author

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The Economics of Geography: The Underlying 'Zero-Sum Game' of India-US Relationship

A Strategic Resource-Based View

Commander Allan Rodrigues (Retd)

There has been a cataclysmic outpouring of both disappointment and anger across the world, and more recently in India, with President Trump's aggressive use of tariffs as a repressive tool to preserve the hegemony and dominance of the United States over world trade and commerce, by fair means or foul.

In India, news and opinion outlets as well as the blogosphere at large over the last week, have been dominated by the breakdown of the supposedly 'carefully nurtured' relationship between the United States and India. There is the usual handwringing by those who would foresee a great future of geopolitical, military, and economic cooperation between the United States and India on several fronts, including their shared mutual interests in containing China.

Conversely, the explosion of disappointment and anger from the entire apparatus of government, as well as the blogosphere of opinionators across the board, is palpable. They see the imposition of arbitrary tariffs on India as a great betrayal by the current US President, Donald Trump, and a direct repudiation of the hard-won gains made by several successive US and Indian administrations over the last 25 years.

Much will be written in the coming days in column-inches "a mile high", on the reasons why (and how) this travesty in international diplomacy and trade came to pass. The innards of the problem should however, have been obvious to India-US watchers keeping track over several universally recognised signs and markers that

have traditionally measured the progress and well-being of any nation across the arc of world history.

Put simply, the “US Empire”, like its forerunners — the Greek, Roman and the British Empire — is nearing its demise as a unilateral world power. The desperate attempts of the current US administration are but visible manifestations of a dying empire long bereft of its ability to exercise absolute control over the globe with any consequence, as it did over the last 80 years after WW-II. The world order, in short, will become a multipolar one. India is on track to become the third- and then the second-largest world economy by 2075, and will likely be seen as a threat by the US at some stage along the way. Any cooperation between these two powers needs to recognise this dynamic — a point that is repeatedly made in this paper at several places.

President Trump will leave office one way or another, but the real danger to countries like India is not Trump, but the neo-liberals, the hard core conservatives, the architects of Plan 2025 and their ilk, who clearly understand that unless they can actively shape the construct of the current global geopolitical environment to their advantage, America’s day is done, and that the American empire, like the empires before it, will wane irrevocably.

Understanding the real threat lurking under the surface tensions that the US has with India’s long-term interests, and vice versa, is critical. It is one that India’s governing class appears to have finally understood, even if the public at large has not. The new enemy that the US sees is not China alone, but any country that challenges America’s national competitive advantage and hegemony over the ‘knowledge economy’ of the world.

The BRICS group therefore poses a ‘clear and present’ danger to the United States, not because of their increase in GDP or trade, but in how they have seized large sections of the knowledge economy, that was hitherto the preserve of the erstwhile western powers alone. In the last five years alone, the GDP of the BRICS nations has far surpassed the GDP of the G7.

What is more threatening to the US, however, is that key sectors of the knowledge economy ranging from manufacturing, high-technology products/services,

pharmaceuticals and even advanced rocketry and aerospace engineering have seen exponential growth within the BRICS nations, understandably giving both the US and the other Western economies serious pause. China and now India, more than any of the other BRICS, are at the helm of this disruptive change in the traditional dynamics of power across the globe. Any expansion of the BRICS nations will represent a clear danger to the ability of the US to influence world affairs.

The ‘Thucydides’ and ‘Kindleberger’ Traps

Graham Allison (2015), in a comprehensive study of the writings of the Greek historian Thucydides on the Peloponnesian war between Athens and Sparta in 431 BC, described what he termed as the ‘Thucydides Trap’. It was based on the analytical inference by Thucydides, that war between Athens and Sparta was inevitable because Sparta, the ruling power at that time, feared the challenge to its authority by Athens. Athens’ rise, through a series of innovations in a number of disciplines and sectors was a direct and existential threat to Sparta.

Alison’s work has a few detractors no doubt, but it forms a useful armature around which the structural concepts that lead to a war might be defined. If the Thucydides Trap could apply to a possible conflagration between the US and China, one could argue that over time, the Thucydides trap could just as easily be applied to the conflicting ambitions of China and India, as the Indians begin to flex their strengths in the IOR or the Greater Asia Region (GAR). An ascendant China could just as easily see India as a rising threat to its power and hegemony.

In fact, Allison did not argue that war was inevitable, but rather, it would additionally take an external event that could trigger a conflict. Most strategists accordingly recognise the inherent danger of falling into the ‘Kindleberger Trap’ first described by Charles Kindleberger who argued that it was the failure of the existing world power in the 1930s (Great Britain) or even its challengers (the US or Germany) to provide ‘Global Public Goods’ or GPGs, that ultimately led to the collapse of the global economy, the great depression, genocide, pogroms, famine and eventually world war. He recognised the need for a world power to enforce the public good as a critical ingredient in the framework for any kind of world peace.

Kindleberger essentially argued that smaller countries have little incentive to pay for these GPGs, preferring to ‘free ride’ rather than taking on the responsibility themselves. Fast forward to today, many of the major global benefits and public goods are once again at great risk as the current US President does not appear to understand, or connect, the strategic ramifications of power, and the responsibility that it comes with. It is also a lesson for China and India who would seek to replace the US at the top of the table of nations in the years to come.

To avoid the ‘Kindleberger Trap’, an authority (usually a global power/s) needs to enforce the global order in ways where the response to global risks like pandemics, climate change, world trade treaties, arms proliferation treaties and even the full faith and credit of the United Nations as a means of ensuring peace, are not compromised. The case of Ukraine voluntarily surrendering its nuclear weapons after being provided with security assurances by Russia, the UK and the US in the “*Budapest Memorandum*” demonstrates this failure.

The Economics of Geography (EoG)

There has been a rapid and arguably, a tectonic shift, away from the global power and reach of the United States in recent years. Even more surprising however, has been the speed at which the dynamics of global power have begun to leach away from almost all traditional western powers of yesteryears in favour of China for the most part, but more recently in favour of the BRICS countries, and towards India in particular.

The underlying cause has been the fundamental shifts in power dynamics across the globe in the last few decades that were never quite controlled or envisaged by the western powers. This upending of the world order was driven in part by a “convergence marketplace” of information, technology and its conversion into real time knowledge-sharing at mind-numbing speeds, across a free Internet, acting as an unregulated information highway. It was followed in short order by the rapid deregulation of even hitherto protected industries that in turn, led to ‘globalisation’ and the creation of giant conglomerates producing products and services, across international and even ownership boundaries to earn super-profits and economic rents.

Ergo, the real problem is not about bilateral tariffs or trade (a fact that the current US president and his compliant administration do not seem to get). When used intelligently and rationally, tariffs, at least in times past, were a smart way of addressing the unemployment created by free trade, with disadvantaged economies that lacked the capacity or expertise to compete in free markets. The Great Global Supply chains (GSCs) of the world changed all that. It is this aspect of global trade that is not quite understood by the world, and is elaborated in this paper.

To understand India's place in this global give-and-take, it is important to understand not just the underlying dynamics of the geo-political and economic heft that makes winners and losers in many of these international trade and commercial transactions, but the 'Economics of Geography' in this 21st century that drives this seemingly unstoppable engine of global growth and wealth creation (or destruction as the case may be).

The EoG concept is based on the 'spatial advantages of labour' and/or the geographic 'spheres of specialisations' that exist around the globe, driven in part by the Western powers who orchestrated major disruptions through deregulation, globalisation and the revolution in information-technology and knowledge-sharing, at the beginning of this century. It effectively divided the world to their advantage into the low-cost production economies in the regions of the 'Global South', and high value knowledge-economies in the 'Global North'.

The Upstream Downstream Economic Divide

The low cost '*Production Economies*' were the developing economies at the time, namely China, Vietnam, Bangladesh (even India) located upstream, where products were produced with cheap labour readily available. In this avatar of the EOG, the western powers saw themselves as 'knowledge-economies' downstream where these products were designed and paid for by high value customers, and where a lion's share of the value was captured.

There was a rapid understanding between all parties upstream and downstream, that each would manipulate the EOG and the special advantages of low-cost labour,

or highly specialised expertise by geography, to their mutual advantage. Traditional rivalries between nations rapidly gave way to a new way of doing business called ‘Co-opetition’ — a word originally coined by Noorda (1992) and later used by Brandenberg et al. (2021), to describe the ability of any entity to both ‘cooperate and compete’ at the same time, usually in different regions.

The concept took hold rapidly with governments as well. The US and China make a good example. Their relationship until recently has been based on being sometimes trusting, sometimes distrusting, sometimes cooperating, and sometimes competing, particularly in how they trade. They found ways of balancing out the clear conflicts between their global ambitions and between the geopolitical, economic, or military levers of power wielded by each of them.

Manipulating the Economics of Geography rapidly became a win-win for all parties. There were clear benefits for both sides. The low wage low GDP countries in Asia used their spatial advantages of cheap labour to build products and services at the lowest possible cost, creating enormous profits for the great big global behemoths that owned them. Governments at both ends of the divide profited enormously as well.

The greatest benefits accrued from the concept of being Lean (upstream) and Agile (downstream), in turn creating the Global Supply Chains (GSCs) of the world, which became sleek and streamlined. Globalisation coupled with the march of technology and information sharing, allowed them to super-specialise as Contract Manufacturers, Original Equipment or Design or Brand Manufacturers, or as Value Added Resellers (VARs). The GSCs evolved with techniques like delay-manufacturing and delay assembly. Traditional gateway ports and freight hubs became ‘ecocentres’ of value-added facilities and logistics, in turn converting the traditional logistics hub from a physical location into a commercial decision. Instead of companies competing, entire GSCs now compete with each other.

Digital factories using the fourth industrial revolution (4IR) began to appear upstream, connecting the production shop floor to the far ends of the GSCs using advanced sensors, Big Data, AI and Machine Learning, Industrial Internet of Things (IIOT) devices and edge computing to streamline manufacturing upstream. More

recently, block chains have begun to be used to share secure detailed information amongst GSC members end to end. It is this seamless knowledge-sharing that right up to the advent of tariffs, has kept the GSCs lean upstream, yet enabling them to ramp up supply to match demand downstream seamlessly.

If this avatar of the great GSCs had been allowed to continue as envisaged by the US and the Western powers, low wage workers in Asian countries would have continued to provide cheap labour, and cheap products, creating super profits for these global conglomerates that straddled these GSCs across international boundaries, whilst additionally providing a windfall for their parent governments.

The Fundamental Disruptions to the *Status Quo*

Four fundamental powers shifts took place that would profoundly alter the balance of power between these upstream and downstream economies. Each of these shifts would augur poorly for the West with harsh consequences that were never envisaged by them.

The First Consequential Disruption – The Creation of Scale and Scope Economies

The first disruption that upended this equilibrium was that China used large scale, economies of scale and scope, combined with massive investments in capital, to become the de-facto manufacturing economy of the world. They soon began to rival Japan and Korea in manufacturing complexity, and quality, at costs that were significantly lower than anything seen previously. They created a strangled hold on major sectors of the world markets literally displacing workers in almost all manufacturing sectors, in turn devastating low-end manufacturing in the West from which they are yet to recover.

Almost immediately, low-cost manufacturing across the board in the West was immediately offshored to China and the other production economies and replaced by robotic factories with little use for traditional factory labour. Little was done

to re-skill many of these low-end workers in the Western economies, especially in the US, whose workforce languished at minimum wage for decades. It is the unhappiness prevalent in this cohort that support Trump's tariffs, which are a rather ill-conceived attempt to 'onshore' jobs back to the US, even if these jobs will never compete profitably against the Asian production economies. Not surprisingly, it is this cohort that falls prey to many venal politicians who use their naivety to gain access to power.

The Second Consequential Disruption – Strategic Value Chain Invasion

The second disruption came when these supposedly 'low cost, lean manufacturing economies began to super-specialize. Using economies of scale and scope they began to cluster these high-end specialisations into geographic zones of expertise. Taiwan became the world's largest provider of high-end electronic chips across all industry sectors, India became a powerhouse in software engineering, Korea and Japan began to specialize in displays, analytics and digital manufacturing. More recently the race to build the next big-data, AI projects and quantum computing is underway, and will likely appear outside the US and the West.

Delay Manufacturing which was originally designed to enhance supply chain agility allowed these production economies to invest in research and development and move forward and invade the value chains nearer to the customer, creating a conflict at the supply-chain value chain boundary, where information and knowledge was shared. In the process of which, many of these supposedly low-end production economies themselves became knowledge economies with a high-tech production grunt, far in excess of their western counterparts.

The US and its Western counterparts see these value chain invasions as an existential threat to their dominance of the knowledge economy; more so because these countries (China and India in particular), are able to produce these high-tech products at a lower cost and far better quality than their counterparts in the US and the West. India sent a long-range rocket to Mars and later to the Moon at a fraction of the price it cost NASA. China has cornered the world's marketplaces for EVs and batteries, Taiwan has cornered the market for high-end chips.

These low-cost providers to western companies, have reinvented themselves to now become alternative providers to the world's marketplaces. The US and Europe have discovered to their chagrin that the loyalty of the CEOs of their own global companies is to their bottom line and not to their home country. Not surprisingly they happily buy products and services from India, China, Korea or Taiwan instead of the US. Trump's desperation in trying to enforce tariffs is a rather ham-handed way of addressing a problem for which the US clearly has no solution.

The Third Consequential Disruption — the Dollar and the US Bond Market

Many of these new knowledge economies have since begun to challenge the supremacy of the US dollar as the international currency for trade. China has already ditched the US dollar as have many other countries in Africa and Asia, particularly in respect of China's Belt and Road Initiative (BRI) infrastructure expansion. The BRICS countries have followed suit and are reducing their dependency on the US dollar. There is a similar downward trend with the sale and purchase of US bonds a significant part of which are financed through their sale and purchase to these very same production economies in the main.

US debt has already reached astronomical proportions, especially in the last 15 years. Washington DC is finding it harder to get many of these countries across the globe to buy their bonds due to the increased risk that are now associated with high debt. While the impact is slow, and often imperceptible, there has nevertheless been a steady leaching in the value of these bonds as interest rates demanded by these international buyers began to climb. Many traditional buyers like China, Japan, Canada have begun to move away from repurchasing US bonds.

The fall in usage of the US dollar as the default currency for world trade and the increase in the perceived risk of their external Bond Market, are both bellwether markers which individually, or together, do not augur well for the US economy moving forward. They will be an existential threat to the full faith and credit of the US economy and will not be well received.

The Fourth Consequential Disruption – The Impact of Social Media

The advent of unregulated and unfettered social media platforms and services, which have harnessed the social interactions, and even the aspirations of entire national and international subscriber-populations, into ‘willing products’ that can be monetised, should be recognised as a clear and present danger to the democratic ideal. Social media today uses complex algorithms, to gather into protected silos large cohorts of likeminded population groups often running into the tens of millions, into which they allow both information (and even misinformation) to be drip-fed by several influencing actors pursuing their own agendas, or to channelise the way people think towards a desired direction.

For the people in their protected silos with pre-ordained belief systems, having likeminded believers in their silos, constantly agreeing with them, makes their belief systems into self-fulfilling prophecies. The possibility of these algorithms being enabled and even empowered by the recent advances in Artificial Intelligence (AI) exacerbates how humans behave and defy any prediction. People often act against their governments, or even against their own interests!

This is particularly true for democratic countries where power lies at the ballot box and where social media silos can upend the logic and predictability of an election with nihilistic abandon. Unsurprisingly, venal politicians tend to play to their base, often acting against the interests of their country or government. This might explain, in some small way, the sudden breakdown in the US- India relationship. There is no other rationale that makes a modicum of sense as to why the US-India relationship is in the mess that it is currently in.

A New World Order Emerging from the Global South

Until the COVID -19 pandemic, almost all macro-economic markers of growth, by any measure, had all but forecasted the almost foregone conclusion, that China would become the largest economy in the world by the middle of the 21st century. These forecasts have since had to be revised. Rising debt, an ageing population as a direct result of China’s misguided one-child policy for many years, the ongoing

property crisis with stranded assets across China, will likely delay these forecasts to nearer 2080.

Nevertheless, either way, China will remain a global powerhouse in the ensuing years. Statista (2024) which compiles reports of global economic markers worldwide, currently lists 12 Chinese corporations amongst the top one hundred of the world's largest global corporations. Fortune Global 500 counts as many as 128 Chinese companies in its list of 500 corporations. Chinese companies like Huawei, Alibaba or Xiaomi have become behemoths with vast global footprints.

Conversely, India's balance sheet of power and influence feature some interesting (and at times completely baffling) sets of strategic assets and liabilities, which have often puzzled western strategists. In recent years it has shrugged off much of this deadweight. The current Modi administration is undoubtedly one of the most business-friendly administrations in the world. There are clear markers that India is in the process of reinventing itself into a new geo-political, economic and military powerhouse in its own right.

Several India watchers, including Forbes (2025) and India Briefing (2024), recognise India's long-term investments in the high-tech sector, its policy pivots towards the specialised knowledge sector and the ability of its private sector to outperform international competition in industries with high entry barriers worldwide. These include 'difficult to emulate' industries like pharmaceuticals, advanced software engineering, software value-added services, e-commerce, mobile and mobile based value adds, 'Electronics System Design and Manufacturing' (ESDM) biochemistry, pharmacology, nuclear physics and advanced rocketry.

Using the same economic markers by the World Bank (2025), India is expected to be the third largest economy in the world as early as 2030 and will likely equal or surpass the GDP of the United States by 2075. The Chinese economy during this period will likely face headwinds as the impact of its ageing population is felt over the next 50 years. Conversely India with a median population age of 29 years and its investment in the knowledge economy will likely drive high growth projections for some time. As a case in point, it would not be lost on China and the world, that almost all the CEO's of the Giant-Tech companies worldwide (or even the deep lower tier ranks of their senior managers), are all members of the Indian diaspora.

This does not suggest that they will act in India's interest. What it does suggest, however, is that India has managed to create and sustain a model of knowledge dominance in the technology sector and associated industries, due to the sheer volume of trained engineers and scientists that are churned out by the Indian education system each year. Put together year upon year, they give India a massive competitive advantage that is difficult to either replicate or emulate easily. Eventually, if the numbers are large enough, they will change the rules of the game in India's favour.

It is this ability to leverage its size and expertise to capture an extraordinarily large share of the 'knowledge economy' that makes India a powerful player across the board. If India is able to streamline and efficiently cascade its bureaucracy and governance systems, it can exploit vast economies of scale and scope across its entire geo-political and economic macro-environment, to join a rarified top tier oligopoly of a few dominant nation States that straddle the IOR, the Indo-Pacific, and eventually, the globe.

This is the reason why the US and India, by their very make-up, cannot be anything more than a strategic alliance of convenience. It is time India recognises that merely having a good relationship between its leaders does not necessarily translate into foreign policy, although it does help when both leaders are rational in their dealings — of which Trump is certainly not.

More appropriately, the entire apparatus of the government and industry have to be in synch for any such alliance to work. There will always be naysayers, making any strategic relationship between these two competing nations a huge ask at any given time. Each step forward often results in a step backwards, as the different cohorts in government and industry address the objections of key naysaying constituencies before trust is developed between both parties.

Trump's reason for slapping tariffs on India for buying Russian oil needs to be viewed through this lens. India is not the only nation to buy oil and gas from Russia. CREA (2025) reports that China, Turkey, Brazil, South Korea and even members of the EU and the G7 continue to buy Russian Oil and gas despite sanctions. None of them have been penalised as severely.

The more likely reason for this impasse, is that India has been rapidly re-architecturing the entire construct of its national competitive advantage in key sectors of the knowledge economy, that until now were the preserve of the United States. Not surprisingly the Trump administration would likely have been pressured (from within), to put the brakes on any future economic cooperation until the impact of India's investments in both expertise and coin are understood, and actions taken to mitigate them from the US end. Conversely if this impasse is another irrational outburst by an unpredictable administration, India needs to be transactional in its relationship. Sooner or later, the possibility of a breakdown always remains.

The Way-ahead for India

The US views its relationships with the world at large through a 'longitudinal' or long-term lens over its friends and foes alike. It is this lens that should instruct India on how it needs to deal with the US, be it in the bilateral trade deals with or without tariffs, or the QUAD grouping. As a case in point the current 'CHINA PLUS ONE' (CHINA +1) strategy being employed by the large US companies to mitigate their global supply chain risks has been touted as a boon to India. Apple has already begun developing alternate manufacturing facilities in India. There is an expectation that others will follow.

These are heady times with several conflicting pathways each representing risks that range across the gamut of Rumsfeld's "Known-Knowns" to the "Unknown-Unknowns" and are where the range of likely problems and their solutions, too, lie. There are critical markers that India needs to achieve before it can signal that it is a reliable, worthy alternate to China's 'nous' as the manufacturing economy of the world, which is no easy task. The current Indian administration appears open to shouldering risks and even uncertainties, that previous administrations and particularly its bureaucrats have shied away from. This is an encouraging sign.

A few critical changes in its political, economic, social, technological, legal and environmental (PESTLE) approach in dealing with the macro-environment at large are already underway. There is clear recognition by both, government and industry in India, that this is a critical moment in India's history, and that they cannot be found

wanting when the moment comes upon them. This review accordingly recommends at least four critical shifts in both intellectual and investment capital that India needs to make, to stimulate high growth and national wealth.

The Global Supply Chain (GSC) Approach to Product-Service Development

Apple products are high-value products that are both lean upstream and agile downstream nearer to the customer. If India is to step up and become the 'China + 1' preferred supplier of high-tech products to the US and Western Europe, it must restructure the entire construct of its global supply chains towards a constant 'cadence and rhythm', which requires a change in the culture in both their design and delivery. These include:

- An end-to-end solution that melds the shipping corridors of its maritime zones with its hinterland transportation corridors, to provide seamless supply lines that are both lean and agile. Whilst Indian ports like Mundra have become 'gateway ports' that are models in their own right, the hinterland corridors that connect these ports have not yet been streamlined to the rhythm and cadence of a typical GSC such as the 'Blue Boomerang' and the 'Motorways of the Sea' in Europe, Walmart's 'Pendulum Services' with cross docks, or Amazon's factory floor to the customer door using Fulfilment Centres (FFCs) and Delivery Service Providers (DSPs), all of which are examples of the types of GSCs that are needed.
- The concept of the GSC Eco-Centre as a commercial hub rather than a physical location needs to lodge itself in the minds of the main producers, logistics providers, and the bureaucracy, and enable each of them to act in tandem. Efficiencies are created and risks mitigated when these the hubs are not protected, but rather, made to compete for business. Hubs must be commercial decisions rather than physical locations.
- Digital factories with 4th Industrial Revolution (4IR), Block Chain communication links between the Gateway Ports and Logistics Eco-Centres,

need to drive information and knowledge all along the supply chain, end to end. Much of this seems difficult to comprehend. Yet almost all these high-tech solutions have been developed for the most part, by IIT-trained engineers from the Indian diaspora.

- The Global Lighthouse Network (GLN) initiative by the World Economic Forum (WEF) to recognise and celebrate manufacturing excellence in 4IR has identified 189 companies worldwide at the leading edge of manufacturing and digital technology. The WEF (2025) has identified 16 Indian companies as Global Lighthouses. Similarly, WEF (2025) lists ten Indian pioneering companies as global leaders in their fields. These include ‘CynLr’ which is revolutionising industrial automation and robotics, and Freight Tiger providing real time visibility in logistics.
- The technical *nous* to upgrade to a front end GSC in the hinterland should not be difficult. The real difficulty is in the management of its bureaucracy.

A Need to Shift from ‘Incremental’ To ‘Radical’ Innovation at the Cutting Edge

It has been barely ten years since India launched its *Mangalyaan* mission to Mars and a mere two years since it landed a Rover on the dark side of the moon at a fraction of the price of similar missions by NASA. Likewise, by launching Production Linked Incentive (PLI) schemes India has, in many cases, combined the strengths of its private and public sector to successfully launch a phalanx of high-tech projects, to boost domestic manufacturing across the board.

These include high-end assets ranging from advanced medical devices, EV solutions and mobile components to ballistic missiles, stealth warships, space technology and rocketry. The Department for the Promotion of Industry and Internal Trade (DPIIT-2025) lists India as the third largest ‘startup-ecosystem’ in the world, with nearly 159,000 startups as of January 2025.

Most of these innovations are directed towards leveraging technology to create products and services to address local needs. Almost all of these examples demonstrate

India's ability to achieve extraordinary efficiencies in delivering high-end solutions at a fraction of the cost. This ability demonstrates an absolute mastery of 'Mee-Too' engineering, rather than in high-risk blue-sky ventures. More recently, the landscape has begun to change as a few of these start-ups have made it to the WEF (2025) list of the top 100 global technology pioneers. These include AGNIKUL for rocketry, CynLr which is revolutionising factory automation, and Digantara a spaced traffic management platform, to name just a few.

Investing in blue sky high-risk ventures that have no antecedents has not attracted as much attention, although the marketplace has begun to change. There is a growing appetite for risk amongst newer generation Indians, especially in the high-tech sector. Start-ups have begun to appear in emerging technology at high risk which would not have happened earlier. The risk averse nature of the Indian managers and bureaucracy, however, persists, as a fear of failure especially at the working level of most projects, remains a stumbling block.

The Indian government clearly recognises these limitations. The current government has already signalled an appetite for higher risk with the unveiling of the National Quantum Mission (NQM 2023) to build a robust Quantum technology eco-system in India, even as the first Quantum computers are as yet in research labs. While it might not be true-blue-sky as yet, it signifies a jump start in investing at a time when India might actually develop the first applications for a technology that is as yet unready for widespread practical application.

Cascading the Indian Bureaucracy – Delegating Decision-making to the Coalface.

The dominant levers of power exercised by any nation-State that have driven State-sanctioned responses to any perceived threats, both foreign and domestic, have always coalesced around a geo-political response, a socio-economic response and a military response, often enabled by information and technology. Each of these strategic levers accordingly place equally compelling demands on the purse of a nation-State.

There is a symbiotic relationship between the State and its ability to raise sufficient resources organically from within the State, or externally from its allies

and supporters. Each of these strategic levers exist in an ‘administrative-bureaucratic bubble’ or a fourth dimension, which is essentially charged with identifying and collating resources to support each of the dimensional responses of the State. Since resources are rarely enough, the bureaucratic dimension tends to dwarf the imperatives of the State. The bureaucracy then administers a zero-sum-game where trade-offs and compromises have to be made, and where failure is rarely tolerated.

There has always been a perception that India runs arguably the most paralytic and stifling bureaucracy in the world. And yet the IAS attracts the sharpest minds in the country, and which, through competitive examinations, selects the best and brightest. The real solution, therefore, lies in the need for India to change its mindset, especially within its administrative class, and in how it executes policy at the coalface of day-to-day operations.

The fundamental problem is not one of efficiency but of trust. India’s administrative services have not been able to cascade decision making down to the actual coalface, where the rubber meets the road. Whilst the fear of corruption entering the process of administration is often cited as the reason for managerial oversight, the real reason is a paternalistic view that staff at the coalface cannot be entrusted to make real time decision-making without supervision.

The result is an arcane, overcomplicated system of procedural hurdles. Attempts to speed up the process usually focus on the use of technology rather than in decision making. At senior managerial levels, the IAS runs a super-fast decision process. At the level of the clerk or the customs inspector, however, the pace is glacial. The world over, administrative reforms have focused on trust and delegation to make ‘decision making on the spot’ in the first instance, rather than on using technology to speed up an arcane decision-making process.

The real problem with India’s bureaucracy is that front-end thinking does not easily cascade easily down to the front line and the coalface, where many of these initiatives need to be executed on the ground. This is a critical requirement that needs to be addressed in any “China+1” strategy that India wishes to be a part of.

Concluding Remarks

The Resource-Driven view of the 'US-INDIA' Relationship: Moving Forward

The United States is currently mired in what appears to be a series of self-inflicted wounds that have created a deep and widening schism between the right and left leaning segments of its population. Each sees the other as an existential threat. The internal and external policies of the US are dictated not just by which end of the spectrum is in power, but which personality dominates a particular end of the spectrum. This is not an economically sustainable construct and is, therefore, one that will rapidly come to a conclusion one way or the other.

President Trump represents an extreme example of this political quagmire in which the US finds itself. He is not a professional politician or statesman. His worldview is based on the hurly-burly of the real estate marketplace of yesteryears, where the rules of naked competition dominated, and where there were no win-wins, only winners and losers. Nevertheless, countries like India, which have to deal with the US, need to understand that behind this administration are serious players, who do understand the gravitas of the moment. The US may be on the back foot, but it still owns the greatest economy and largest military in history.

If India and the BRICS are to survive and flourish, they need to take the long-term view of their dealings with the US. There are obviously many strategic imperatives that India might pursue across its geopolitical and PESTEL (Political, Economic, Social, Technology, Environment, Legal) spectrum. This paper has focused upon the elements of trade that are intrinsic to the longevity of the Global Supply Chains of the world. The GSCs have, for the last 20 odd years, delivered both trade and prosperity across the globe. Whilst there may be some conniptions and value-chain conflicts between the various actors, or even the various nations operating on the GSC, there is recognition that it is a system that has worked to the advantage of trade across the globe.

Punitive tariffs destroy the very construct of the GSC, which are based on their ability to be lean upstream and agile downstream. Tariffs that existed were minimal,

and standardised in ways, whereby their presence did not affect the price, or quality, of the product service offerings. In fact, any increases in tariffs were carefully planned, as the GSCs were fiercely competitive and tended to operate in countries where the tariffs were lowest.

The Indian government is right to stand up to the US against the arbitrary and punitive methodology it has used to impose tariffs, that appear to depend on the mood of the current US President and his administration, on a given day. However, there is a hidden warning and a harbinger of what is to come, post the Trump administration. Of all BRICS countries, India in particular, shows no signs of slowing down its growth progression. It is India's invasion of the knowledge-economy that seriously threatens the United States' hegemony. This will not go unanswered. Whilst the current threat of tariffs might well end-up as a storm in a teacup that will likely die down to a manageable level, there is no doubt that a more studied, perhaps even more lethal response will arrive with the next US administration —whichever party is in power.

After many false starts, India has thrown down a gauntlet to the world. It must expect and accordingly prepare for a multi-layered response.

28 August 2025

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*Maritime Security Paradigms
in the Indo-Pacific: Status,
Strategies and Instruments*

2025 White Paper on China's National Security: Viewing 'Holistic Security' Through the Chinese Prism

Captain Kamlesh K Agnihotri (Retd)

The Chinese State Council issued a White Paper entitled “*China's National Security in the New Era*” on 12 May 2025. Although the full text of the White Paper is available only in Mandarin, an abstract in English has been officially released.¹ This abstract offers a summarised Chinese interpretation of the all-encompassing concept of “*national security*” in the contemporary period, and the chosen pathways towards its realisation. However, it is always a good scholarly practice to peruse the whole document rather than rely solely upon an abstract, so as to ensure that vital details and finer nuances, so necessary for precise and meaningful analysis, are not missed out. While the official English language version of the ‘White Paper’ is still awaited, Dr Andrew Erickson, a renowned US-based China scholar has, in the meanwhile, published an English-translated version — with of course, a cautionary alert highlighting the very rough nature of the translated draft.²

This paper, which seeks to provide an analysis of the ‘White Paper’ is based on the English-translated version by Dr Erickson. Thus, the author’s assessments and inferences, based on this English-translated version, may suffer minor deviations from the issues that the Chinese probably intend to convey in the original document.

Main Issues of Conceptual Salience

The White Paper, formatted in six sections has — for the first time ever — articulated a grandiose concept of ‘big security’ — a clumsy-sounding expression that

suffers from infirmities of translation rather than from any lack of sophistication in conceptualisation. It might be better understood as ‘comprehensive’ (or ‘holistic’) security. Even so, it appears to be excessively broad in its embrace of an exceptionally large number of elements of national development in its addressal of national security.³ This unabashedly expansive ‘securitisation’ of very nearly the entirety of national development is evident in the following underlying messages that are implicit in the contents of each section:

- The changing world is in disorder, and China injects certainty and stability therein.
- China’s holistic approach to national security seeks political security first, with the absolute leadership of the Communist Party of China (CPC) — hereinafter referred to as ‘the Party’ — in the implementation of all national security tasks.
- Maintain the Party’s rule and preserve the existing socialist system while supporting long-term progression of Chinese modernisation, ensuring territorial integrity and safeguarding maritime rights and interests.
- Inextricably link the national security with national development with mutually contributory roles for effective progression of the other.
- Promote the ‘Global Security Initiative’, supposedly borne out of ‘Chinese wisdom’ as an alternative construct to existing global security mechanisms.
- Modernise the national security organisation and capabilities through extensive reforms.

The concept of ‘big security’ (‘comprehensive’ security) encompassed in the 2025 White Paper goes way beyond the common understanding of ‘holistic security’, the constituents of which are generally classified in traditional and non-traditional terms. While traditional security threats are said to arise from State-on-State dynamics, non-traditional ones often relate to the activities of non-State malevolent actors, with or without the support of State actors. However, this white Paper encompasses and privileges a number of widely varying domains that include “... *politics, military, territory, economy, finance, culture, society, science and technology, network, food, ecology, resources, nuclear, overseas interests, space, deep-sea, polar regions, biology, artificial*

intelligence, and data”,⁴ and still leaves scope for the addition of many other fields. Importantly, the securitisation of all elements of national development generates an important strategic vulnerability because, as the eminently quotable American economist, Thomas Sowell, has put it, “*if a word means everything, it also means nothing*”.

An even more obvious strategic vulnerability is the fawning obsequiousness — an increasingly common feature in autocracies and dictatorships — that the White Paper showers upon President Xi Jinping. Thus, the 2025 White Paper posits that “*China’s holistic approach to national security is ... an important component of Xi Jinping Thought on Socialism with Chinese Characteristics for a New Era...*”⁵ Even when the White Paper attempts to cloak at least a fig leaf of institutional identity around itself, it fails quite spectacularly, as witnessed in the unambiguous acknowledgement that the CPC Central Committee — *with President and Party General Secretary, Xi Jinping, at its core* (emphasis added)— had proposed this creative approach to national security in the ‘new era’, and that the ‘Party’ would exercise absolute leadership in the execution of the entire national security effort.

‘New Era’ – Harbinger of Resurgent China

Further, the term ‘New Era’ — included in the title of the White Paper — finds a great deal of prominence as the baseline time period, during which the conceptualisation of national security has been undertaken, the execution of relevant reforms, restructuring, and reorganisation are being rolled out, and innovative measures for future are being contemplated. In fact, this ‘New Era’, has notionally been implied as having commenced with President Xi Jinping taking over as the General Secretary of the CPC in November 2012.⁶ The current White Paper generally corroborates this assumption by stating that upon “*entering the new era, on April 15, 2014, at the first plenary meeting of the Central National Security Commission, General Secretary Xi Jinping creatively proposed the comprehensive national security concept.*”⁷

Chinese officialdom appears to be quite enamoured with this term, with ‘New Era’ finding ‘title space’ in many Chinese white papers which have been issued on widely divergent themes since 2019.⁸ Table 1 below lists all such white papers — including the current one — along with their titles and dates of promulgation.

Table 1: White Papers issued by China with term ‘New Era’ in title (2019 till date)

Ser	China’s White Paper	Date
1.	China’s National Security in the New Era	12/05/2025
2.	China’s Rural Roads in the New Era	29/11/2024
3.	CPC Policies on the Governance of Xizang in the New Era: Approach and Achievements	10/11/2023
4.	China’s Law-Based Cyberspace Governance in the New Era	16/03/2023
5.	China’s Green Development in the New Era	19/01/2023
6.	China’s BeiDou Navigation Satellite System in the New Era	04/11/2022
7.	China releases white paper on Taiwan question, reunification in new era	10/08/2022
8.	Youth of China in the New Era	21/04/2022
9.	China and Africa in the New Era: A Partnership of Equals	26/11/2021
10.	China’s International Development Cooperation in the New Era	10/01/2021
11.	Energy in China’s New Era	21/12/2020
12.	China and the World in the New Era	27/09/2019
13.	China’s National Defense in the New Era	24/07/2019

Source: The State Council of People’s Republic of China

Major Foreign Policy Reassertions

Beijing’s absolutely uncompromising stance on Taiwan comes across quite clearly in the White Paper’s assertion that “*Taiwan is a province of China and has no basis, reason or right to participate in the United Nations and other international organizations...*”, and that “*China will never allow any person, any organization, any political party, at any time, in any form, to separate any piece of Chinese territory from China*”.

The White Paper has also highlighted the role of so-called ‘external forces’ and ‘some countries’ in “*deliberately playing the Taiwan card*” and creating trouble in the Taiwan Strait, South and East China Seas, Hong Kong, Tibet and Xinjiang. While the Chinese ire on these issues is mainly directed towards the US, the fact that Tibet has been mentioned also appears to suggest that India is very much a part of their risk assessment calculus, even though no country has been named within this allegation.

China has also sought to promote the earlier launched ‘Global Security Initiative’ of 2023⁹ as a panacea for all global problems through this White Paper, by suggesting that this initiative “*addresses the urgent need of the international community to uphold world peace and prevent conflicts*”, and that it has garnered the support and appreciation of as many as 119 countries and organisations.

The White Paper also claims support of the ‘Global South’ in strengthening the global security governance system by invoking the marginalised interests of that grouping in the current world order. In this context, the White Paper also highlights its accomplishment of having arrived at “*a consensus on building a community with shared future*” with 17 neighbouring countries — with Pakistan and Indonesia being particularly mentioned.

In its quest to be counted as a veritable superpower, Beijing seeks to position itself as an ‘honest broker’ between various disputants at the global stage. The following assertions in the White Paper are clearly indicative of what might well be considered to be diplomatic overreach:

- Be a peace builder in the Middle East; promote reconciliation between Saudi Arabia and Iran.
- Enhance the ability of African countries to maintain peace independently.
- Support Latin American and Caribbean countries in opposing external interference to the maintenance of their own peace and stability.
- Assist Pacific Island countries (PIC) in coping with marine disasters and rising sea levels.
- Play an important role in preventing the Ukrainian conflict from escalating into nuclear war.
- Facilitate reconciliation amongst Palestinian factions in Gaza and the West Bank.
- Actively mediate peace in northern Myanmar and support political reconciliation there.

Policy Indicators of Interest to India

A country-specific scan of the White Paper— particularly with respect to India, the Indian neighbourhood, likeminded countries in partnership with India, and multilateral groupings in which India is an active member— reveals quite interesting insights. The associated context within which these countries/grouping are mentioned, does offer broad pointers into the likely Chinese foreign policy inclination towards them. A list of such countries/groupings along with the associated context is placed at **Table 2** for easy assimilation.

Table 2: Countries/Groupings mentioned in Chinese White Paper 2025 with Context

Ser	Country	Number of Mentions	Context
1.	India	1	– China has resolved land border issues with 12 of its 14 neighbours, and border negotiations with India and Bhutan continue to advance.
2.	Australia	1	– China conducts anti-drug law enforcement cooperation with Australia, Cambodia, Vietnam ...
3.	Pakistan	1	– China has built consensus on ‘a community with a shared future’ with 17 countries including Pakistan and Indonesia.
4.	Iran	2	– China promotes reconciliation between Saudi Arabia and Iran. – China promoted resumption of negotiations on Iran nuclear deal.
5.	Russia	3	– comprehensive strategic partnership between China and Russia in the New Era. – China-Russia relations have strong endogenous driving force and unique strategic value – 77th and 78th UN General Assembly Disarmament and International Security Committee passed the resolutions jointly proposed by China, Russia and other countries.
6.	US	3	– The US has announced abuse of tariffs on all trading partners including China – Between China and the US, neither side can suppress the other from the so-called ‘position of strength’ – China is willing to work with the US to explore the correct way for both major countries to get along

Ser	Country	Number of Mentions	Context
Groupings			
7.	SCO	1	- Expand cyber security cooperation with SCO countries
8.	BRICS	2	- Promote BRICS Food Security Cooperation Strategy - Expand cyber security cooperation with BRICS countries.
9.	ASEAN	2	- China supports regional security cooperation centred on ASEAN. - China is committed to jointly maintaining peace and stability in South China Sea with ASEAN countries.
10.	NATO	2	- China opposes patchwork of an 'Asia-Pacific version of NATO'. - China opposes NATO's cross-border expansion of power.

Source: Compiled by the Author from White Paper 'China's National Security in the New Era'

It is quite apparent from **Table 2** that while the US and NATO have been positioned in a negative context, the settings related to India and Australia largely come across as neutral. However, Pakistan, Iran, Russia, SCO, BRICS and ASEAN have been decidedly framed in a positive context— and along expected lines. While Taiwan has, understandably, been mentioned 12 times in the Chinese White Paper in the context of the recent reunification narrative consistently being peddled through Chinese official documents and media, it is surprising that Japan (as a country) and the QUAD (as a grouping) do not find any mention in any context.

Comparison with the 2019 Defence White Paper

The last Chinese *Defence* White Paper, entitled “*China's National Defense in the New Era*”, was released in 2019. So, defence and security analysts and China watchers across the world have been awaiting the release of the next edition with a palpable sense of anticipation for more than half a decade. In this context, the periodicity of earlier editions of White Papers is noteworthy. The first such White Paper was released in 1998, with follow-on editions being published every two years until 2010. The next three editions were published in 2013, 2015 and 2019, with a gap of three, two, and four years, respectively. Such random— and sometimes extended— gaps between the release of successive Defence White Papers were largely attributed to the

ongoing large-scale reforms within the Chinese defence establishment— including in the Central Military Commission (CMC) and the People’s Liberation Army (PLA).

It was therefore presumed by the international security community that the 2025 edition — released after six years— would be the latest in a continuum of thematically related *Defence* White Papers. However, that presumption has not been validated by this White Paper, which is focused upon *security* rather than merely *defence*. Unsurprisingly, therefore, a perusal of both White Papers reveals little or no commonality of the central theme. Thus, while the 2019 White Paper provided a detailed insight into the reorganised Chinese *defence* structure and offered fairly specific information about the resultant post-reform PLA hierarchy, the 2025 White Paper has looked at national *security*— that too, from a very broad conceptual prism— with military-based security forming just one relatively minor subset of the ‘big (‘comprehensive’) national security’ definition articulated therein.¹⁰

In fact, despite the PLA being one of the foremost instruments of national power — as, indeed, are the armed forces (or defence forces) of any country— it and its affiliated aspects are covered in just one paragraph under the sub-heading “*Build a Strong Military Defense Barrier*” in the sixth and last part of the 2025 White Paper, and feature nowhere else in the entire document. Obviously vital topics such as the CMC leadership, joint-combat systems-management, capacity-building and capability enhancement that address both traditional security areas and new ones as well, cross-Service and local reforms, the optimisation of the defence industrial base, and the incorporation of science and technology in national defence, among others, are simply enumerated as such in that single paragraph. In sharp contrast, these are the very topics that formed the bulk of the 2019 White Paper and had been explained in greater detail therein.

It would, therefore, not be totally out of place to argue that the 2025 White Paper is not a continuation of the earlier series of Chinese ‘*Defence* White Papers’. By extension, it can also be inferred that the 2025 ‘National *Security* White Paper’ is a unique document of its kind, and that a comparison of the two White Papers is akin to ‘comparing apples with oranges’.

Concluding Thoughts

The 2025 ‘National Security White Paper’ has specifically singled out the ‘Asia-Pacific’ within which ‘severe challenges to regional stability inherently exist. The use of the term ‘Asia-Pacific’ to largely describe the ‘Indo-Pacific’ region— which has progressively found greater visibility, near-ubiquitous usage and wide acceptability— remains consistent with the Chinese official stance and media narrative. However, it is nevertheless interesting to note the mention of the term “Indo-Pacific” in this White Paper, even though the context of its usage is to express China’s opposition to the “... *division of the region under the Indo-Pacific strategy*”.¹¹ However, no clarity has been offered with regard to ‘which’ region and ‘whose’ Indo-Pacific strategy.

In the inherently unstable ‘Asia-Pacific’ region, as China calls it, vital security issues of international import, such as the protection of Chinese overseas interests (citizens, organisations and institutions), and the safeguarding of maritime rights and interests, were expected to find greater salience. That said, these important security matters are mentioned quite routinely alongside numerous other national-level concerns such as agriculture (where soyabean import dependency is, of course, an extremely significant security issue— albeit one that usually escapes the attention of hard-security analysts; mineral resources, human fertility and demographics (another area of very serious concern); public health; amongst many others. This sort of narrative in the 2025 White Paper thus appears to broadly conform to CPC General Secretary Xi Jinping’s Work Report presented during the 20th Session of the National Party Congress (NPC).¹² On closer investigation, it also appears that all the national development aspirations across a wide-spectrum as mentioned in the exhaustive 13th Five-year Plan (2016-2020) promulgated by the Chinese National Development and Reform Commission (NDRC),¹³ have been largely securitised, summarised, and linked to the ‘big (‘comprehensive’) security’ paradigm in the 2025 White Paper.

The 2025 White Paper has adopted the broadest possible view of national security, virtually subsuming every aspect of national development into the framework of national security. The imperative of ensuring national security has, in fact, been metaphorically described as building “*a new indestructible great wall*”, so that it can

provide across-the-board guarantee to national development. On the flip side, the White Paper also posits that an unfinished or stagnant development process will certainly lead to national insecurity.

It is, of course, readily conceded that close correlation between economic development and security is a universally accepted reality— with an economic powerhouse deemed to be relatively more secure against threats and risks than one that is merely military-centric. In that sense, the 2025 Chinese White Paper has simply repeated this truism, albeit with grandiosely expressed linkages between these two imperatives. Consequently, this latest Chinese ‘National Security White Paper’ of 2025 can certainly be characterised as a ‘comprehensive security’ redux, albeit one viewed through a Chinese prism.

23 June 2025

ENDNOTES

- 1 The State Council of The People’s Republic of China, “Abstract of white paper on China’s national security in new era”, 12 May 2025, https://english.www.gov.cn/news/202505/12/content_WS6821a354c6d0868f4e8f279a.html
- 2 Andrew S. Erickson, “New White Paper: “China’s National Security in the New Era”, 12 May 2025, <https://www.andrewerickson.com/2025/05/new-white-paper-chinas-national-security-in-the-new-era/>
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- 5 The State Council Information Office of the People’s Republic of China, “China releases white paper on national security”, 12 May 2025, http://english.scio.gov.cn/whitepapers/2025-05/12/content_117870467.html
- 6 Ministry of Foreign Affairs of the People’s Republic of China, “Full text of the report to the 20th National Congress of the Communist Party of China,” 25 October 2022, https://www.fmprc.gov.cn/eng/zxxx_662805/202210/t20221025_10791908.html
- 7 White Paper, “China’s National Security in the New Era”, as translated by Andrew Erickson. See Note 2 *ibid.*

- 8 The State Council, The People’s Republic of China, <https://english.www.gov.cn/archive/whitepaper>
- 9 Xinhua, “Full text: The Global Security Initiative Concept Paper”, 21 February 2023, <https://english.news.cn/20230221/75375646823e4060832c760e00a1ec19/c.html>
- 10 Note 5 *ibid.*
- 11 The Author makes this assertion based on the presumption that the term ‘Indo-Pacific’ is the correct translation of the relevant Chinese characters used in the original Chinese version of the 2025 ‘National Security White Paper’. The English- translated version of the White Paper published by Andrew Erickson has been used in this case. Note 2 *ibid.*
- 12 Ministry of Foreign Affairs of the People’s Republic of China, “Full text of the report to the 20th National Congress of the Communist Party of China, *ibid.*
- 13 National Development and Reform Commission, “13th Five-Year Plan for Economic and Social Development of People’s Republic of China (2016–2020)”, December 2016, https://en.ndrc.gov.cn/newsrelease_8232/201612/P020191101481868235378.pdf.

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‘Comprehensive Archipelagic Defence Concept’ (CADC) of the Philippines and Opportunities for India Arising Therefrom

Ms Sushmita Sibwag

A geopolitical storm has been brewing in the South China Sea (SCS) for some time now, and increasingly, the Philippines finds itself at the centre of this turmoil. Over the past decade, successive administrations of the archipelagic nation have employed various strategies to navigate its often complex and vexed relationship with China in the SCS. These strategies have ranged from diplomacy and economic partnership to hard balancing and leveraging international law. Over time, the Philippines’ strategy has evolved to combine all three approaches to address Chinese assertiveness and violations of international law in the SCS or the West Philippine Sea (WPS).¹ In doing so, the Philippines has adopted an approach distinct from that of its ASEAN counterparts, who have largely relied on diplomacy and negotiations with China. The 2016 Award of the Arbitral Tribunal, which rejected China’s extensive historic claims and criticised its illegal actions in the SCS, marked a pivotal moment in the development of the conflict which provided the support of international law to the arguments of the Philippines. Its latest strategy, encapsulated in the “*Comprehensive Archipelagic Defence Concept*” (CADC),² marks a significant shift in the country’s strategic thinking and defence priorities, moving from an emphasis on internal security— borne out of decades of counterinsurgency efforts— to a focus on comprehensively safeguarding its archipelagic territory, comprising 7,641 islands, along with its sovereign rights in an EEZ spanning approximately 2.2 million square kilometres.

This article analyses the objectives of the CADC and evaluates the existing capacities and capabilities of the Philippines in domains relevant to this strategy. In addition, considering the evolving geopolitical dynamics in the SCS, and the Indo-Pacific at large, it assesses the role of key external players, including the United States (US), Australia, and Japan, in supporting Manila's efforts to fully operationalise the CADC. Focussing upon India's growing defence cooperation with the Philippines, it argues that the two nations should harness existing synergies and scale-up cooperation to achieve the rapid and full operationalisation of the CADC, in alignment with other like-minded partners, and concludes by providing policy recommendations to achieve this.

Analysing the Objectives of the Comprehensive Archipelagic Defence Concept (CADC)

The CADC of the Philippines represents a significant shift in that nation's security strategy, moving from an inward-looking focus to a more maritime-centric approach, with particular emphasis on safeguarding the nation's resources in its EEZ.³ This shift was long overdue, given the country's vast archipelagic geography, and builds on previous service-led initiatives, such as the *“Active Archipelagic Defense Strategy”* (AADS) introduced by the Philippine Navy in 2013, and the *“Archipelagic Coastal Defense”* concept published by the Philippine Marine Corps (PMC) in 2021.⁴

This shift was accelerated by the increasing harassment of the Filipino officials and fisherfolk in the WPS by Chinese agencies and, in particular, by the Chinese maritime militia. Obviously, in comparison to China's substantial naval capacities, the Philippines' military might at sea is constrained by both limited capacity and corresponding capability. To address this imbalance, the CADC was introduced as a focussed strategy, along with the *“Horizon 3”* phase of the *“Revised Armed Forces of the Philippines Modernisation Programme”* (RAFPMP), to enhance the operational readiness and overall effectiveness the Armed Forces of the Philippines (AFP) in ensuring *“unimpeded and peaceful exploration and exploitation of all natural resources within the EEZ”* for Filipinos and *“those authorised by the Philippine government”*.⁵ Broadly, fully operationalising the CADC would involve enhancing the AFP's capacities and capabilities across the following key domains⁶:

1. **Enhancing Maritime Situational Awareness (MSA).** The efforts of the AFP towards generating maritime situational awareness (MSA) are still at a nascent stage. Currently, the Philippines obtains its MSA through a limited number of patrol vessels and aircraft, drones, and information-sharing mechanisms and programmes such as the *Sea Vision* of the US⁷ and the *Dark Vessel Detection Programme* of Canada.⁸ In March 2024, the Philippines restructured the National Coast Watch Council (NCWC) to establish the National Maritime Council (NMC) through its “*Executive Order (EO) No. 57*” so as to develop coordinated policies and strategies focussed on maritime security and MSA/ MDA.⁹ Since its establishment, the NMC has been attempting to coordinate the efforts of the Philippine Navy (PN), the Philippine Coast Guard (PCG), and other relevant agencies such as the Bureau of Fisheries and Aquatic Resources (BFAR). It has also conducted training workshops for them on various international information sharing platforms, such as the Indian Ocean Regional Information Sharing (IORIS) platform under the EU CRIMARIO II initiative.¹⁰ In addition, Philippines is cooperating with the US through the US-Philippines Space Dialogue to utilise space for developing maritime domain awareness and space situational awareness.¹¹ However, considering the frequency and scale of Chinese intrusions into the Philippine EEZ, the efforts to generate a “*common operating picture*” (COP) fall short of the required capacity for the Philippine agencies to track Chinese activity in its waters in real-time and respond rapidly in a unified manner.¹² Further, as confrontations with China increase in the WPS, there is a pressing need for the Philippines to scale-up investment in platforms, equipment, and assets for monitoring and implement the *Horizon 3* phase of the RAFFPMP in a timely manner, along with forging new partnerships and deepening existing ones with likeminded nations in the Indo-Pacific.
2. **Bolstering the Maritime and Air Defence (MAD) Capacities and Capabilities of the AFP.** Since the preceding decade, the Philippines has been increasing its investment towards improving its maritime defence. In the process, it has inducted three *Gregorio Del-Pilar* Class offshore patrol vessels (OPVs) (formerly US *Hamilton* Class cutters) between 2011 and 2016, the BRP *Conrad Yap* (*Pohang* Class corvette) in 2019 and two *Jose*

Rizal Class frigates received in 2020 and 2021 from South Korea.¹³ Under the *Horizon 3* phase of the RAFMP, the Philippines is to acquire “*Wonhae-class Offshore Patrol Vessels (OPVs), missile corvettes, fast attack interdiction boats, and S-70 Black Hawk helicopters.*”¹⁴ In October 2023, the Philippine Navy Aviation unit announced its plans to purchase three fixed-wing anti-submarine maritime patrol aircraft.¹⁵ Further, with the delivery of two batches of the shore-based, anti-ship variant of BrahMos missiles from India in April 2024 and 2025, respectively, the maritime defence capacity of the Philippines received a major boost.¹⁶ In respect of air defence, the Philippines currently operates 12 FA-50 fighter jets, purchased from Korea Aerospace Industries (KAI) between 2015 and 2017, and the Philippine Air Force (PAF) recently recommended acquiring an additional twelve FA-50s.¹⁷ While modest in terms of capabilities, these jets are vital for air defence, particularly in securing contested regions of the WPS. Reportedly, the Philippines is seeking to acquire about twenty F-16s from the US, with advanced avionics, radar and weaponry included.¹⁸ In addition, drawing lessons from Ukrainian successes with drones in the Black Sea against Russia, it received the MARTAC MANTAS T-12 unmanned surface vehicles (USVs) from the US to bolster its capacity to conduct asymmetric warfare in the SCS.¹⁹ However, while the CADC envisions greater cooperation amongst the three Services of the AFP, challenges remain in enhancing interoperability amongst the Philippine Army, the Philippine Air Force (PAF), and the Philippine Navy (PN). Consequently, there is a need to regularly conduct joint exercises²⁰ and train together for eventually conducting multi-domain operations (MDO) to overcome “*the incompatibilities in ‘technology’, ‘time’, ‘timing’ and ‘thinking’ amongst all domains.*”²¹

3. **Leveraging strategic partnerships with others in the region, including Australia, Japan, Republic of Korea, and India.** Under the CADC, the Philippines is looking to forge deeper strategic ties with other like-minded partner nations across the Indo-Pacific to address the growing military challenges posed by China’s increasing assertiveness in the region.²² Typifying this is the media-hype given to what is known colloquially (albeit not officially) as the ‘Squad’. This emerged as a strategic response to China’s expanding

influence and its aggressive actions in the SCS, as well as its broader efforts to dominate the Indo-Pacific region.²³ The term is seductive enough to have been gleefully picked-up by a few sections of the strategic community, particularly in the Philippines itself and in Australia and is sought to be popularised more widely. The grouping includes the US, Japan, Australia, and the Philippines (but not India) and has conducted combined maritime exercises in the SCS and the Philippine EEZ as part of Manila's strategic signalling to China.²⁴ Bilaterally, too, these partner nations are bolstering Philippines' military capacities and capabilities to defend its rights in the face of China's strongarm tactics and increasing assertiveness in the Philippine EEZ.

Evaluating the Role of Other Players in Operationalising the CADC

The CADC is reinforced by the Philippines' strategy of "*naming and shaming*" China for its coercive actions, implemented under the framework of the "*assertive transparency*" initiative.²⁵ This approach has drawn significant domestic and international attention to the persistent challenges the Philippines faces in asserting its sovereign rights within its EEZ. By actively confronting China's harassment of Filipino officials and fisherfolk, as well as its use of "*grey zone*" tactics, the Philippines has adopted a markedly different stance from that of most Southeast Asian nations, which have tended to favour diplomacy and negotiation in managing territorial disputes and tensions in the South China Sea. As a result, the Philippines has often found itself isolated within the region in its firm opposition to China's unlawful activities in the WPS.²⁶ China has exploited these regional divergences, accusing the Philippines of aligning with a US-led agenda, and frequently portraying it as a cautionary example to deter other ASEAN member States from yielding to what it describes as "*Washington's manipulation*" and efforts to sow discord.²⁷ Consequently, the Philippines has increasingly sought support beyond the region — primarily from its treaty ally, the US, as well as other like-minded partners — to bolster its military capabilities and to uphold both its maritime entitlements and the broader rules-based international order in the South China Sea.

1. **The United States.** The United States remains the principal partner in the Philippines' military modernisation efforts, providing critical support under

the “*Mutual Defense Treaty*” of 1951. In 2023, under the 2014 “*Enhanced Defense Cooperation Agreement*” (EDCA) — which grants US forces access to designated locations within the Philippines²⁸ — the number of approved sites was nearly doubled and the US committed nearly US\$ 100 million towards infrastructure upgrades at the existing EDCA sites.²⁹ Additionally, during the “*2+2 Ministerial Dialogue*” in July 2024, the US announced a further US\$ 500 million in military funding for the Philippines.³⁰ Between 2019 and 2023, the US was also the third-largest arms supplier to the Philippines, following South Korea and Israel.³¹ As part of its broader efforts to bolster the capacity of the Philippines to defend its EEZ, the US has provided radar systems³² and unmanned surface vehicles (USVs),³³ and in 2024, the two allies signed an important intelligence sharing agreement.³⁴

The BALIKATAN Exercise, the annual joint military exercise between the US and the Philippines, has expanded significantly in recent years. This expansion includes increased participation from partner nations such as Australia, France, and Japan, as well as a broadened scope encompassing multi-domain operations, disaster relief, and cybersecurity.³⁵ Notably, during the 2023 edition of Exercise BALIKATAN, the “SINKEX Serial” involved the live-fire sinking of a target ship off the coast of Zambales in the SCS.³⁶ Furthermore, for the first time during the exercise, the US Army deployed a HIMARS (High Mobility Artillery Rocket System) battery from the First “Multi-Domain Task Force” (MDTF). The MDTF also utilised Exercise BALIKATAN to experiment with long-endurance drones, unmanned aerial systems (UAS),³⁷ and information fusion.³⁸ These ‘joint-and-combined’ exercises play a pivotal role in operationalising the CADC by enhancing interoperability between the AFP and US Forces.

2. **Japan.** Under the “*Maritime Safety Capability Improvement Project*” (MSCIP), Japan delivered ten 44-metre Multi-Role Response Vessels (MRRVs) in 2013, followed by two 97-metre MRRVs in 2016. In May 2024, a USD 507 million agreement was finalised for constructing an additional five 97-metre MRRVs, to be funded through an “*Official Development Aid*” (ODA) loan from the “*Japan International Cooperation Agency*” (JICA).³⁹ Between 2016

and 2018, Japan transferred five TC-90 trainer aircraft to the Philippine Navy, one of which was rapidly deployed for patrol missions over the Scarborough Shoal.⁴⁰ Since December 2023, Japan's Mitsubishi Electric Corporation has supplied air surveillance radar systems to the PAF under the Official Security Assistance framework.⁴¹

In a significant development in defence cooperation, a “*Reciprocal Access Agreement*” (RAA) was signed in July 2024, establishing a legal framework for the enhanced deployment of Japan's Self-Defense Forces (SDF) in the Philippines. This is the first such agreement Japan has concluded with an Asian country.⁴² In addition to participating, since 2023, in successive editions of Multilateral Cooperation Activity (MCA) amongst the ‘Squad’, Japan conducted its first combined military exercise with the Philippines in the SCS in August 2024⁴³ and became a full-fledged participant in the multilateral Exercise BALIKATAN in April 2025.⁴⁴

3. **South Korea.** As a key Asian defence partner, South Korea was the largest arms supplier to the Philippines between 2019 and 2023.⁴⁵ It has provided twelve FA-50 fighter jets, naval platforms, and a range of weapon systems to support the AFP's modernisation efforts.⁴⁶ In 2021 and 2022, Hyundai Heavy Industries (HHI) secured contracts to deliver two corvettes and six offshore patrol vessels (OPVs), scheduled for delivery by 2026 and 2028, respectively.⁴⁷ In a key diplomatic milestone, the two nations elevated their relationship to a strategic partnership in October 2024 and signed an agreement to enhance coastguard cooperation.⁴⁸ In recent times, South Korea has also articulated a clearer stance on the South China Sea issue, advocating for upholding “*the freedom of navigation and overflight based on the principles of international law, including UNCLOS*”.⁴⁹
4. **Australia.** The Philippines' defence partnership with Australia is underpinned by a series of bilateral agreements, including a longstanding Memorandum of Understanding (MOU) on Defence Cooperation (1995), an Australia-Philippines “*Status of Visiting Forces Agreement*” (2012), an “*Enhanced-Defence Cooperation Programme*” (E-DCP) (2019), a “*Mutual Logistics Support*

Arrangement”, and an MOU on “*Defence Industry Cooperation and Logistics*” (2022).⁵⁰ The E-DCP, which focuses upon maritime security, counter-terrorism (CT), and humanitarian assistance and disaster relief (HADR), led to the establishment of the “*Joint Australian Training Team-Philippines*” (JATT-P). This initiative has facilitated training courses and workshops for AFP personnel across all three Services. In August 2023, the two nations also conducted the joint bilateral amphibious exercise ALON.⁵¹ Further, as part of Australia’s capacity-building efforts, a new Air Force facility was donated to the Philippines in 2023.⁵²

5. **Israel.** In 2017, the Philippines acquired *Spike* Extended-Range (ER) missiles from Israel’s Rafael Advanced Defense Systems, for installation on its multi-purpose attack craft (MPAC).⁵³ Under the *Horizon 2* phase of the AFP Modernisation Programme, Israel Shipyards signed a contract in 2021 to deliver nine *Shaldag* MK V Fast-Attack Interdiction Craft (FAIC), known as the Acero-class in the Philippine Navy.⁵⁴ The deal also includes an agreement for the transfer of technology and support for upgrading the Philippine Navy’s shipyard infrastructure,⁵⁵ thereby contributing to the Philippine government’s “*Self-Reliant Defense Posture*” (SRDP) programme.⁵⁶ The contract is expected to be fulfilled by June 2025, with the Philippine Navy expressing interest in procuring an additional ten vessels.⁵⁷ Furthermore, in July 2023, the Philippines also signed an agreement with Elbit Systems to deliver two long-range patrol aircraft (LRPA) to enhance its aerial surveillance capacities in its EEZ.⁵⁸

CADC and Opportunities Arising for India to Enhance Cooperation with the Philippines

Over the years, India and the Philippines have consistently engaged through various mechanisms including the Joint Defence Cooperation Committee, the India-Philippines Maritime Dialogue, Service-to-Service Joint Staff Talks, military training and education programmes, and the Maritime Partnership Exercise (MPX), most recently conducted in 2024.⁵⁹ The Philippines also participated in the inaugural

ASEAN-India Maritime Exercise (AIME) in 2023 as well as the recent multinational MILAN Exercise hosted by India in 2024.⁶⁰ Furthermore, Indian Navy ships on long-range operational deployments to the Western Pacific Ocean have regularly made port-calls at Manila for over 25 years (Table 1 refers).⁶¹

Table 1: Representative list of Indian Navy Ship visits to the Philippines

Year	Indian Navy Ships	Other Countries Visited
2014 (August)	INS Shivalik	Singapore, Vietnam, Malaysia, China, Japan, South Korea
2015 (October)	INS Sahyadri	Vietnam
2016 (30 May-3 June)	INS Satpura and INS Kirch	Vietnam
2017 (23 September)	INS Satpura and INS Kadmatt	Singapore, Indonesia, Malaysia, Thailand, Vietnam, Cambodia, Japan, South Korea, Brunei and Russia
2021 (August)	INS Ranvijay and INS Kora	Vietnam
2023 (02-08 May)	INS Delhi and INS Satpura	Singapore, Malaysia, Cambodia, Indonesia
2023 (12 December)	INS Kadmatt	Japan and Thailand
2024 (19-22 May)	INS Delhi, INS Shakti, and INS Kiltan	Singapore, Malaysia, and Vietnam

Source: Kamlesh Kumar Agnihotri

The establishment of the CADC as the overarching strategy of the Philippines, alongside its shift from a traditionally land-centric focus to a more holistic approach towards defending its archipelagic territory and maritime zones, presents India with a significant opportunity to enhance maritime security cooperation with the Philippines. The recent delivery of the second batch of BrahMos missiles has further solidified bilateral defence ties and bolstered the coastal defence capacities of the AFP.⁶² As the Philippines looks towards like-minded partners such as India to support the *Horizon 3* phase of the RAFPMP and the SRDP Programme, the operationalisation of the CADC offers India with a range of avenues to deepen its defence engagement with the Philippines. This partnership would allow both nations to more effectively

address the challenge posed by China to the rules-based order in the SCS, and across the wider Indo-Pacific. Given that nearly 55% of Indian trade transits the SCS,⁶³ India is increasingly asserting its interests in the region, not only as a concerned stakeholder but also to ensure that China remains focussed on the SCS issue, away from the Indian Ocean.⁶⁴ In a notable shift in its official stance on the escalating conflict in the SCS, India explicitly called for adherence to the 2016 Arbitral Award on the SCS in the Joint Statement of the 5th India-Philippines Joint Commission on Bilateral Cooperation (JCBC),⁶⁵ signalling a departure from its earlier neutral and diplomatically cautious stance following the Tribunal's announcement of the Award in 2016.⁶⁶

Policy Recommendations for India

- a) **Build on the Success of the BrahMos Deal to Strengthen India-Philippines Defence Industrial and Technological Partnerships, Enhancing the AFP's Maritime and Air Defence Capacities.** The US\$ 375 million BrahMos deal between India and the Philippines has provided a significant boost to bilateral defence cooperation, establishing India as a key actor in the evolving sub-regional geopolitical landscape of the SCS.⁶⁷ The Philippines is also expected to procure the *Akash* short-range surface-to-air missile system in 2025, under a proposed USD 200 million deal.⁶⁸ Building on this momentum, India should competitively position itself for future defence projects under the *Horizon 3* phase of the RAFMP, particularly in missile systems and naval platforms, including unmanned underwater vehicles (UUVs).
- b) **Donate or Gift a Naval Ship or a Coast Guard Vessel as a Goodwill Gesture:** Following the precedent set by the gifting of the active-duty warship, the *Kirpan* to Vietnam in 2023, India could explore the possibility of extending a similar gesture to the Philippines, through the donation of a naval ship or a coast guard vessel to symbolise deepening strategic goodwill.
- c) **Engage Closely with the "Squad".** While the Philippines has expressed interest in involving India and South Korea in the so-called "Squad",⁶⁹ India should adopt a calibrated approach in assessing the appropriate degree of

engagement with this group, which is focussed on security cooperation. However, to avoid being sidelined, India could begin by participating as an observer in the multilateral MCA, conducted by the combined defence forces of the US, Japan, Australia, and the Philippines.

- d) **Pursue the Positioning of an International Liaison Officer (ILO) from the Philippines at the Information Fusion Centre-Indian Ocean Region (IFC-IOR).** India and the Philippines should work towards positioning a Philippine ILO at the IFC-IOR to facilitate enhanced information exchange on non-traditional security threats, such as illegal, unreported, and unregulated (IUU) fishing within the Philippines' EEZ.
- e) **Foster a Close Partnership on Strategic Communications, Public International Maritime Law, and Cooperation within Regional and Multilateral Bodies.** India needs to prioritise strategic communications and legal cooperation with the Philippines, focusing on promoting adherence to international maritime law and the rules-based international order. This includes closer bilateral collaboration within regional and multilateral forums, which will be essential to address shared maritime security challenges.
- f) **Explore Opportunities for Joint Hydrocarbon Exploration with the Philippines.** Building on ONGC Videsh Ltd's (OVL) long-standing hydrocarbon exploration activities within Vietnam's EEZ, OVL should assess the feasibility of joint ventures with the Philippines. With the *Malampaya* gas field— currently the largest and the only indigenous commercial source of natural gas in the Philippines— projected to be depleted of recoverable gas by 2027,⁷⁰ Manila is actively seeking new exploration partnerships. The Reed Bank is the only other proven gas reserve of the Philippines but here, contracted survey ships have repeatedly faced Chinese harassment, leading to moratoriums being imposed in 2014 and 2022, although these were later lifted.⁷¹ In this context, India could play a pivotal role as a reliable partner by engaging in joint exploration initiatives in the region with the Philippines.

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Security Situation in Taiwan Strait: Poised on the Razor's Edge?

Captain Kamlesh K Agnihotri (Retd)

President Lai Ching-Te made his first public National Day speech on 10 October 2024 as part of the Taiwan's 113th anniversary celebrations. The event, widely attended by foreign delegates, opposition party members, government functionaries and military personnel, was also well-publicised in the domestic and international media. Major highlights of the Presidential speech were: (1) China has *"no right to represent Taiwan"*; (2) Mainland China and Taiwan were not subordinate to each other; and (3) his main mission was to *"resist annexation or encroachment upon our sovereignty."*¹ The Chinese reaction to the Taiwanese President's public assertion was, of course, along expected lines. The Chinese media severely criticised the Presidential statement as being an unacceptable expression of separatist tendencies, aimed at seeking independence. The Global Times, an acknowledged mouthpiece of Chinese Communist Party, went to the extent of asserting that President *"... Lai's blatant declaration that the two sides of the Taiwan Strait are "not subordinate to each other" constitutes a serious act of illegal provocation. Such open violations of the law must be met with a strong response."*²

The "strong response" that the Global times advocated came in the form of an unannounced and rapidly organised Exercise JOINT SWORD 2024B by the Chinese People's Liberation Army (PLA) on 14 October 2024, wherein the PLA Navy, Army and Air Force units from China's Eastern Theatre Command participated along with some elements of the PLA Rocket Force. The major segment of the exercise was concentrated at six specific locations all around the main island of Taiwan, with the stated objective of *"testing the joint operations capabilities of the Eastern Theater*

*Command units in conducting sea- and air-based combat-readiness patrol, laying blockade against key Taiwanese ports, carrying out assault on maritime and ground targets, as also seize joint superiority in the combat-zone”.*³

A concurrent ‘show of force’ posture involved proactive Chinese Coast Guard (CCG) presence in the vicinity of the outlying Taiwanese islands of Dongyin, Matzu, and Wuqiu. The pictographic representation of the PLA’s exercise JOINT SWORD 2024B released by the Taiwanese media, indicating six areas of deployment around Taiwan and the affected outlying islands, is at Figure 1.⁴

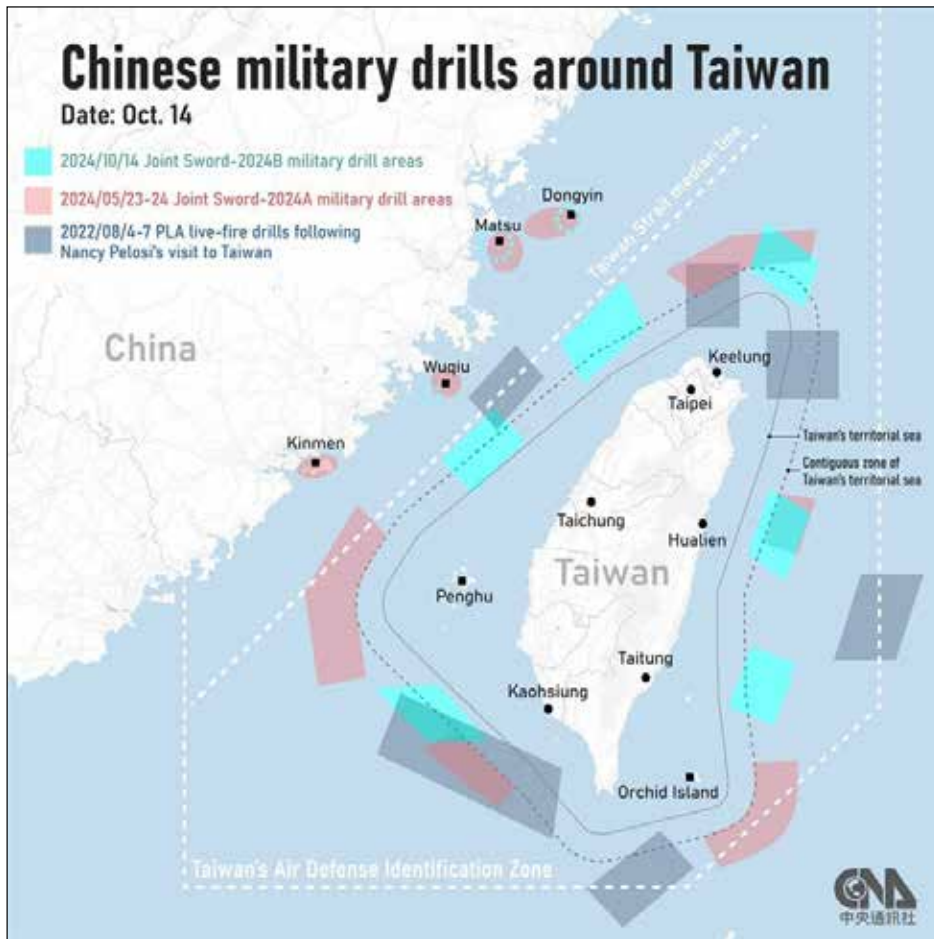
Comparison: Exercises JOINT SWORD 2024A and JOINT SWORD 2024B

In order to get a comparative insight into the scale and scope of JOINT SWORD series of exercises — two of which have been conducted this year — it is necessary to visualise the conduct of the first exercise, the JOINT SWORD 2024A. The PLA engaged in a public display of aggressive brinkmanship, by conducting Exercise JOINT SWORD 2024A on 23 May 2024 — just three days after the newly elected President of Taiwan, Lai Ching-Te, took the oath of office on 20 May 2024 — at an unprecedented scale, all around Taiwan. The exercise, lasting 24 hours — from 0600 hours local time on 23 May 2024 to 0600 hours the next day — involved PLA Army troops, PLA Navy ships and submarines, PLAAF aircraft, PLA Rocket Force units, and, for the first time, CCG ships as well.⁵

The large-scale exercise also covered many additional areas including its outlying islands of Kinmen, Matsu, Wuqiu, and Dongyin. Known differences in the number of participating forces between ‘A’ and ‘B’ series of exercises are tabulated below:

Ser	Key Aspects of Difference	JOINT SWORD 2024A ⁶	JOINT SWORD 2024B ⁷
a.	Participating PLA Navy and CCG Ships	53 (Details not known)	26 (14 PLA Navy +12 CCG)
b.	Participating PLA AF Aircraft	111	153
c.	PLA AF Aircraft crossed Median Line and entered Taiwan’s air defence identification zone (ADIZ)	82	111

Figure 1: Areas of Exercise JOINT SWORD 2024 – Comparison between A and B Series



Source: Focus Taiwan/ CNA English News

Even a perfunctory look at Figure 1 reveals the following disconcerting characteristics related to the present edition of the exercise series:

- The number of exercise areas around Taiwan increased to six, as against five in the 2024A edition.
- The inner limits of the exercise areas were not very far from Taiwan's territorial sea and often transgressed into its adjacent contiguous zone, which was not the case in the previous (May 2024) edition.

- There was, thankfully, no posturing near Kinmen Island, unlike during the last edition.

It can also be inferred from Figure 1 above that a relatively new pattern of major PLA exercises in areas surrounding Taiwan has emerged over past couple of years — having commenced in August 2022 in the run-up to US House Speaker Nancy Pelosi’s visit to Taiwan, which had been followed by a similar exercise in April 2023. They are timed to broadly coincide with major political events in Taiwan’s calendar, so as to make the linkage ominously clear to Taiwan, as also to the rest of the world. Even though specific coordinates of the exercise areas have not been released by either party, the general areas depicted in the admittedly ‘not-to-scale’ graphics, do point to the fact that the PLA forces are progressively inching closer to Taiwan with every iteration of the exercise.

However, a quantum jump in the force level — and consequently implied threat quotient — as compared to the 2024A edition was more than evident, with the Liaoning aircraft carrier group, which was exercising in the South China Sea, also joining in the current exercise and deploying to the east of Taiwan.⁸ While there is insufficient clarity on the composition of participating PLA Navy and CCG units in exercise JOINT SWORD 2024B, it is instructive to note that an operationally effective carrier battle group (CBG) comprises at least four to five surface units (Destroyers and/or frigates) in addition to the carrier itself and a replenishment ship — along with a nuclear submarine in support role for those countries which possess the latter.⁹

The Threat Quotient – Operational and Tactical Issues

While the doctrines for operating aircraft carrier groups differ from country to country on the basis of the capabilities of aircraft carrier and associated air wing, number of escorts and their weapon systems, robustness of integrated intelligence, surveillance and reconnaissance (ISR) architecture, and the ability of other defence forces to support overall national objectives, certain generic and foundational commonalities do exist between their operating philosophies. Two particular aspects pertain to the need for achieving extended-range offensive coverage, and ensuring a large area of

‘sea denial’ to the adversary. In the context of Liaoning carrier group’s deployment on the east coast of Taiwan for the exercise, it is worth noting that the physical length of Taiwan is a mere 395 km (245 miles) from end to end. For a moderate capability CBG — such as the one centred around the aircraft carrier Liaoning whose offensive or defensive umbrella would easily cover a radius of 200 km — it is well within its operational capabilities to sanitise the entire length of Taiwan and its adjoining maritime areas.

Thus, a PLA Navy CBG — and its surface action group(s) — would be quite well suited to perform all the stated objectives that Beijing laid down with regard to the JOINT SWORD series of exercises, viz., conduct sea-air combat-readiness patrol, blockade key ports and areas, assault maritime and ground targets, as well as accomplish joint seizure of comprehensive superiority.¹⁰ Taiwan, hamstrung by the limitations of its geography, has very few major ports, mainly at Keelung in the north, Kaohsiung in south-west, Taichung in the west and Hualien on east coast. The largest Taiwanese naval base (at Suao) also lies on the east coast. A CBG, dynamically deployed on the east coast of Taiwan, would be able to effectively blockade all ports along an arc running clockwise from Keelung in the north to Kaohsiung in the southwest, and would be in a position to prosecute any maritime or even ground targets which try to breach its blockade, either from landward or seaward.

A further point to note is that the CBG was deployed further seaward of the two exercise locations on the east coast of Taiwan, so as to provide air cover to both these locations. The PLA certainly deployed additional naval ships at all the six locations around Taiwan, even though their deployment details are not readily available in public domain. As regards the outlying islands farthest from Taiwan, but closest to China, the CCG ship-manoevres during both ‘A’ and ‘B’ editions of this exercise series sent an unambiguous message of isolating and cutting them off, if required. This intent was borne out by the publicised tracks of CCG ships manoeuvring in the restricted waters around Wuqiu and Dongyin islands during Exercise JOINT SWORD 2024A, wherein they transited as close as 2.8 Nautical Miles (NM) from Wuqiu and 3.1 NM from the Dongyin coast.¹¹ The graphic at Figure 1 indicates that a similar pattern of CCG deployment was repeated in close proximity of Dongyin, Matsu and Wuqiu island during the follow-on 2024B exercise, too.

The actual operational scenario during hostilities will, however, never be as simple and straight-forward as projected above. The Taiwanese national defence establishment — including its shore-based anti-ship and air defence ordnance, as well as its Air Force — will oppose this Chinese intent to the best of its capabilities. A high probability of the US Navy committing its forces to the defence of Taiwan in accordance with the provisions of the Taiwan Relations Act 1979¹², will also have to be factored. However, despite this longstanding US security guarantee, Beijing, in the current environment of uneasy peace, does appear to be largely succeeding in its endeavours vis-à-vis Taiwan by this blatant and repeated display of the aggressive brinkmanship. Concurrently, the PLA units are getting trained on the operational and tactical methodologies of executing the laid-down tasks in fulfilment of the stated objectives; and the troops are slowly getting used to the idea of taking the fight to Taiwan and internalising it by way of repeated drills.

The Bigger Picture

China has conveyed the firmness of its intent of reunifying Taiwan in its 2022 White Paper entitled ‘The Taiwan Question and China’s Reunification in the New Era’, by articulating that the “*rejuvenated China of the new era considered this time as a new starting point for reunification*”.¹³ Over the next couple of years since that time, the PLA has followed-up on this national objective by relentlessly exerting incremental pressure through ‘show-of-force’ exercises around Taiwan — four of which including the JOINT SWORD series that have been conducted to date. These major exercises are, of course, in addition to the almost daily intrusions of the PLAAF aircraft across the median line and into Taiwan’s ADIZ.

In addition to the reunification pitch being linked to the Chinese territorial integrity and ‘core interest’ rhetoric, Taiwan is also of huge geostrategic significance to Beijing in its bid to project power into the Pacific Ocean and beyond. The strategic significance of Taiwan’s geographical location has been widely acknowledged from the available historical records pertaining to previous invasions. A Chinese warrior chieftain named Koxinga (Cheng Cheng-kung) reportedly attacked Taiwan in 1662, and upon its capture, pushed the Dutch colonisers out of the Island. Using this new conquest as a base, he went on to raid numerous locations in the Philippines and even

sought tribute from the Filipinos.¹⁴ While these threats did not materialise (largely due to the untimely demise of that crafty warrior), the idea of using Taiwan as a sheet anchor for southward expansion took root, and continues to persist. Subsequently, the Japanese Imperial Army invaded Taiwan in 1874, and followed up its eventual capture by launching its military and economic campaign into southern China and Southeast Asia, using Taiwan as a launch pad.¹⁵ The relevance of this historical context in the current environment — one in which China appears to be poised for forcible reunification like never before — is brought home quite starkly in this ominous forewarning: “*That south-pointing history of Taiwan should be remembered whenever Taiwan’s future under PRC occupation is discussed. History is not going to stop. It will continue, and like all history, it will echo what has gone on before.*”¹⁶

The strategic importance of Taiwan — and the military concerns for the US, should China manage to succeed in forcibly absorbing Taiwan into the PRC — was summed up quite succinctly by General Douglas McArthur in the 1950s: “*Formosa in the hands of the Communists can be compared to an unsinkable aircraft carrier and submarine tender, ideally located to accomplish Soviet offensive strategy and at the same time, checkmate counter-offensive operations by United States Forces based on Okinawa and the Philippines.*”¹⁷ The same concerns continue to hold good for the US — as also for various western Pacific littorals — in the present day, even though a quarter of the century has gone by.

Conclusion

Beijing, with its publicly evident actions of creating ‘ever-new normals’ vis-à-vis Taiwan by conducting unannounced military editions of the JOINT SWORD series of exercises, is certainly testing the resolve of Washington, while its allies and like-minded partners observe the ‘power-play’ dynamics from the sidelines, all the while mulling the options available to them so as to preserve their own national interests. The Global Times opinion piece certainly seems to have sounded the bugle by mincing no words this time:

*“The ‘Joint Sword-2024B’ exercise is intended to make the Lai authorities (sic) acutely aware that two swords hang over the ‘Taiwan independence’ separatist forces: One is the sword of military punishment, and the other is the sword of judicial punishment.”*¹⁸

Against this backdrop, the most obvious question that must cause the greatest worry to political leaders across the globe is this: “*Is the security situation in the Taiwan Strait actually poised on a razor’s edge at this moment?*”

20 October 2024

ENDNOTES

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Approaches for the ‘Indo-Pacific Partnership for Maritime Domain Awareness’ (IPMDA) to Actually Deliver on its Promise

Ms Anuttama Banerji

The International Maritime Organisation (IMO) defines maritime domain awareness (MDA), as, “*the effective understanding of anything associated with the maritime domain that could impact (the) security, safety, the economy or the marine environment.*”¹ However, this definition is so inclusive and all-embracing in its ambit as to be well-nigh impossible to achieve. Indeed, since there is precious little within the maritime domain that would *not* impact safety, security, the economy, or the marine environment, such an “*effective understanding*” would require an awareness of very nearly *everything*. Clearly, therefore, MDA will remain an *aspirational* goal rather than one that can be achieved in the “here-and-now”. This realization makes it critical for the reader to recognize the importance of the three components of MDA that the IMO has identified, namely, “*Maritime Situational Awareness*”, “*Maritime Threat Awareness*” and “*Maritime Response Awareness*”.² Amongst these components it is maritime *situational* awareness (MSA) — the picture of the current situation within the maritime domain — that “*forms the foundation on which MDA is built*”.³

This notwithstanding, there is no gainsaying the fact that the acronym MDA has become so commonly used a term that it has largely caused the distinction between MSA and MDA to be ignored almost worldwide. This is, in many ways, a pity, because the distinction is an important one, especially where it relates to information-sharing. One can have a high degree of MSA without any need to share information outside of one’s national institutions. One needs to look no farther than China for the proof of this statement. China has excellent MSA but shares

absolutely no information on this entire subject with any country or agency outside of China. On the other hand, to move from MSA to MDA (which involves the aggregating — across geographies — of the MSA obtained or attained by each of a number of nations or agencies), information-exchange amongst the partnering entities is absolutely essential. Likewise, the engendering of international “trust” is not at all required for MSA but is absolutely necessary to move from MSA towards MDA. Consequently, while it is necessary to keep chipping away at the current apathy, the road to establishing widespread awareness of the need to use MSA rather than MDA is likely to be a long, hard, (and lonely) one.

Within India, for instance, the Indian Navy (IN) appears quite content to ignore the acronym MSA and to simply stick with MDA. Indeed, it describes MDA as an *“as an all-encompassing concept... It involves being cognisant of the position and intentions of all actors, whether own, hostile or neutral, and in all dimensions - on, over and under the seas...”*⁴ MDA is also central to the Information-Decision-Action Cycle (IDA) and *is a key enabler for maritime security across the conflict spectrum.*⁵ This IDA cycle is often also described as the OODA loop, where the acronym stands for “Observe-Orient-Decide-Act” — an acronym that was developed by Colonel John Richard Boyd, USAF (Retd).⁶

MDA is also categorised by the Indian Navy into three broad categories, military MDA, which is restricted to naval operations; non-military MDA, which includes Indian maritime security agencies and sectors with interest in the security and constabulary roles; and information-sharing mechanism with navies, countries, regional constructs and other stakeholders.⁷

MDA/MSA may also be seen as, *“a process that collects, fuses, and analyses data about activities in, and the conditions of, the maritime environment and then disseminates the data gathered and analysis results to decision makers.”*⁸ In somewhat more simplistic terms, MDA has been understood as the ability to comprehend what is *“occurring on, above and below the water — as an essential starting point to understanding maritime security.”*⁹

The Quad and Indo-Pacific Maritime Domain Awareness Initiative (IPMDA)

Of the four member States of the Quadrilateral Security Dialogue (commonly known as ‘Quad’), MDA matured first and fastest in the USA where, driven by Homeland Security Presidential Directive-13 (HSPD-13)/National Security Presidential Directive-41 (NSPD-41), under the aegis of President George W Bush,¹⁰ it had achieved a reasonable degree of maturity over two decades ago — in 2004. Developments relevant to MDA in Australia, Japan and India grew somewhat more slowly and certainly matured later.

Within India, for instance, while the Indian Navy was cognisant of the need to share maritime information and was, indeed, doing so as long ago as 2005, it was only over a decade later that the principal Indian centre for the development of cooperative MDA, namely, the “Information Fusion Centre - Indian Ocean Region” (IFC-IOR) was formally established (on 22 December 2018) by the Government of India.¹¹ Since then, of course, India has made rapid and impressive strides and the IFC-IOR is today considered to be *primus inter pares* throughout the western segment of the Indo-Pacific, namely, the Indian Ocean.

In Australia, the Australian “Maritime Border Command”, was established in 2005, “to lead and coordinate Australian maritime security operations by military and civil agencies through a centralised operations centre, now known as the Australian Border Operations Centre (ABOC). ABOC acts as Australia’s national information fusion centre for all civil maritime threats”.¹² More recently, Australia has turned to private firms such as Thales Australia to develop an MDA capability to detect, identify, classify and track potential threats in the maritime environment.¹³

In Japan, MDA is developed under the aegis of the National Headquarters for Ocean Policy. However, the Japan Coast Guard serves as the principal operational agency responsible for implementing and managing MDA systems, particularly through its operation, since April 2019, of the “MDA Situational Indication Linkages” (MSIL) platform.¹⁴

As ships traverse territorial seas and move into international waters, the MDA picture becomes dense, complex, and multinational. Within this complicated environment, other surface and sub-surface vessels also navigate the waters, adding to varying degrees of complexity within the volatile oceanic space. Thus, facilitation of MDA activities becomes problematic with considerable issues surfacing at the operational level.¹⁵

Perhaps the most topical example of cooperative efforts towards MDA is the Quad's "Indo-Pacific Partnership for Maritime Domain Awareness" (IPMDA). Launched in 2022, the IPMDA is "...a technology and training initiative to enhance maritime domain awareness in the Indo-Pacific region and to bring increased transparency to its critical waterways. IPMDA harnesses innovative technology, such as commercial satellite radio frequency data collection, to provide partners across Southeast Asia, the Indian Ocean region and the Pacific with near real-time information on activities occurring in their maritime zones."¹⁶

As a founding member of the Quad, India has adequately demonstrated New Delhi's commitment to the development of the IPMDA. India recognises that MDA is not simply about information and knowledge but essentially about "understanding" the maritime domain — that is, "*making sense of activities related to the maritime domain*".¹⁷ As such, it has correctly been likened to the "*engine room of nation and regional maritime security*"¹⁸ and because it enables policy cross-domain integration and interagency coordination, MDA can be harnessed to build trust and confidence between Quad member States.¹⁹ It can also resolve some of the "*sociopolitical challenges*"²⁰ associated with the dissemination of information within the maritime domain. These sociopolitical challenges occur between States, regional stockholders such as shipping and insurance companies as well as local citizens within the maritime landscape. It is important to avoid the error of placing MDA solely with the technological domain and, instead, to recognise and acknowledge the role of *people* as well. Indeed, "*effective MDA/(MSA) needs to be viewed as a function of both low and high technology*."²¹ In fact, in many cases, one ought to favour low-tech, people-centric solutions.²²

Such an attempt could bring about a tangible shift in the *material balance of power* since Quad partners could potentially build/harness their diverse capacities

and capabilities.²³ It can also proactively enable the Quad to build capabilities that are “mission agnostic”, which could, in turn, enable the Quad to perform a range of functions that ensures preparedness for multiple contingencies, especially in the long run.²⁴

Enhancing MDA in the Indian Ocean

The IPMDA offers integrated maritime domain awareness/maritime situational awareness to a variety of partners across the Indo Pacific.²⁵ For instance, under the aegis of Australia, the IPMDA has been integrated with “Regional Fisheries’ Management Organisations” (RFMOs) such as the “Pacific Islands Forum Fisheries Agency” to “*enhance regional MDA/(MSA) in the Pacific through satellite data, training, and capacity building*”²⁶ This approach could easily be emulated in the western segment of the Indo-Pacific, namely, the Indian Ocean, involving a strong tie-up between the Quad and the Indian Ocean Tuna Commission (IOTC), which is a major RFMO, in order to combat illegal, unreported, and unregulated fishing (IUUF).

In this regard, regional stakeholders such as “local fishermen” should be consciously incorporated within existing MDA frameworks so as to enhance the quality of information available to the Quad member-States. Since limited knowledge of the ‘local’ conditions makes it difficult for security personnel to identify vessels (both foreign and domestic) engaged either in IUUF or in drug-, arms-, and human trafficking, the fishing communities of different subregions of the Indo-Pacific should be incorporated as key stakeholders, as they possess the “generational knowledge” and have an intrinsic awareness of living conditions and working in their local maritime environment. For example, the Indian state of West Bengal, with its fluvial/deltaic landscape has, for millennia, been home to fishing communities who have an excellent understanding of the brooks, *jheels*, lakes, swamps that dot the region, and most importantly, are intimately aware of the conditions that prevail in their area of the Bay of Bengal. These fishing communities also have a nuanced understanding of the boats that are used to fish in ‘their’ waters and are easily able to identify craft that are from outside their area. They need be hired by state agencies to provide for low-tech MDA.²⁷ In this regard, not just fishermen who fish in the sea but also those who ply their trade along rivers need to be engaged by the State to

combat illicit maritime activities that often occur within and along the estuaries that connect the rivers to the sea. The Farakka port in Murshidabad district of India is a typical “hotbed” of smuggling and offers an excellent case in point.²⁸

A good example of people-involvement and low-tech solutions to MDA is the “National Spatial Data Infrastructure” (NSDI) of Bangladesh, which attempts to create a variety of “mediums” that integrate the *whole of society* to achieve its national objectives within the maritime domain. This ambitious endeavour incorporates a series of legal statutes that enable the authorities to mobilise fishermen operating in international waters, and the “*cultivation of people and (web) applications*” within the established system to enhance greater State control.²⁹

Within India, the *Pradhan Mantri Matsya Sampada Yojana* (PMMSY) already provides a blueprint for benign and constructive community. Community Interaction Programmes (CIPs) and the State Marine Police (SMP) are jointly attempting to improve the interface between the local people and security agencies in order to better disseminate knowledge and acquire information.³⁰ Such initiatives can be emulated/conceptualised at the level of the Quad with all the Quad members effectively engaging with their “own” local communities to gain a more robust understanding of MDA/MSA, instead of concentrating solely upon solutions based on high technology.

Perhaps local units, on the lines of the Australian “Northwest Mobile Force” (NORFORCE) — a fleet of indigenous people within Australia³¹ — offers a model that could be used within the Quad construct. As is the case in India and several parts of South Asia, such local units could act as eyes-and-ears and work in conjunction with security agencies so as to provide a more nuanced picture of specific maritime areas of activity. Through such efforts, human intelligence could be given additional primacy within MDA/MSA constructs that are generally considered highly technical in nature.

Since success at local levels engenders success at broader levels including regional ones, information-coordination amongst diverse domestic maritime stakeholders associated with maritime law enforcement and coastal security, and coastal defence,

such as coast guards and navies, customs authorities, fisheries, and border control, and other agencies charged with the promotion of maritime safety and security, could be improved *within* each constituent country of the Quad to supplement specific information that is sought to be shared amongst the partners.³²

At the present juncture, however, the IPMDA initiative seems to be concentrated upon satellite-based data of vessel movements correlating data from automatic-identification system (AIS) transmitters with that obtained from satellite-based surveillance of vessel-transmissions across the entire electromagnetic spectrum.³³ The attempt is to make the system sufficiently robust so as to detect such craft as choose to deliberately switch off their AIS (becoming ‘dark’).

This naturally shifts one’s attention to “Information Fusion Centres” (IFCs). While fusion centres such as India’s IFC-IOR, Singapore’s IFC, the IOC’s RMIFC in Madagascar, etc., rely extensively upon technological means to fuse data-with data, data with track information, and track with track, it is important to take note of the enormous value that human inputs provide, by way of International Liaison Officers’ (ILOs). These ILOs are perceived not just as “*conduits of data*” but as agents who add the analytical and interpretive value to the data generated by technological means. A significant percentage of the credit that accrues to the IFC-IOR, for instance, which indubitably provides the region’s most reliable source of insightfully analysed information that meaningfully promotes coordinated regional engagement³⁴ across the maritime domain, must rest with its ILOs. The congeniality of the cooperative and collaborative atmosphere that the IFC-IOR is steadily breaking down the silos of narrow national security suspicion and concern. However, despite all this — and the enormous expertise and experience of the ILOs notwithstanding — their role continues to be undervalued and almost reflexively derided, particularly by a few Australian scholars who decry what they perceive to be a lack of guidance and geopolitical constraints on the ability of ILOs to share outputs and consequent country-specific actions or results with their fellow ILOs. It is, however, opined that such conclusions are reflect a strong reflexive bias, fed by extremely superficial exposure — unfortunately combined with excellent writing skills. Quite correctly ignoring these biases, the IFC Singapore continues to value its ILOs, while India’s IFC-IOR is actively increasing its number of ILOs to as many as forty.

Given that India and her Quad partners will always need incrementally better situational awareness, the IPMDA initiative needs to be extended to the Western Indian Ocean Region (WIOR) as well, so that a greater geographical swathe is covered. India, whose IFC-IOR does cover this critical subregional space, needs to take the initiative in this regard, coopting the United States and other regional partners both, within the Quad construct and beyond it.

Conclusion

It is very important for Maritime Domain Awareness (MDA) to be understood as an aspirational goal of the spread of Maritime Situational Awareness (MSA). As a collective initiative, the IPMDA is a partnership that has enormous potential and this potential can best be realised through a wide rather than a narrow geographical embrace, through the leveraging of both, hi-tech and low-tech means — ranging from satellite-based detection to the analytical and skills of ILOs and the harnessing of community-skills of a variety of coastal and fishing communities that characterise the littoral of the Indo-Pacific in all its vast entirety. India needs to take the lead but to do so subtly and intelligently so as to create and sustain inclusive mechanisms that leverage both people and technology. The IFC-IOR is proceeding down this very path, as is Singapore's IFC and Madagascar's RMIFC. It is for the Quad partners to take the fullest advantage of these and similar national and subregional efforts and generate a regionally stable maritime environment that is marked by inclusive maritime safety, holistic maritime security, and maritime commerce that promotes societal growth and economic prosperity throughout the Indo-Pacific.

In this regard, 'local communities' across different geographies within the Indo-Pacific can be sanguine partners in providing a more nuanced picture of the maritime domain. The IPMDA initiative under the Quad could be geared towards this endeavour as well. Through such initiatives, we can envisage the amalgamation/ *mélange* of 'local' elements within more abiding 'global' constructs.

06 August 2025

ENDNOTES

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*China's Long March to Great
Maritime Powerhood:
Naval and Maritime
Dimensions*

PLA Navy's Aircraft Carrier, the *Fujian*: A Symbol of China's 'Far-Sea Dominance' Aspirations

Captain Kamlesh K Agnihotri (Retd) and Mr Chemi Rigzin

"The carrier has become an important strategic weapon for China's maritime ambitions, the development of naval power, and its strategic goals for sea lane security and regional influence"

— Admiral Liu Huaqing¹

China's third aircraft carrier, the *Fujian*, completed the most technically demanding eighth phase of its trials in June 2025. The trial schedule reportedly included catapult-launch and recovery validation, as also the testing and integrations of the associated aircraft operating hardware and deck-based handling mechanisms.² As the first fully indigenously designed and built aircraft carrier, the *Fujian* signifies the material realisation of the long-held vision of Admiral Liu Huaqing — often dubbed the father of the modern PLA Navy — that had been articulated by him in the 1980s itself.³ This particular Chinese carrier symbolises a conceptual shift from coastal defence to far-seas control, from brown-water bastion to blue-water assertion.⁴ The *Fujian*, first seen in the public domain in June 2022, is China's most technologically advanced carrier to date; and its development signals a decisive departure from earlier aircraft carriers, both in capacity and capability.⁵

The extended duration of *Fujian*'s testing programme and sea trials— now approaching two years— reflects both the scale of its technological advancement and the institutional learning curve, sought to be projected through the Chinese warship-building enterprise. The completion of its eighth, and reportedly most rigorous, sea

trial marks a seemingly critical milestone in its due progression towards a modern aircraft carrier. This trial was markedly different, not merely in its intensity, but in the multi-layered facets of the complex systems under evaluation. While China Central Television (CCTV) did not confirm aircraft launches, it noted that the ongoing tests involved fifth-generation stealth fighters, specifically the J-35s. Satellite imagery and top-deck photographs were suggestive of limited ‘touch-and-go’ evolution by carrier-based aircraft, as seen by tyre marks on the flight deck.⁶ Though circumstantial, these visual clues suggest that the PLA Navy is carefully advancing towards integrating its next-generation aircraft with the Electromagnetic Aircraft Launch System (EMALS) in a phased progression.

Trial Schedule of the *Fujian* Aircraft Carrier

China’s first aircraft carrier, the *Liaoning*, underwent ten sea trials before its commissioning in September 2012, while the second carrier, the *Shandong*, required nine (commissioned in December of 2019).⁷ The *Fujian* incorporates an altogether different design and is reportedly equipped with higher technology equipment. **Table 1** below outlines the sea trials conducted so far by the *Fujian*, highlighting key focus areas and critical takeaways.

Table 1: Fujian aircraft carrier sea trials, dates and explanatory comments

Sea Trial	Date Range	Focus Areas	Remarks
First	01–08 May 2024	<ul style="list-style-type: none"> - Tested propulsion and electric power systems. - Assessed basic seaworthiness. 	<ul style="list-style-type: none"> - Initial trials focused on fundamental alignment of individual sub-systems.
Second	23 May–11 June 2024	<ul style="list-style-type: none"> - Evaluated communication and reconnaissance systems - Further propulsion assessments. 	<ul style="list-style-type: none"> - Early-stage trials of electronic systems as a precursor to the next step of testing and tuning.
Third	03–28 July 2024	<ul style="list-style-type: none"> - Conducted navigation and manoeuvrability tests under various sea conditions. 	<ul style="list-style-type: none"> - Provided data for maintaining operational efficiency in a complex maritime environment.

Sea Trial	Date Range	Focus Areas	Remarks
Fourth	03–21 September 2024	<ul style="list-style-type: none"> - Prepared for aircraft operations integration. - Potential testing of the catapult Systems. 	<ul style="list-style-type: none"> - First ever test of electromagnetic catapults identified the technical challenges required to be overcome for its reliable operation.
Fifth	18 November–03 December 2024	<ul style="list-style-type: none"> - Initiated carrier-borne aircraft operations. - Tyre marks observed on the flight deck, indicating aircraft ‘Touch and go’ trials. 	<ul style="list-style-type: none"> - Effective operation of carrier-based aircraft requires extensive all-around departmental coordination and training.
Sixth	Late December 2024–Early-January 2025	<ul style="list-style-type: none"> - Tested aircraft handling and deck operations. - Mock-up of fighter jets observed on the flight deck. 	<ul style="list-style-type: none"> - Real time aircraft handling at flight deck and in hangars was carried out. - Space, time and procedural uniformity requirements to improve efficiency in high-tempo aircraft operations were ascertained.
Seventh	18–27 March 2025	<ul style="list-style-type: none"> - Shock trials to assess structural integrity under simulated combat conditions were conducted. - Initial tests of air-defence and anti-submarines warfare systems were conducted. 	<ul style="list-style-type: none"> - Structural Resilience against combat-related stress is critical. - Large ships are more susceptible to attack from advanced anti-ship missiles; therefore, effective air defense systems are essential. - Potential vulnerabilities to submarine attacks highlight the need for robust anti-submarine warfare capabilities.
Eighth	12–21 June 2025	<ul style="list-style-type: none"> - Live testing of EMALS with fighter aircraft. - Simulated full-deck flight operations under combat conditions. 	<ul style="list-style-type: none"> - Repeated launches to assess the deck wear patterns and long-term operational durability of launch and recovery equipment. - High-tempo flight operations can reveal limitations in sortie generation rate and deck logistics efficiency.

Source: Compiled by the Authors, from various Chinese media reports

For a nation seeking to indigenously develop a next-generation aircraft carrier, these trials are being utilised to gain far greater insights than meeting routine procedural benchmarks. They endeavour to reflect stringent evaluation of industrial robustness, technological complexity, and the strategic breadth of systems' autonomy. Each successive trial reportedly offered critical inputs into the aircraft carrier's evolving proficiency towards its eventual operational readiness. However, there is no denying the fact that the PLA Navy still has to address many multifaceted challenges associated with making such a technologically advanced naval platform—that too the first of its type—fully operational.

Major Characteristics of the *Fujian*: Weapons Package and Air Wing

At the operational core of *Fujian* lies its EMALS, a next-generation technology that replaces traditional steam catapults. The presence of three electromagnetic catapults provides the wherewithal for the launch of heavier, longer-range, and more combat-capable aircraft, with the generation of higher sortie rates.⁸ This offers a critical operational advantage by enabling the integration of a more diverse air wing, including early air warning (AEW) aircraft, electronic warfare (EW) platforms, and unmanned aerial vehicles (UAVs), as well. This capability of launching aircraft of various sizes and weights would certainly provide more flexibility during carrier borne air operations, thus enabling enhanced strike coordination, role diversification and better airspace dominance.

Although the Chinese EMALS system is far from proven; the PLA Navy is quite close to joining the exclusive ranks of naval powers capable of deploying Catapult Assisted Take-off, but Arrested Recovery (CATOBAR)-configured aircraft carriers — previously limited to just the US and France. **Table-2** below outlines the main technical specifications and capabilities of the *Fujian*, as currently gleaned from various open-source Chinese and other global media disclosures.

Lessons from the First and Second Aircraft Carriers

In the past, neither the *Liaoning* nor the *Shandong* were mere hardware experiments at carrier building; they served as institutionalised foundational blocks. These two

Table 2: Technical Details of the Fujian Aircraft Carrier

Category	Specifications & Details	Assessment & Significance
Displacement	80,000 tons (full load, estimated)	Close to US supercarrier class in scale; marks a substantial leap from Liaoning (60,000 tons) and Shandong (70,000 tons).
Launch & Recovery System	CATOBAR configuration – 3 x Catapults – 4 x Arresting wires	First non-US carrier with EMALS; could offer more sortie generation rate, reduced airframe stress, and compatibility with heavier aircraft compared to STOBAR systems.
Aircraft Elevators	2 deck-edge elevators	Essential for rapid movement of aircraft between the hangar and flight deck; design could impact tempo of sustained flight operations
Rotary-Wing Facilities	5 marked landing spots for helicopters	Supports ASW, AEW, SAR, and logistic roles; it complements fixed-wing operations.
Air Wing (Projected)	Total – 50–60 aircraft – Fixed-wing: J-15, potential J-35 (5th-gen), KJ-600 AEW – Helicopters: Z-8/Z-20 for Utility & ASW roles	KJ-600 AEW aircraft improves fleet-level situational awareness. The air wing composition mirrors US carrier doctrine.
Combat Roles Enabled	SEAD (Suppression of Enemy Air Defences) AEW&C coverage	Defensive area denial to offensive power projection in far seas
Defensive Systems	– HQ-10 short-range SAMs – Rotary CIWS (Type 1130) – Possible point-defense missile systems (e.g., RIM-116 SEARAM) – Speculative: directed-energy or acoustic systems	A combination of kinetic and possibly experimental systems suggests that the PLAN is preparing the Fujian Carrier for future multi-domain threats.

Source: Compiled by the Authors from various sources

aircraft carriers provided vital conceptual, technological and operational lessons to the PLA Navy before it could potentially induct carriers into its force-matrix and conduct viable operations in open waters. Over the past two years, both the *Liaoning* and the *Shandong* have ventured farther from home, pushing past the First Island Chain — that crucial geostrategic line from Japan to the Philippines — and increasingly operating in the Western Pacific, often in proximate waters of the US forward base of Guam.⁹ Till May of 2024, the PLA Navy carrier-based aviators used to operate within 700 nautical miles (NM) of China’s coast. By December 2024,

however, they were operating 1,300 NM out — well beyond the comfort factor of land-based diversionary airfield limits.¹⁰ This achievement was, in fact, a precursor to the Chinese carrier-based aviation truly operating with confidence in the far-seas.

Yet the trend line tells a more nuanced story. The *Liaoning* took almost nine years to generate its first carrier-based sorties outside the First Island Chain.¹¹ The *Shandong* reduced this time frame to just two years; and the tempo has only picked up since then. In May of 2022, the *Liaoning* operated about 300 aircraft and helicopter sorties.¹² By April 2024, the *Shandong* exceeded 600 sorties in a single exercise.¹³ These statistics clearly indicate that China is shifting gears in terms of operational efficiency — from an experimental mode to a far more combat-worthy, assertive one.

If the *Liaoning* was the proverbial classroom, and *Shandong* the quintessential lab, the *Fujian* is akin to a deliberately scripted thesis project — a unique platform to test high-intensity operations with a ‘never-before’ launch system, at scale and speed. The PLA Navy is just not aiming to launch more aircraft, it is trying to accomplish the integration of a complex air-sea battle group towards effective power projection — something the US has been a master of since the Cold War. In fact, the learning is not limited to the sea alone. Satellite imagery and model mock-ups indicate that the PLA Navy is modifying its carrier’s island configurations and sensor arrays to conform to the *Fujian*’s future command structure.¹⁴ These visible trends force one to infer that this carrier does not just represent naval shipbuilding, but rather goes much beyond to doctrine-building ‘through metal and steel.’

The *Fujian* as a Force Multiplier

The commissioning of the *Fujian* will provide a three-carrier force to the PLA Navy, thus allowing the deployment of at least one carrier continuously in a given location or area of interest. Meanwhile, the other carriers can undergo maintenance and/or operational readiness training, reflecting the US Navy carriers’ rotational strategy.¹⁵ Additionally, the *Fujian*’s operational architecture provides the essential foundation for future carrier doctrines centred on mobility, long-range ISR (Intelligence, Surveillance and Reconnaissance), layered defence, and offensive air dominance. In fact, the long-term goal is quite clear, in that the PLA Navy aims to transition from

sea denial to sustained presence and shaping of maritime security environment, not only within the First Island Chain, but potentially extending into the Second Island Chain, and even till the Indian Ocean.

Yet another tactic by which China can achieve this objective is by simultaneous deployment of two carrier-based formations in the chosen area of interest. The propensity of the PLA Navy to deploy twin-carrier groups has been observed for last couple of years, with the *Liaoning* and the *Shandong* carrier groups often sailing together for short durations, while on their sea passages from north to south, or vice-versa. The two carrier-groups were recently observed to be deployed together in the general area between the First- and Second Island Chains in May-June 2025, in a sort of ‘strategic communication’ endeavour in response to the deployment of two US navy carrier-groups in the Western Pacific Ocean — the *Nimitz* group in the South China Sea and the *George Washington* group deployed south of main Japanese islands.¹⁶ **Figure 1** illustrates the deployment pattern of the Chinese aircraft carriers the *Liaoning* and the *Shandong*.

Figure 1: PLA Navy’s Twin-aircraft carrier deployment in the Western Pacific (May-June 2025)



Source: K. Tristan Tang, LinkedIn

It may be inferred from Figure 1 that both the Chinese carriers were observed to be operating within the First Island Chain in late May 2025. However, by June 2025, both carriers were conducting exercises in the sea area between the First and Second Island Chains, extending towards Guam. While this is not the first instance of both carriers conducting synergistic operations in a given extended area, their deployment pattern vis-à-vis US navy's twin-carrier presence in the same extended area is a clear indicator of Chinese aspirations to match the US navy, force-for-force.

The PLA Navy is already in the process of finalising its concept of operations (CONOPS) for more a effective combat role for its aircraft carrier formations. The concept envisages the combat umbrella coverage of this twin aircraft carrier formation extending up to 400 km all around the strike force. One Western analysis of a CCTV-7 video on the composition and operational theory of the Chinese aircraft carrier groups, posted in the open domain, provides the details of various layered defence zones around such formations. It delineates the following three concentric defence zones, each associated with specific maritime tactics and sensor-shielding capabilities¹⁷:

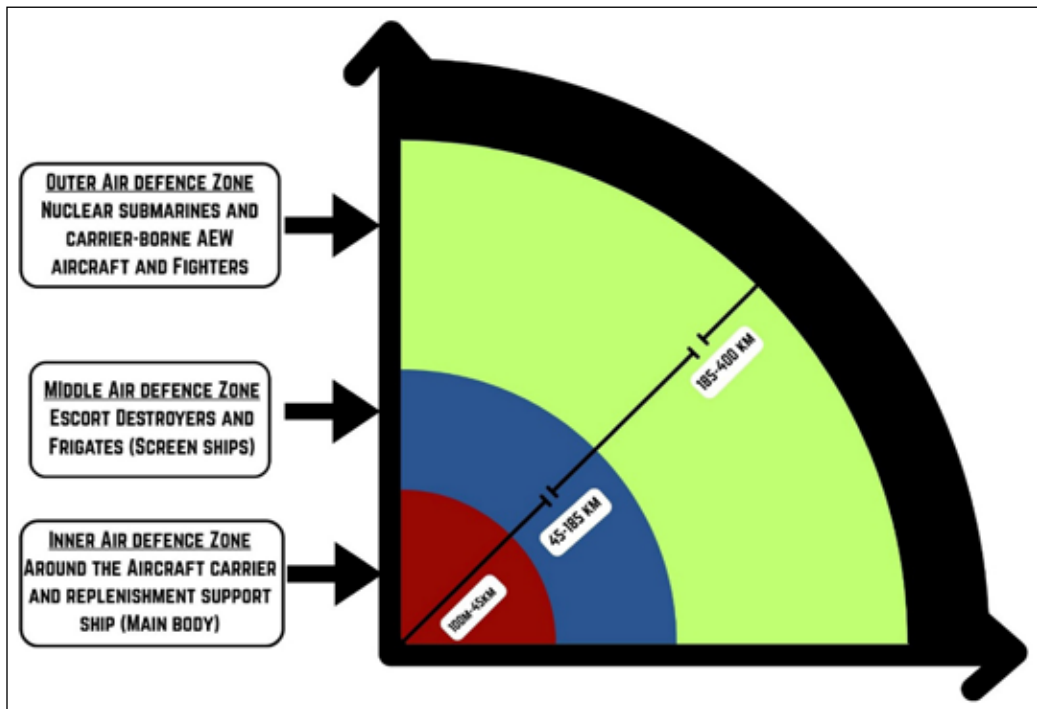
- An Inner Defence Zone – 100 m to 45 km
- A Middle Defence Zone – 45 km to 185 km
- An Outer Defence Zone – 185 km to 400 km

These defence zones are represented in Figure 2 below for better appreciation.

The Inner Defence Zone emphasises terminal defence utilising surface combatant systems and the aircraft carrier's own close-range defences. The Middle Defence Zone involves large surface combatants equipped with advanced radars and guided missile systems for area defence, while the Outer Defence Zone is characterised by the deployment of submarines and carrier-based fixed-wing aircraft tasked with surveillance, long-range strike, and offensive operations.

The report also distinguishes between two primary flight operation patterns — split wave operations and continuous ones — with an aim to optimise operational coverage, tactical flexibility and combat readiness. These revelations clearly highlight

Figure 2: A segmented representation of the Chinese Aircraft Carrier Battle Group Air Defence Zones



Source: Data from CMSI Note #6; Drawing by Authors

the PLA Navy's emphasis on adopting layered defence and versatile operational patterns to bolster the survivability and efficacy of its carrier strike groups (CSGs).

However, this technological leap-forward also introduces significant complexity. Chinese military analysts and naval planners have acknowledged that operating a CATOBAR carrier with such a sophisticated air wing demands an entirely new set of competencies — spanning deck-management, elaborate execution sortie generation — much like a perfectly choreographed symphony, logistical sustainment, and real-time strike planning.¹⁸ Unlike the PLA Navy's earlier *Liaoning* and *Shandong* aircraft carriers, which employed the simpler ski-jump launch systems and fielded limited fighter contingents, the *Fujian* embodies a generational evolution in carrier aviation. The PLA Navy's challenge now lies in training carrier-qualified pilots, (both for day and night missions) engineering-skilled deck crews, and integrating these capabilities

into coherent naval doctrines—none of which can be achieved solely through hardware advances.¹⁹

India's View on China's *Fujian* Aircraft Carrier Programme

Indian strategists and China watchers have been observing China's third aircraft carrier, the *Fujian*, with heightened interest. While the Chinese media claims that this is a technological breakthrough comparable to US supercarriers, Indian analysts are more circumspect in their assessment, noting that the ship is not yet commissioned and operational, and that the PLA Navy will still take a long time before it can reach the operational standards befitting a formidable aircraft carrier well-integrated with the PLA Navy's CONOPS. While the *Fujian* is equipped with advanced systems, it will still face numerous challenges in integrating new systems into actual maritime combat conditions. Indian analysts also posit that China often rapidly develops technologically-advanced assets without sufficient training or proven plans; a widespread affliction which also implies that the *Fujian* might fall well short of the standards expected of a reliable combat warship.²⁰

From a defence industrial perspective, Indian naval thinkers underscore the lack of transparency and reliability in China's shipbuilding claims.²¹ The *Fujian* is often touted as indigenously designed and constructed, yet there is limited credible verification of the degree of genuine indigenous innovation, especially in the areas of EMALS, integrated power systems, and advanced aircraft operational mechanisms. Some Indian assessments also question whether the PLA Navy has the necessary experience in executing blue-water carrier operations, particularly in complex multi-domain scenarios. As India's experience with the *Vikramaditya* and the *Vikrant* has shown, aircraft carrier efficacy lies not only in hull construction, but in the efficient integration of air wing, battle group coordination, and logistical endurance²² — all areas where the PLA Navy is still learning, catching up, and preparing the requisite logistical supply and support chains.

In operational terms, India has noted that while China may possess three aircraft carriers on paper, their true combat integration within the specific task forces remains untested and unproven. The probable employment of the *Fujian* is interpreted

less as a response to immediate security needs, and more as a long-term signalling effort aimed at regional power projection, especially in the Western Pacific.²³ Indian perspectives also tend to frame *Fujian* not as a threat in itself, but as a catalyst for engendering instability in maritime Asia, especially when seen in conjunction with China's expanding Strategic Strong Points (SSPs) in the Indian Ocean Region (IOR) — from Djibouti in the west potentially to the Myanmar coastline in the east. Moreover, the PLA Navy's doctrinal ambiguity regarding carrier exploitation — as defensive bastion or offensive tool — raises due concerns for Indian analysts.

Indian naval circles also draw attention to China's overreliance on numerical superiority without corresponding combat experience in a blue-water domain. As some analysts have pointed out, even the most sophisticated carriers are only as effective as the supporting ecosystems — the carrier-capable aircraft, trained pilots in large number, and an integrated logistics and maintenance framework. The *Fujian's* EMALS, for instance, may actually require a long time before it gets certified for operational exploitation. In this regard, the experience of the US Navy's *Gerard Ford* aircraft carrier presents a sobering analogy, with its EMALS system finally achieving operational clearance after a prolonged trial, a good four years after its commissioning.²⁴ There is also a perception that the PLA Navy's fast-paced carrier push is driven more by political considerations — particularly with an aspiration to close the gap with the US Navy and overshadow regional peers—than being driven by any coherent maritime doctrine. Indian analysts, therefore, naturally view this conundrum as a point of vulnerability rather than one of strength.

Future Trajectory of China's Aircraft Carrier Programme

The PLA Navy's aircraft carrier programme, marked by rapid expansion and increasingly sophisticated platforms, has emerged as a symbol of China's transformation into a credible maritime power. From the retrofit-heavy *Liaoning* to the indigenously constructed *Shandong*, and now the technologically ambitious *Fujian* — all within a span of two decades — China's progression reflects a concerted effort to transition from a historically coastal navy to a full-spectrum, blue-water force. China has cryptically announced that it is constructing a fourth aircraft carrier

(Type 004) in its Dalian shipbuilding facility.²⁵ While this is likely to be a follow-on of the *Fujian* carrier, there is no clarity with regard to its EMALS and its propulsion system.

At the heart of China's carrier push is the desire to match — if not eventually rival — US CSG capability.²⁶ The *Fujian* essentially embodies this aspiration. However, Chinese carriers, unlike their US counterparts, still lack actual at-sea combat integration, such as the experience required to reach operational maturity and sustained logistics management, among other details. Therefore, despite its visual resemblance to US Ford-class carrier, the *Fujian* will probably continue to be well short of the combat capabilities that a US aircraft carrier can bring to bear. The Chinese carrier can hope to operationally match-up only well-after the innovative EMALS system had been proven to be combat worthy. In the present state, the PLA Navy's carrier programme, at best, can be said to serve China's 'regional seas dominance' objective, enabling it to influence the regional geopolitics only in the Western Pacific littoral.

Conclusion

China's aircraft carrier programme is undoubtedly a powerful symbol of its maritime ambitions, and future progression — especially the unconfirmed speculations about the fifth and sixth carriers — will likely focus on sustained presence, nuclear propulsion, carrier-based UAV integration, and twin-carrier synergistic employment. However, a rational and unbiased outlook must consider that the road to genuine "*far seas dominance*" is neither short, nor easy and straightforward. While China has proven it can build large platforms at scale, its ability to employ them in a sustained, strategic maritime presence roles — especially in the Indian Ocean — still remains debatable. Moreover, the PLA Navy's aircraft carriers have thus far remained somewhat tethered to home waters, or have ventured only into the Western Pacific under controlled peace time conditions.

These challenges and limitations notwithstanding, future developments in the Chinese aircraft carrier programme — such as a fourth carrier (possibly nuclear-

powered) — and a progressively improving naval logistic network in the IOR, suggest that China is laying the groundwork for sustained carrier presence in the region. The construction of an approximately 330-metre long jetty at the Chinese naval facility in Doraleh multipurpose port of Djibouti in January 2020, which is capable of berthing an aircraft carrier alongside, offers some credence to this argument.²⁷

This has significant implications for all States in the IOR littoral, including India. The possibility of a dual-carrier PLA Navy presence in the Indian Ocean would necessitate a substantial rethink within the Indian maritime security establishment about own fleet missions, exercises and operational plans, long-range ISR (Intelligence, Surveillance, Reconnaissance) employment, sub-surface CONOPS, and readiness levels, among many other maritime security realms.

The IOR for now, remains a psychological frontier more than an operational one for China. For India and the broader Indian Ocean littoral, the strategic task lies in not matching China carrier-for-carrier — or platform to platform — but in developing asymmetric capabilities and countermeasures, bolstering multilateral maritime partnerships, and ensuring a credible, resilient, and transparent regional naval posture. The future of naval power in Asia therefore must not only be decided by steel and steam, but by synergistic collaboration, mutual trust-building, and a ‘new era’ of operational maturity, after due assessment of the threat-pattern that may emerge in near- to mid-term timeframes.

31 July 2025

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China is Well on the Path Towards a Nuclear-Powered Aircraft Carrier

Rear Admiral Monty Khanna (Retd)

China's third aircraft carrier, *Fujian*, returned from her sixth round of sea trials on 07 January 2025. While much has changed on her when compared to her predecessors insofar as the aviation capabilities are concerned, her propulsion system is largely a replication of that on the *Liaoning* and *Shandong*, with possibly a few iterative improvements. There has been considerable speculation about the configuration of China's next aircraft carrier, more so since no photographs of its construction have been posted by open sources as yet.

Figure 1: Full-Scale Mock-Up of Liaoning Under Construction at Wuhan



A reliable harbinger of what China's future aircraft carriers are likely to look like is developments that is taking place at the Ship Integration Facility of the China Ship Design and Research Centre located at Wuhan.

The facility primarily comprises of a 1:1 scale model of China's first aircraft carrier, *Liaoning*. The construction of the full-scale mock-up commenced in the early 2008 and completed in the late 2009. This was carried out so as to dovetail with the progress of work on the *Liaoning* (Ex -Varyag), which commenced her modernisation at the Dalian shipyard in 2005.

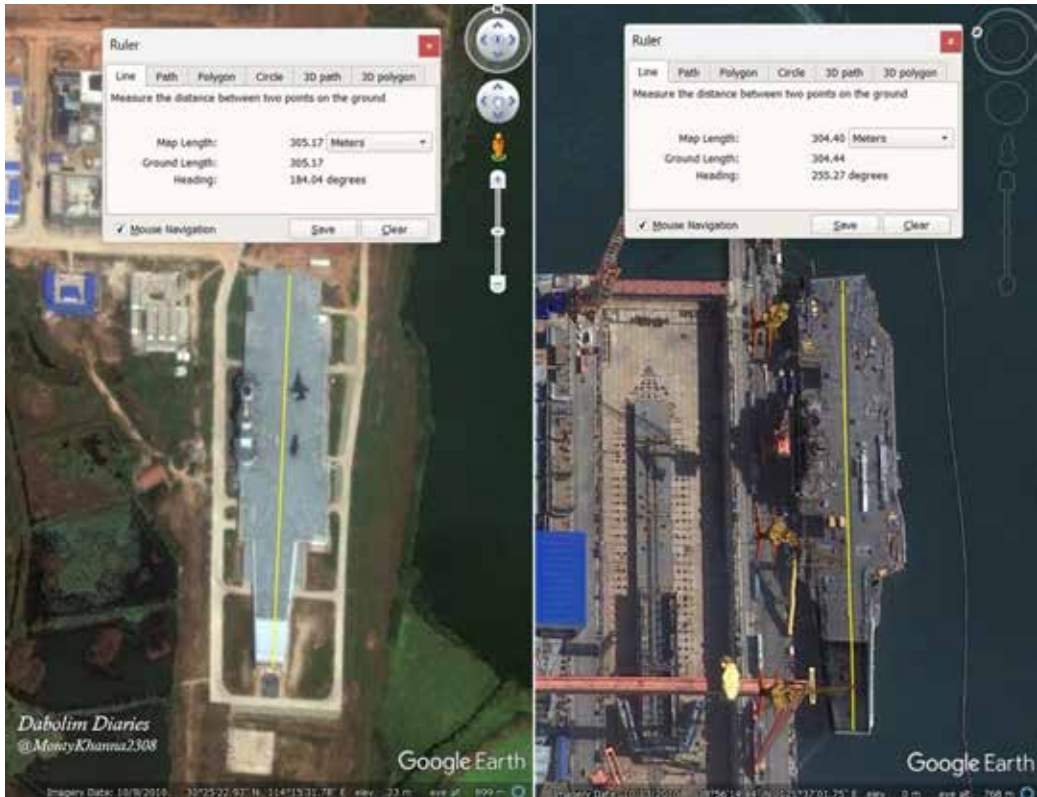
Figure 2: Google Earth Imagery of the Mock-Up Site Before and After Construction



The full-scale mock-up is a unique way of derisking the integration of sensors and systems in aircraft carrier construction. It also assists in optimally configuring the layout of aviation-associated systems. This is evident from the different models of aircraft that are observed frequently on its deck.

The near identicalness in the dimensions and layout of the full-scale mock-up with the *Liaoning* is evident from the images below, both of which are 2010 vintages. Two prominent aspects in this respect are the ski-jump at the bows and the island structure on the starboard.

Figure 3: Google Earth Images of Mock-Up (09 Oct 2010) and Liaoning (13 Oct 2010)



Of particular interest are the dimensions and layout of the island structure with its associated mast. This houses the sensors as well incorporates the command platforms, i.e., the Bridge and Flyco. In the case of the *Liaoning*, the island structure is fitted with the first variant of the Dragon Eye radar (346) with its characteristic four curved panels, each mounted at cardinal points of the island.

The island is 70 metres long. Both the structures, i.e., the full-scale mock-up and the actual vessel have identical dimensions as illustrated below.

Figure 4: Liaoning Island Mock-Up (Left) and Actual (Right)



Figure 5: Images Showing Length of Liaoning Island Mock-Up (Lt) and Actual (Rt)



Steel cutting of China's second carrier, the *Shandong* commenced on 28 August 2013 with the keel being laid on 10 March 2015 at the Dalian Shipyard. While her hull dimensions remained identical to that of the *Liaoning*, considerable changes were made to the size and layout of the island as well as to her sensor fit. An early indication of these changes came with the modifications made to the full-scale mock-up. The replacement of the 346 Dragon Eye radar by its improved variant, the 346A, as well as the placement of its flat panels at inter-cardinal points of the island are evident in the changed configuration of the full-scale mock-up.

Figure 6: Island of Mock-Up Being Modified (Left), Completed (centre), Actual on Shandong (Right)



From the images of changes to the full-scale mock-up (above), it is observed that while the configuration of the mast and the sensors on the island were changed to that of the *Shandong*, the structure of the island itself and the layout of the command platforms moved a step further ahead to replicate China's third aircraft carrier, the *Fujian*. This may have



Figure 7: Ski Jump of Full-Scale Mock-Up Dismantled

been done as the length of the island on both the aircraft carriers, i.e., *Shandong* and *Fujian*, is similar at approximately 60 metres. In 2018, fresh rounds of iterations commenced on the full-scale mock-up. This was undertaken in two phases. In the first, the ski-jump was entirely dismantled and replaced with a flat deck consistent with a CATOBAR aircraft carrier.

In the second phase, the structure of the mast was changed with new arrays being added to replicate what was to come on the *Fujian*.

The staged modifications of the island of the full-scale mock-up as a precursor to construction of the aircraft carriers themselves is clearly evident in the set of photographs below.



Figure 8: Fujian Island Mock-Up (Left) and Actual (Right)



Figure 9: Mock-Up of Island of Liaoning (Left), Shandong (Centre), Fujian (Right)

After several years of inactivity, major changes are underway once again at the full-scale mock-up. As per photographs posted on social media on 01 January 2025, the entire island has been dismantled and is being shifted to the aft of the flight deck.

Figure 10: Imagery of the Mock-Up dated 12 April 2022 (Left) and 01 Jan 2025 (Right)



One of the major considerations of sighting the island of an aircraft carrier is the facilitation of unimpeded aircraft operations. On the USS *Ford* for instance, the island has been shifted further aft of the location it had on the Nimitz class. The new location allows far greater parking space for the aircraft ahead of the island while minimising the space astern. This is an advantage because, if an aircraft had to be moved from the aft of the island to ahead of it or vice versa, landing operations on the angled flight deck have to stop. The concomitant disadvantage of bridge watchkeepers having a large blind zone ahead of the ship has been addressed by placing lookouts near the bows as well as by using modern day EO/IR pods.

Such flexibility in the placement of the island is not available to conventionally-powered aircraft carriers as the island also houses the funnel for locating up-takes

Figure 11: USS Ford (Foreground) with a Nimitz Class Aircraft Carrier (Background)



and down-takes that cater for the voluminous amount of air required to power hydrocarbon-based fuel burning engines; be they boilers or gas turbines. These passages are required to be short to cater for efficiency and minimise the use of internal volume. Further, machinery spaces at the bowels of the ship are typically spread over two or more sections in a central position of the hull so as to ensure flooding or damage of any one section does not result in a catastrophic failure of the entire propulsion system. As a consequence, the island perforce has to be located close to the midships position or may even be split into a twin-island configuration as done in the Royal Navy's Queen Elizabeth Class aircraft carriers.

Further confirmation of China's move towards nuclear power for aircraft carriers will emerge once additional pictures of the island structure at the full-scale mock-up becomes available as the absence of a funnel will re-enforce the above inference.

Assessment

Nuclear powered aircraft carriers will give China the ability to project power well beyond the second island chain into the central Pacific as well as the Indian Ocean. It will also partially address the shortfall of bases that they currently have at distant locations by easing the quantum of logistical support required to sustain such

operations. Continued investment in large aircraft carriers also point out that in spite of rapid developments in Anti-Access Area-Denial (A2AD) capabilities such as Anti-Ship Ballistic Missiles (ASBMs), China assesses that these platforms will continue to play a significant role in times to come.

15 January 2025

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Are We Seeing the Construction of the PLA Navy's New Nuclear Submarine Base?

Rear Admiral Monty Khanna (Retd)

The PLA Navy's nuclear attack submarine fleet is growing exponentially with an estimated six to nine Type 09III-B SSNs having been launched since May 2022, when the first one rolled out from the newly constructed eastern expansion of the Bohai Shipyard at Huludao. Existing berthing arrangements at 1st Base in Jianggezhuang and 2nd Base in Longpo will soon begin to fall short, in spite of two piers having been recently added to the existing four in Longpo. In the recently published ORF Research Paper, entitled 'China's Nuclear Submarine Bases – a Stocktaking', the author had made the observation that The PLA Navy had three options to increase berthing capacity.¹ These were to augment either Jianggezhuang or Longpo, or to build a brand-new greenfield base at a location which had easy access to the South China Sea as this is the main deep-water operating space for the submarine fleet and offered the most options for breaking out beyond the Second Island Chain without being detected, should there be a need to do so.

From the latest image of Yulin on Google Earth Pro dated 20 Dec 2024 (Position 18° 12'.5 N, 109° 33'.7E), it would appear that the supposition was partially correct.

The layout of the piers under construction at Yulin gives credence to it being a greenfield base designed to support nuclear powered submarines. This activity,



Figure 1: Construction Activity at Yulin Probably for a New Nuclear Submarine Base

however, is not taking place at a distant location from Longpo, but just about 7.25 nautical miles west of it.

Figure 2: Location of Probable 3rd Base in Relation to 2nd Base, Longpo



Doing so has the advantage of having a limited amount of dispersion of key assets while simultaneously allowing submarines located at the new base to use existing technical and maintenance facilities created to support submarines based in Longpo. Nonetheless, there is considerable activity with regards to creation of administrative infrastructure in the close vicinity of the under-construction piers as seen in the image below.

Figure 3: Creation of Administrative Infrastructure Adjacent to Piers



A broad layout of existing facilities of the PLA Navy in the Yulin area is shown in the image below:

Figure 4: Broad Layout of PLA Navy Facilities in Yulin Area



The similarity in the layout of piers at the new base under-construction (3rd Base) and the existing base at Longpo (2nd Base) is evident in the figure 5 below:

Figure 5: Layout of Piers at Probable 3rd Base (Left) and 2nd Base, Longpo (Right)



There are, however, some dissimilarities. The piers at the new base are substantially wider (40 m versus the 20 m at Longpo) and are likely to be longer than the 230 m of 2nd Base, Longpo.

Figure 6: Dimensions of Piers at Probable 3rd Base (Left) and 2nd Base, Longpo (Right)



In addition, the spacing between the piers in the new base is considerably greater at 268 metres versus the 178 metres in Longpo. Further, while the six piers at Longpo were built in three phases with the first three coming up together by 2006, a fourth being added in 2010 and the final two in 2022-23, the five piers at the new base are all coming up simultaneously.

Assessment

Currently, 2nd Base, Longpo is being used to support both Type 09IV/A Jin Class SSBNs and Type 09III/A Shang Class SSNs. Once the 3rd Base is functional at

Figure 7: Phased Augmentation of Piers at 2nd Base, Longpo



Yulin, it is likely that rather than have both types of submarines, i.e., SSNs and SSBNs operate from both the bases, the PLA Navy may decide to segregate these boats in specialised bases, one each for SSBNs and SSNs, akin to the manner in which the US Navy functions. Towards this end, it is more likely that the Jin Class SSBNs will continue to operate from the 2nd Base while the Shang Class SSNs shift to the newly constructed 3rd Base. This is based on the proximity of the 2nd Base to the tunnel complex inside which the loading and unloading of strategic missiles on SSBNs is undertaken.

10 February 2025

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Yuchi Naval Base, Guzhen Bay in the Midst of Another Round of Expansion

Rear Admiral Monty Khanna (Retd)

Yuchi Naval Base (35° 43.4' N, 119° 58.9' E) in Guzhen Bay is located about 50 km South West of Qingdao. It is the primary base of the Northern Theatre Navy (NTN, erstwhile North Sea Fleet) and is amongst the PLA Navy's largest operating bases. It is also home to China's first aircraft carrier, the Liaoning.

This report confines itself to assessing the developments taking place at the base on the waterfront and does not examine the rapid expansion of the shore-based training and administrative facilities.

The earliest clear image of Yuchi on Google Earth dates back to June 2003. At this time, Yuchi was merely a shadow of what it is today.

Figure 1: PLA Yuchi Naval Base 2003 (Left) and 2024 (Right)



Source: Google Earth

At the time, it essentially comprised of three breakwaters of length 1,670 meters, 832 m and 1,750 m (Breakwaters A, B & C of Figure 3) enclosing a basin of about 9,000 square meters (1,080 acres).

Figure 2: Area of Inner Tidal Basin



Source: Google Earth

Within were two piers, each 600 m long and 40 m wide. In addition, the inner side of the southern breakwater (BW 'C') was also available for berthing ships. Altogether, this provided a berthing length of 4,150 m.

The other notable features of this initial layout are a ramp at the landward end of the southern breakwater (BW 'C') to cater for rolling on/off vehicles onto amphibious ships equipped to do so, and two relatively small berths at the southern end of the western breakwater. These appear to be for a specialised purpose, the exact nature of which is not known.

Figure 3: Facilities at Yuchi (Google Earth 05 Jun 2003)



Source: Google Earth

Figure 4: Ramp at Berth No 3 (Left) and Special Purpose Berths (Right)



Source: Google Earth

Insofar as ship repair facilities are concerned, the initial layout included two dry docks, one 220 x 35 m (Drydock 1) and the other, a smaller 150 x 22 m one (Drydock 2). The presence of only one crane to service both the drydocks till 2015 and the relatively low utilisation of both the docks (as observed on google maps) is indicative of this being a fairly austere repair facility in its early years.

Figure 5: Ship Repair Facility (Google Earth 05 Jun 2003)



In 2009-10, a third pier of length 515 m and width 30 m was added (Pier 3). This is primarily being used to berth frigates and corvettes.

The base witnessed major expansion between 2010 and 2012. Three large breakwaters were built during this period, which added an enormous area of about 13,000 square metres to the existing inner tidal basin taking up the area of the enclosed water space (inner and outer tidal basins) to approximately 22,250 square metres (4,090 acres). The breakwater lengths (from West to East) are 1638 m (BW 'D'), 3385 m (BW 'E') and 3494 m (BW 'F'). In addition, a brand-new jetty, 550 metres long and 120 metres wide (Pier 5) was completed for berthing aircraft carriers.

The Liaoning, after her commissioning at Dalian on 25 September 2012 was relocated to Yuchi and has been based here since. Apart from berthing the carrier, this jetty is also used for major commemorative events such as the commissioning of *Nanjing*, the first Type 55 *Renhai* Class destroyer on 12 January 2020.

Figure 6: Facilities at Yuchi as of 2004 (Google Earth 03 Dec 2024)



Figure 7: Commissioning of the first Type 55 Renhai Class destroyer Nanjing on 12 Jan 2020



In 2014-15, the naval dockyard in Yuchi received a boost through the addition of an 'L' shaped 20 m wide ship repair wharf with a berthing length of 945 m. The inference of this being primarily used for ship repair is based on its proximity to other repair facilities (including the drydocks) as well as the fact that it is provisioned with five cranes. In addition to this berth, other facilities at the dockyard were also augmented simultaneously. These include expansion of the covered area for workshops and an increase in the number of cranes to service the drydocks.

A second pier, 575 m in length and 55 m wide (Pier 6) was constructed in 2017/18 in the outer tidal basin. This is being used predominantly for berthing Type 55 destroyers.

After a few years of relative inactivity, construction work has picked up at Yuchi since 2024. The main projects currently underway are as follows:

- **New Pier.** Construction of a new 40 m wide jetty (Pier 7). This is likely to be of similar length to Pier 6 and will possibly be primarily used to berth the PLA Navy's growing fleet of Type 52D destroyers.

Figure 8: Ship Repair Facility as in 2024 (Google Earth 03 Dec 2024)



Figure 9: Pier No 6 with three Type 055 Destroyers (Google Earth 25 Sep 2022)



Figure 10: New Jetty (Pier No 7) under construction (Google Earth 03 Dec 2024)



- **Site A.** Consequent to the completion of some reclamation work, construction of what appears to be two parallel piers is currently underway. Each of these is 15 m wide with the current length being 120 m and the final length estimated at approximately 200 m. The size, location and orientation of this construction make its final purpose unclear. The possibilities are as follows:
 - **Degaussing Facility.** As the NTN lacks its own degaussing facility, these could be the two arms of a brand-new facility to meet this requirement. However, the unusual spacing of 71 m between the arms seems excessive. The corresponding dimensions of degaussing arrangements at Yuling, Hainan (Southern Theatre Navy) and Xiangshan, Zhejiang (Eastern Theatre Navy) are 30 m and 25 m respectively.

Figure 11: Construction Underway at Site 'A' (Google Earth 03 Dec 2024)

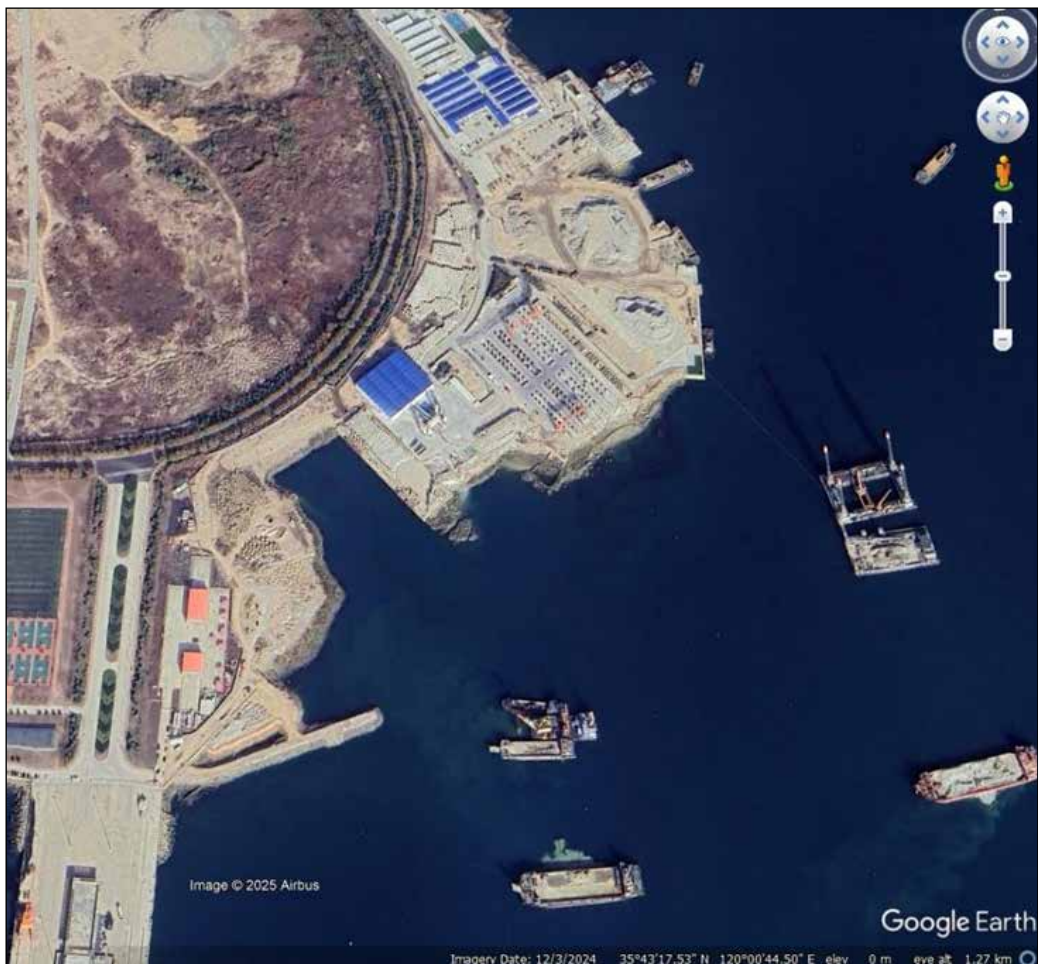


- Aircraft Carrier Berth. The space between the two arms could be reclaimed, as was done in the case of the aircraft carrier jetty (Pier 5), to create a wide jetty possibly for aircraft carriers or large amphibious assets (Type 075/076). This too, however, seems improbable as the current orientation would make the berth on its eastern flank a little restrictive for use by large assets. Further, if the area in between were to be reclaimed, this process should have commenced by now.
- Conventional Submarine/UUV Base. The two piers currently under construction along with the wharfs surrounding the reclaimed land could be used for berthing smaller assets such as conventional submarines. This seems the most likely option, even though the 71 m spacing between the two piers could be slightly restrictive. Given the PLA Navy's growing

fleet of manned and unmanned underwater assets, additional berthing is a pressing requirement.

- **Site ‘B’.** This is essentially a robust construction site for the manufacture of cement blocks used in the construction of piers as well as tetra-pods for breakwaters. The size and scale of ongoing activity at this site is indicative of the prolonged nature of major construction works currently being undertaken.

Figure 12: Construction Yard at Site ‘B’ (Google Earth 03 Dec 2024)



Assessment

The overall berthing infrastructure at Yuchi is as tabulated below.

Table 1: Broad Parameters of Berths at Yuchi

Berth No	Dimensions L x W (m)	Est Usable Berthing Length (m)	Remarks
1	600 x 40	1,160	Destroyers, Corvettes
2	600 x 40	1,160	Destroyers, Corvettes
3	515 x 30	1,000	Frigates (Luyang), Tankers (Fuchi), Type 636 Hydrographic Ships
4	Not Available	945	Used by Ship Repair Facility
5	550 x 120	1,120	Aircraft Carriers, Type 901 Fuyu Class Combat Support Ships
6	575 x 55	1,120	Destroyers (Renhai)
BW 'C'	Not Available	1,750	Support Ships – ELINT, Submarine Rescue, Diving Support, Accommodation, Tugs
Spl Berth I	Dolphins	90	Occasionally used by oilers
Spl Berth II	145 x 13	145	Not known
7*	575 (est) x 40	1,120	Possibly Destroyers
8*	200 (est) x 15	400	Possibly Conventional Submarines, UUVs
9*	200 (est) x 15	400	Possibly Conventional Submarines, UUVs
TOTAL		10,410	

Note: () indicates the infrastructure that are still under construction*

From the above table, it can be seen that even though the berthing length available at Yuchi remains considerably less than the 18 km of wharfage in the largest US Navy base at Norfolk, Virginia; Yuchi, unlike Norfolk, is still growing rapidly. Further, the tremendous expanse of the tidal basins (both inner and outer) provides considerable opportunities for its continued growth. Given the large construction effort currently underway, this expansion is likely to continue for the next few years.

The eventual purpose of construction activity in progress at Site 'A' will soon become evident. Given the spurt in submarine construction, both nuclear and conventional, existing bases may soon become inadequate. It will be interesting to see if a submarine base emerges within the confines of Yuchi.

06 February 2025

About the Author

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China's Heavy Lift Ship Fleet and their Potential for Use in Combat

Rear Admiral Monty Khanna (Retd)

Hheavy Lift Ships (HLS), as the name suggests, are essentially vessels that are designed for the purpose of lifting large and heavy pieces of equipment. They essentially fall into two categories; those which are semi-submersible and those whose cargo carrying deck remains exposed at all times. Both, however, are fitted with a comprehensive outfit of ballast tanks with associated ballast pumps. In some cases, ballast tanks are also de-watered using compressed air, similar to systems operated in submarines. Semi-submersible ships require extensive ballasting arrangements to submerge their main deck to a sufficient depth that allows the cargo to float free. Ballast tanks in non-submersible vessels are also required to be reasonable robust to cater for accurately aligning their main deck with shore-based rails or platforms for rolling out heavy items such as container cranes and for ensuring that the ship remains evenly trimmed, even as the cargo is being shifted ashore.

The cargo carrying deck of HLSs provides a flat expanse of space, sometimes rivalling that of an aircraft carrier in its dimensions. Not only is it large and without obstructions, but it is also strong and has a high load carrying capability. Further, as most of such ships are fitted with a Dynamic Positioning (DP) system, they can accurately maintain both position as well as orientation, both of which are important attributes for military usage. This opens up several possibilities for their use to support military operations. In keeping with a well-established ethos of Civil Military Integration (CMI), China has been in the forefront of such activity. Before examining specific examples of such use, it would be useful to take stock of the size of China's HLS fleet which has both military as well as commercial components.

PLA Navy

The PLA Navy commissioned its first and only Heavy Lift Ship, the semi-submersible Mobile Landing Platform *Donghaidao* (Pennant No 868) in July 2015. Consequent to a new policy pertaining to the naming of ships that was issued in 2021/22, the name of the vessel was changed to *Yinmahu* and the Pennant Number to 834. The ship has a length of 175.5 metres, a beam of 32.4 meters and a displacement of roughly 20,000 tons. It has been used extensively for ferrying of combat loads in the Western Pacific and also for supporting the PLA base in Djibouti.

Commercial HLS Operators

China has the largest fleet of commercial HLSs in the world numbering more than fifty. Their ownership is concentrated amongst three large companies though there are several other smaller operators as well. The main HLS fleet operators are as listed below.



Figure 1: PLA Navy Ship Donghaidao (868)



Figure 2: PLA Navy Ship Yinmahu (834) Being Used to Ferry Tugs

COSCO Shipping. The Heavy Transport division of COSCO Shipping operates the world's largest fleet of modern, purpose-built semi-submersible heavy lift vessels. As of 2024, its fleet strength comprised of thirteen such vessels. Notable amongst these is the Xin Guang Hua, the flagship of COSCO's semi-submersible HLS fleet with a stupendous lift capacity of 100,000 DWT. In preparation for berthing the craft, China began the construction of a facility on the western side of the Guangzhou Shipyard International (GSI) in 2013. The choice of the premises of a shipyard for this facility possibly stems from their desire to ensure the smooth transfer of technical knowhow to the shipbuilders for construction of subsequent craft.

Figure 3: Xin Guang Hua Loading a FPSO Hull



Shanghai Zhenhua Shipping Company, Ltd. The company is a subsidiary of Shanghai Zhenhua Heavy Industries Company Limited (ZPMC), the largest manufacturer of marine cranes in the world. As per the website of the company, it has a fleet of 25 integrated transport ships, of which 7 are semi-submersible. These

include twelve 60,000-ton heavy cargo ships which are used to deliver assembled cranes to its clients.

Jiangsu Fanzhou Shipping Company (FZCW). FZCW is a Nanjing based shipping company that has a fleet of about six HLSs of which at least two are semi-submersible. A recent addition to their fleet has been the Fan Zhou 8 that was built by the Taizhou Zhonghang Shipyard. The vessel's massive lift deck reported has an area of 11,700 square metres and is capable of embarking 58,000 metric tons of cargo. More importantly, she has an ice-classification that allows her to operate in waters with small floating ice.



Figure 4: Zhen Hua 26 with Three Container Cranes Embarked



Figure 5: Fan Zhou 8 Returning from Sea Trials

Potential Military Applications

HLSs, as mentioned earlier, are very flexible vessels that have the potential to be used for a wide spectrum of military tasks. Some of these are as mentioned below.

Hovercraft Carrier. China currently operates two classes of medium/large hovercraft, these being the Type 726/A *Yuyi* Class displacing about 160 tons and the gigantic *Zubr* Class with a displacement of 555 tons. While the PLA Navy has several ships such as the Type 071, Type 075 and the recently launched but

Figure 6: *Donghaidao* with *Zubr* Embarked in 2023 (Inset: Similar evolution in 2015)



yet to be commissioned Type 076, equipped with well-decks large enough to accommodate two to four Type 726/A hovercrafts, the only means of ferrying a *Zubr* closer to the planned theatre of employment is on a semi-submersible HLS. The PLA Navy demonstrated such a capability for the first time a few months after the commissioning of the *Donghaidao* by releasing a film on CCTV showing such an evolution. A more recent photograph released in May 2023 suggests that such a practice remains relevant today and is rehearsed from time to time.

Mobile Helicopter Base. The large flat unobstructed deck of an HLS makes it a good platform for a mobile helicopter base that could be rapidly deployed close to the theatre of operations. China has already rehearsed such usage several times, one of the most notable demonstrations being the recent embarkation of eight Z-10 attack helicopters on board a semi-submersible HLS, a picture of which was posted on Weibo in October 2024. The space available on the main deck could also be utilised for the erection of pre-fabricated hangars as well as for embarking specialised equipment and vehicles so as to enhance the quantum of aviation support the mobile base could provide.

Transportation of Submarines/Missile Boats/Fast Attack Craft to Operational Areas. Semi-submersible HLSs are often used to transport ships, submarines and

Figure 7: Helicopters ranged on the deck of an HLS



offshore installations from place to place. An example of such an evolution by a Chinese HLS in the not-too-distant past is the ferrying of two *Ming* Class submarines in end 2016 from Lushun to Chittagong on board a COSCO semi-submersible ship. Delivery transits of such a nature follow protocols that entail elaborate and time-consuming procedures for preservation and de-preservation of vessels being

Figure 8: Two Ming Class Submarines Being Transported to Chittagong on a COSCO Semi-Submersible Ship



ferried at the start and end points respectively. Operational employment of such a capability done with the aim of reducing transit time and conserving machinery running hours may not permit such a process. Under such circumstances, a defining requirement would be for the assets to be fit for combat operations soon after being floated off the HLS, even if this were to be done mid-sea. Enabling procedures would, therefore, have to be at considerable variance from that catering for vessels undergoing delivery voyages. Systems would have to be kept alive to enable quick and flexible deployment. This would require the HLS to provide services such as specialised power supplies, compressed air, sea water, fresh water and distilled water to the embarked vessel. Given the versatility of HLSs, most of these services may be readily available. Where they are not available, specialised container-based solutions may have to be embarked to do so. Insofar as areas of deployment are concerned, the recent induction of the ice-class *Fan Zhou* 8 throws open the interesting possibility of submarines being ferried to the Arctic should such a need arise.

Ferrying Heavy Vehicles in Support of Expeditionary Operations. In any major expeditionary operation like a Taiwan contingency, the quantum of heavy combat equipment such as tanks, infantry combat vehicles, artillery (tracked, wheeled and towed) etc. that will need to be ferried to the landing area will be substantial. HLSs with their large deck, wide beam, variable draught, ability to adjust their trim, and hold their position and heading using dynamic positioning equipment are well suited to meet this requirement. If a berth ashore is not available for discharging their load, vehicles could be rolled off a jury ramp into the sea (if amphibious) or driven ashore using portable causeways built over floating pontoons or lifted off the sea bed using specialised jack-up rigs. Several such structures have recently been seen to be under construction at Guangzhou Shipyard International (GSI) and have been commented upon extensively on *X (Twitter)*.

Repair and Recovery of Damaged Assets. HLSs could be used for carrying out emergency dry-docking of ships in theatre to effect pressing repairs either due to enemy action or other causes. In most circumstances, they may require assistance of a support ship equipped to carry out such repairs. Submarine tenders with their robust workshops and repair facilities will be able to fulfil this role well. In cases of major damage, the effected vessel could be ferried to a domestic ship repair facility or

Figure 9: GSI Shipyard with Jack-Up Pontoons (Left) and Computer-Generated Image of their Use in Combat (Right)



possibly a regional one located in a country with which China has an understanding to address such contingencies.

Assessment. Heavy Lift Ships are versatile platforms that can be used for a wide variety of military applications, particularly as enablers of expeditionary operations. It is notable that in spite of the unification of Taiwan being a major task for the PLAN, their investment in HLSs remains a very modest single vessel. This is clearly indicative of the fact that commercially operated HLSs will be used extensively in support of military operations. Several evolutions of this nature have been exercised in the past and this practice is likely to continue. Further, China will continue to encourage its privately owned shipping companies to remain invested in building and enhancing their fleets of HLSs.

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China's *Zubr* Class Hovercrafts – An Assessment

Rear Admiral Monty Khanna (Retd)

The *Zubr* Class (Type 958) is by far the largest hovercraft in the world. It was designed by the Almaz Central Naval Design Bureau, St. Petersburg, USSR. Subsequently, the construction was undertaken by the Almaz Shipyard in St. Petersburg and the Feodosiya Shipbuilding Company in Crimea.

The basic specifications of the craft are as mentioned below:

- Standard displacement: 480 tons
- Full-load displacement: 555 tons
- Length: 57.3 meters
- Beam: 25.6 meters
- Height: 21.9 meters
- Draught: 1.6 meters
- Max Speed: 60 knots
- Cruising Speed: 55 knots
- Range: 300 nautical miles
- Crew: 27-31 (including 4 officers)
- Effective Operations: Wave height 2 meters, Wind Speed 12 meters/second



Figure 1: *Zubr* Class Hovercraft Seen from the Bows

The hovercraft is powered by five gas turbines which are a derivative of the Kuznetsov NK-12MV. Three of these are used for propulsion and two for generating

lift. The enormous size of the controllable pitch propulsion fans is evident from the photograph below:

Figure 2: Propulsion Fans of the Zubr



Source: CCTV7

On July 2, 2009, the Chinese Ministry of Defense signed a contract with the Ukrainian Special Equipment Export Corporation for four such hovercraft. According to the terms of the contract, the PO More Shipyard in Feodosiya, Ukraine was to deliver two fully built craft along with a complete set of technical documentation to China. Subsequently, the remaining two would be built in a Chinese yard with technical and material support being provided by Ukraine. The reported value of the contract was \$315 million.

As per a report by the People's Daily online,¹ at the time, the Russian side had raised doubts about the deal as it was felt that the Type 958 was a complete copy of the Russian *Zubr* class hovercraft with all patents being held by the Almaz Central Naval Design Bureau in St. Petersburg, Russia. It was also feared that given China's track record of copying foreign military equipment, they would rapidly do so and may even sell the product in the international market. Nonetheless, the deal went through and construction commenced soon thereafter.

In preparation of berthing the craft, China began the construction of a facility on the western side of the Guangzhou Shipyard International (GSI) in 2013. The choice of the premises of a shipyard for this facility possibly stems from their desire to ensure the smooth transfer of technical know-how to the shipbuilders for construction of subsequent craft.

The first vessel (3325) was finally handed over at Guangzhou in May 2013 and the second (3326) in February 2014.



Figure 3: Zubr Class Facility on the Western Side of GSI (Circled)

Figure 4: 3325 and 3326 Soon After Their Commissioning at GSI



The construction of the remaining two contracted craft in China faced complications due to the Russian takeover of Crimea in 2014. Early photographs of their construction at the Huangpu Shipyard in Shanghai, however, emerged in 2015.

Figure 5: 3327/3328 Under Construction at Huangpu Shipyard, Guangzhou



This was subsequently confirmed by the imagery on the *Google Earth*, dated 19 December 2015.

It is estimated that both the craft were delivered by 2017 and were given pennant numbers 3327 and 3328.

A second berthing facility for the *Zubr* was created at the western bank of the Zhanjiang waterway, adjacent to the PLA Navy dockyard, by augmenting an existing Type 726 LCAC



Figure 6: Google Imagery Dated 19 December 2015

facility (21°14'.5 N, 110°24'.9 E). The first image of a *Zubr* at this location appeared on Google Earth on 24 October 2017.

Figure 7: Google Earth Image of Zhanjiang LCAC Base dated 24 Oct 2017



More or less simultaneously, an operational hovercraft base was constructed at Lunxing on Nansen Island, at the mouth of the Zhanjiang waterway (21°05'.8 N, 110°31'.8 E). The construction of this facility commenced in 2014 and is estimated to have been completed by 2016.

A picture of two *Zubr* craft (3325 and 3326) berthed at this facility dated August 2017 gives credence to this estimate.

With three berthing facilities having been created, it appears that the PLA N has purposed each of them. Lunxing is an operational base used for embarkation/

Figure 8: Time Sequence Images of Lunxing Base dated 15 Oct 2014, 15 Apr 2015, 04 Jan 2018



Figure 9: 3325 and 3326 Berthed at Lunxing, Nansen Island



disembarkation of vehicles and troops as well as short term berthing. It has four bays for the *Zubr* and six for the Type 726/A LCACs, each of which could berth two LCACs.

Figure 10: Google Earth Image of Hovercraft Base at Lunxing, Nansen Island dated 16 Jan 2018



The base in Zhanjiang is probably being used for berthing when the craft are not partaking in exercises/ operations.

The facility at GSI is possibly for long term storage/ preservation. An imagery of hoses leading from shore-based equipment to the craft lends credence to this assumption. Russians have been known to undertake preservation of vessels in this manner, which do not have a regular requirement in peace, and are needed only for major exercises or combat.

In 2022, China added two more locally built *Zubr* class hovercraft to their fleet (3260 and 3261) thereby reaching a total holding of six craft. In external appearance,

Figure 11: Google Earth Image of Hovercraft Base in Zhanjiang dated 15 Nov 2023



these are identical to the first four with the exception of the placement of the AK 630 mountings, which have been moved substantially forward.

The *Zubr* has a phenomenal combat capability. It is capable of carrying three T-80 main battle tanks or eight BMP-2 infantry fighting vehicles or ten BTR-70 armed personnel carriers. When used as a troop carrier, it can carry 140 combat personnel and equipment, as well as 130 tons of material. Equipped with two AK 630 gatling guns, apart from landing troops and equipment ashore, it can also provide fire support to beachhead troops.

Figure 12: Google Earth Image of Zubr Facility at GSI dated 25 Sep 2022

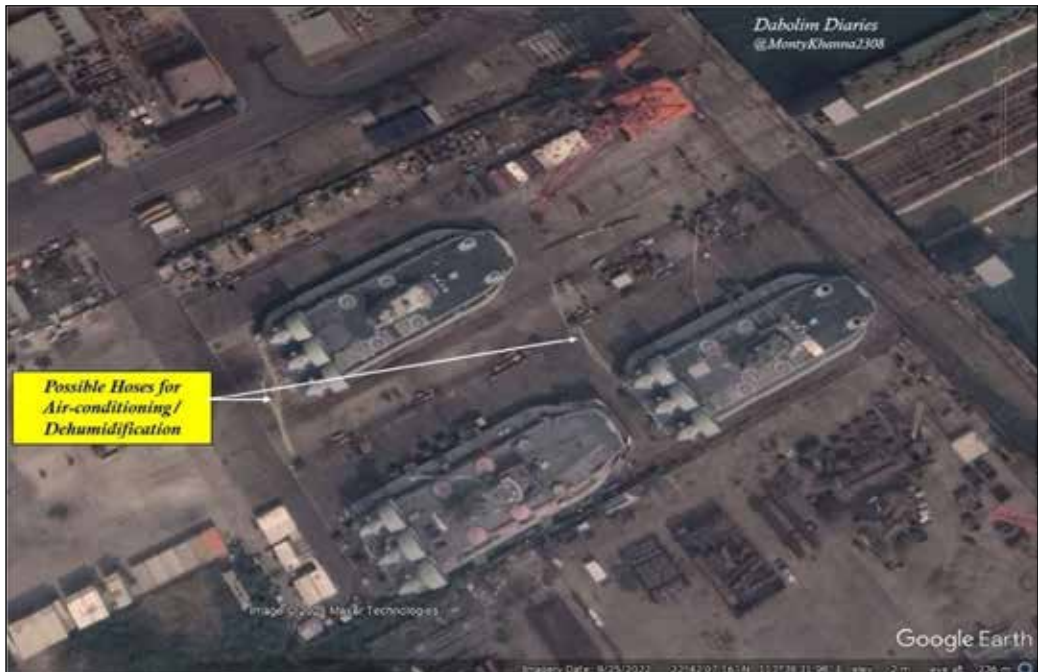


Figure 13: Newer Version of Zubr Class with AK 630 Mounts Shifted Forward



Figure 14: Zubr Discharging Tanks on a Beach (Inset: AK 630 in Action)



Given the *Zubr craft's* limited endurance, the PLA Navy has developed upon the option of ferrying it closer to the combat zone on a Mobile Landing Platform (MLP). The commissioning of the Donghaidao (Pennant No 868) in 2015 provides them a platform to do so, a capability that was demonstrated in a film released on CCTV a few months after her commissioning. A more recent photograph released

Figure 15: Donghaidao with Zubr Embarked in 2023 (Inset: Similar evolution in 2015)



in May 2023 suggests that such an evolution remains relevant even today and is rehearsed from time to time.

Assessment

The *Zubr* Class is a very capable hovercraft with an enormous lift capability. It is, however, prone to defects and expensive to operate and maintain. Greece, which procured four such craft in 2000 has also faced tremendous difficulty in sustaining even a low state of operational readiness. Insofar as China is concerned, the limited numbers constructed, in spite of possessing complete design data, reinforces this assessment. The tendency to conserve the fleet through preservation and restricting usage, indicates that these craft have a niche role in combat for which limited numbers would suffice.

22 January 2025

ENDNOTES

- 1 “Russian media: China has received all the power systems it purchased from the European Bison hovercraft,” *China News*, 27 April 2013, <https://www.chinanews.com.cn/mil/2013/04-27/4770557.shtml>.

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Hudong-Zhonghua (HDZH) Shipyard Sets a New Benchmark for Frigates Construction Timeline

Rear Admiral Monty Khanna (Retd)

The Hudong-Zhonghua (HDZH) shipyard on Changxing Island in Shanghai, launched the first Type 076 vessel, Sichuan (Hull Number 51), on 27 December 2024 with considerable fanfare. Buried under the media blitz was the fact that two Type 054A frigates, one for the PLA Navy and the other for the China Coast Guard, were simultaneously launched from the same dry-dock. Given the drumbeat at which 054A frigates are being launched, this may appear to be inconsequential. However, it is a notable event as it sets a new benchmark for compressing the timeline between the keel laying on the dry-dock floor and the launch of a frigate-sized vessel.

As can be seen from the Google Earth image above dated 08 May 2024, when construction of the Type 076 commenced at the new drydock of HDZH, construction of three Type 054A frigates commenced simultaneously. Work on these progressed rapidly. On 16 August 2024, the drydock was reportedly flooded to launch these vessels. The Type 076 at the time was simply floated and redocked once the frigates were hauled outside the dock. Soon thereafter, work commenced on two more Type 054A frigates, one for the PLA Navy and the other for China Coastguard.



Figure 1: A Type 076 Vessel and 2 Type 054A Frigates in HDZH Drydock

Figure 2: New HDZH Drydock



A photograph of the drydock dated 28 August 2024 taken in a flyby and posted on X by @horobeyo shows the commencement of work on the two frigates on the dock floor. The picture also shows large pre-fabricated modules of the vessels placed adjacent to the dock awaiting to be lowered and mated with the vessels. From this image, it may be assessed that formal keel laying of the vessels on the dock floor took place in mid-August 2024.

Figure 3: New HDZH Drydock



A satellite update posted on SinoDefenceForum on 08 October 2024 shows the considerable progress made in construction of the two vessels. The hulls appear to be complete with only sections of the superstructure yet to be placed on the ships.

The drydock was once again flooded on 27 December 2024 for launch of the Type 076. This was done with considerable media coverage as may be expected given the significance of the event. Strangely, none of the official reports spoke of the simultaneous launch of the two frigates. In fact, insofar as the CGTN videos of the event are concerned, there seems to be a conscious effort not to post any footage of the two frigates

Figure 4: PLA Navy Type 54A frigate in the background with a high proportion of outfitting completed at the time of launch



Source: An image grab from the CGTN video

It can thus be observed that the time elapsed between keel laying on the dock floor and launch of the vessels is an impressive four and a half months. This feat is all the more noteworthy since the HDZH drydock and associated fabrication facilities are almost brand new and still being augmented. In its infancy, the yard has set a

Figure 5: A part of the Coast Guard Type 54 stern seen while the dock is being flooded



Source: An image grab from the CGTN video

new benchmark for speed of construction of a frigate-sized vessel, a timeline that will be difficult for any yard to outdo.

01 January 2024

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China Accelerates Pakistan's *Hangor* Class Submarine Programme

Rear Admiral Monty Khanna (Retd)

In 2015, Pakistan signed a contract with China Shipbuilding & Offshore International Co. Ltd (CSOC), for eight S-26 Class submarines at an estimated cost of between four to five billion U.S. dollars. Termed as the *Hangor* Class Submarine Programme, this was the largest defence contract signed by the Pakistani Navy (PN) in its history. As per the terms of the contract, four submarines were to be built by Wuchang Shipbuilding Industry Ltd (WSIL) at their Shuangliu Base in Wuhan and the remaining four by Karachi Shipyard & Engineering Works (KS&EW) in Karachi, Pakistan, under a Transfer of Technology (ToT) agreement. The submarines built by WSIL were to be delivered in 2022-23 and those built by KSEW by 2028. A stated aim of the programme was to transform Pakistan into a submarine building nation.

The S-26 is an export variant of the Type 039 *Yuan* Class submarine built for the PLA Navy. Like the *Yuan*, it is equipped with a Stirling engine-based Air Independent Propulsion (AIP) system allowing it to remain submerged for a prolonged duration. The version of the S-26 contracted by Pakistan reportedly has some design modifications. These include a heavier displacement of 2,800 tons (as against S-26's 2,550 tons) and a slightly shorter hull of 76 m (as against 77.7 m of S-26).

The programme got off to a good start with both China and Pakistan augmenting their shipyards to facilitate construction. The lone Final Assembly Hall (FAH) at the Shuangliu Base of WSIL (which was being used for the Royal Thai Navy S-26 programme) was augmented by a much larger FAH of dimensions 295 x 42 m built

adjacent to it. Work on this FAH commenced in early 2016 and was completed by early 2017. The PN programme is being executed at this hall.

Figure 1: Google Earth Images of Shuangliu Base dated 20 Feb 2016 (Left) and 21 Jul 2017 (Right)



Insofar as KSEW is concerned, a contract was signed in July 2017 with the Norwegian ship design and building firm TTS Group, for the construction of a

Figure 2: Ship-Lift and Transfer System at KS&EW. Google Earth Images dated 02 Nov 2018 (Left) and 08 Feb 2021 (Right)



Syncrolift ship-lift system capable of handling ships of up to 7,300 tons. The lift-system was to be connected with a rail-linked system with 30 motorised trollies used for shifting vessels to one of 12 custom-designed workstations on land, including two inside a covered shed of dimensions 135 x 38 m. Work on this facility commenced in 2018 and it was commissioned on 10 August 2021.

The timeline of the programme however got derailed by two major events. The first of these was the outbreak of COVID followed by the lockdown in Wuhan commencing January 2020. The second major issue was Germany's refusal to give an export license to China for the locally manufactured MTU 396 diesel engines that power the submarine. To address this issue, the PN opted to wait for China to certify its indigenously developed and built CHD-620 diesel engine. It may be presumed that sufficient performance guarantees have been given by China to the PN to address the operational risk associated with the fitment of unproven engines.

The delays to the programme were reportedly used by the PN to persuade China to carry out further modifications to the submarine. The most significant of these is the conversion of the earlier wet snorkel mast to a dry one, which allows the crew to drain the snorkel mast and associated pipes while remaining submerged. This reduces the time required to start generators and commence the charging of batteries after the mast-head breaks surface thereby improving the Indiscretion Rate (IR) of the submarine. Other changes relate to the improvement of habitability and ergonomics.

On 07 October 2020, while briefing the press, the outgoing CNS Admiral Zafar Mahmood Abbasi had stated that the PN would obtain a *Yuan* Class submarine from the PLA Navy (over and above those being constructed as part of the Hangor programme) for training and acclimation on a 'gratis basis'. This, however, is yet to materialize, and given the advanced stage of the programme, appears unlikely at this point of time.

Significant milestones associated with the Submarine Programme

- **Naming of the First Submarine.** The PN Chief of the Naval Staff, Admiral Zafar Mahmood Abbasi visited the Shuangliu Base of WSIL on 29 Apr 2019.

The naming ceremony of the first submarine, *Hangor*, was held during the visit. The dates of steel cutting and keel laying of Hull Nos 1 and 2 are not in the public domain.

Figure 3: PN CNS Reviewing Construction at Shuangliu (Left), Naming Ceremony (Right)



- **Steel Cutting of Hull No 5.** The steel cutting ceremony of the first Hangor-class submarine to be built at KSEW, originally scheduled for October 2020,

Figure 4: Steel Cutting Ceremony of Hull No 5 at KS&EW



was held on 09 December 2021. The submarine would be named PNS *Tasnim* upon commissioning, in honour of the commanding officer of ex-PNS *Hangor*, Vice Admiral (Retd) Ahmad Tasnim, who was present on the occasion. The event was presided over by Admiral Zafar Mahmood Abbasi, Chief of the Naval Staff of the PN.

- **Keel Laying of Hull No 5 and Steel Cutting of Hull No 6.** A ceremony to simultaneously commemorate the keel-laying of Hull No 5 and steel-cutting of Hull No 6 was held at KS&EW, Karachi on 24 Dec 2022. The event was presided over by Admiral Zafar Mahmood Abbasi, Chief of the Naval Staff of the PN.



Figure 5: Ceremony Commemorating Keel Laying of Hull No 5 and Steel Cutting of Hull No 6 at KS&EW

- **Keel Laying of Hull No 6.** The keel-laying of Hull No 6 was held at KS&EW, Karachi on 14 Feb 2024. The event was presided over by Admiral Naveed Ashraf, Chief of the Naval Staff of the PN.
- **Launch of Hull No 1.** The launch ceremony of Hull No 1 (*Hangor*) was held at the Shuangliu Base of WSIL in Wuhan on 26 Apr 2024. Admiral Naveed Ashraf, CNS of the PN was the Chief Guest at the occasion.



Figure 6: Keel Laying Ceremony of Hull No 6 at KS&EW

Figure 7: Launch Ceremony of Hull No 1 at Shuangliu Base, Wuhan on 26 Apr 2024



The skewed propellor blades of the submarine are clearly visible while the submarine is being launched into the Yangtse Kiang on the slipway.

Figure 8: Hull No 1 (Hangor) Being Floated on 26 Apr 2024



Post launch, the submarine has been berthed at one of the floating wharfs of the yard for further outfitting.

Figure 9: *Hangor* at Outfitting Berth Post Launch



Figure 10: Launch Ceremony of Hull No 2 (*Shushuk*) at Shuangliu Base, Wuhan on 13 Mar 2025



- **Launch of Hull No 2.** The launch ceremony of Hull No 2 (Shushuk) was held at the Shuangliu Base of WSIL in Wuhan on 13 Mar 2025. Vice Admiral Ovais Ahmed Bilgrami, Vice Chief of the Naval Staff of the PN was the Chief Guest at the occasion.

Table 1: Tabulation of Cardinal Dates of Submarine Hull Nos 1 & 2 and 5 & 6

Boat No	Yard	Steel Cutting	Keel Laying	Launch	Delivery	Commissioning
1 (Hangor)	WSIL	Not Known	Not Known	26 Apr 2024	Mid 2025 (Est)	End 2025 (Est.)
2 (Shushuk)	WSIL	Not Known	Not Known	15 Mar 2025	Early 2026 (Est)	Mid 2026 (Est.)
5 (Tasnim)	KSEW	09 Dec 2021	24 Dec 2022			
6 (Not yet named)	KSEW	24 Dec 2022	14 Feb 2024			

Assessment

Progressive induction of AIP equipped *Hangor* Class submarines in the PN will give a fillip to their submarine arm and its capabilities. Even though the Agusta 90B submarines in PN inventory are also AIP equipped, the system has been plagued with several technical and contractual issues, rendering these plants practically inoperable.

The experience gained by KS&EW in building four of the submarines under this programme will hold them in good stead for conducting major overhauls as well as modernisation of these boats as and when they fall due. The yard will also find it easier to transition to the building of newer classes of submarines, particularly if they are of a Chinese design, or share several features of the *Hangor* Class.

As several of these boats are likely to be based at Jinnah Naval Base, Ormara, facilities to support the class will be created there in due course. This will also be immensely beneficial to the PLA Navy which will now have the option of pulling into two ports i.e. Karachi and Ormara (in addition to Djibouti) for supporting their submarines when deployed in the Indian Ocean, should the requirement to do so arise. They will however have to confront internal security issues related to

a turbulent Sindh and Baluchistan. The long-term solution for them would be to have an exclusive hard-perimeter base at a desolate location on the Makaran coast in which they could minimize their interaction with the local populace.

25 March 2025

About the Author

Rear Admiral Monty Khanna (Retd), is the member of India's National Security Advisory Board (NSAB); and is also an Honorary Adjunct Fellow at the National Maritime Foundation.

China's Antarctic Stations Grow Unabated

Rear Admiral Monty Khanna (Retd)

China's tryst with the Antarctic was led by Guo Kun, a graduate of the PLA Military Institute of Engineering, Harbin. While working at the State Oceanic Administration (SOA), in the early 1980s, he was appointed as Director of the newly established National Antarctic Investigation Committee. One of the first tasks he was entrusted with was to pave the way for China to become a party to the Antarctic Treaty System (ATS). This happened in 1983 when China was accepted as a 'Contracting Country,' a status that allowed it to attend meetings of the ATS but not to partake in substantive discussions and voting, which was restricted to 'Consultative Countries'; essentially those which had conducted an expedition and had permanent presence in the continent. To join the more exclusive group of consultative countries, China decided to send an expedition in 1984 headed by Guo Kun himself. They were tasked to set up its first permanent research station in the continent.

Constrained by resources which precluded the charter of an icebreaker, the newly commissioned non-ice class research vessel 'Xiang Yang Hong 10' was chosen for this

Figure 1: Vessels Used for China's First Antarctic Expedition
Xiang Yang Hong 10 (Left) and J121 (Right)



task. She was accompanied by a Naval salvage vessel 'J121', both displacing about 10,000 tons.

Figure 2: *Xiang Yang Hong 10* Entering Maxwell Bay



The expedition comprising 591 people embarked the two vessels and sailed from Shanghai on 20 November 1984. They finally arrived at the Maxwell Bay of King George Island, Antarctica on 30 December 1984, when for the first time Chinese nationals set foot on the continent.

Figure 3: Guo Kun Stepping Ashore (Left) and Leading the Expedition (Right)



Since then, China has significantly increased its presence on the continent. Over the years, it has established five stations.

Details of each of these research stations are as described below:

1. **Chang Cheng (Great Wall) Antarctic Station.** This was China's first research station on the continent. It is located on the Fildes Peninsula in the west of King George Island, southern Shetland Islands of Antarctica ($62^{\circ}12'59''S$, $58^{\circ}57'52''W$), and was chosen by Chinese researchers due to its abundant freshwater resources. Construction of No. 1 Building, the first permanent one at the station, commenced on 20 January 1985, and was completed on 20 February 1985.

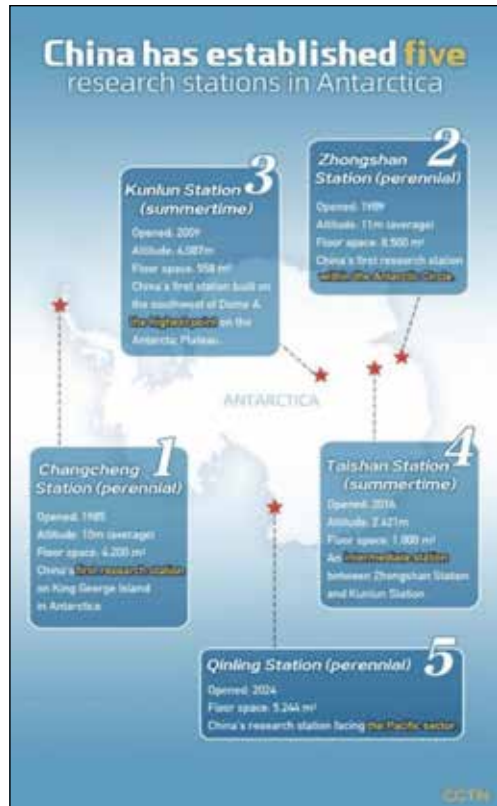


Figure 4: China's Five Stations in Antarctica

A formal ceremony for 'unveiling the nameplate' of the station was conducted several years later on 04 February 1999. This was attended by leaders of Antarctic

Figure 5: Chang Cheng Station Ground Breaking (Left) and Inauguration (Right)



research stations in the vicinity belonging to Chile, Russia and Uruguay in addition to personnel from the Great Wall station.

The station has grown over the years. It can accommodate 40 people for summer and 25 people for winter. It is well equipped to undertake meteorological and geological observations. It also has extensive communication facilities.

Figure 6: Contemporary Aerial View of Chang Cheng Station



2. *Zhongshan* (Sun Yat-sen) Station. This is China's second Antarctic station. It is located on the Larsemann Hills in Princess Elizabeth Land, East Antarctica ($69^{\circ}22'24''S$; $76^{\circ}22'40''E$), near Russia's Vostok Station. This station too was established by an expedition led by Guo Kun using an Australian ice-class vessel *Ice Bird* (*Jidi*) on charter. The expedition faced a setback when the vessel was trapped in ice for over seven days in January 1989, and narrowly missed being hit by falling ice. After extricating herself, the team made landfall and completed the construction of the station on 26 February 1989.

The station functions throughout the year. When built, it was designed to accommodate 60 people in summer and 25 in winter. However, facilities have

significantly expanded over the years, and it can now accommodate 120 people for summer with the winter team continuing to remain at 25. The station primarily carries out scientific observations and research on meteorology, polar high-altitude atmospheric physics, oceanography, geology, geochemistry and environment monitoring. The station also serves as a major transit hub for providing logistical support for China's inland stations (Kunlun and Taishan) in the continent. It also has facilities to support fixed wing and rotary wing aircraft.

Figure 7: View of Zhongshan Station - 09 Feb 2019 (Left) and Contemporary Aerial View (Right)



3. **Kunlun Station.** This is China's third Antarctic station and the first one to be built in the interior (away from the coast). It is located on Dome Argus (Dome A) at an altitude of 4,087 metres above sea level (80°25' 01" S, 77°06'58" E). For its construction, a 28-member team undertook a 20-day 1,300-kilometer journey from the Zhongshan Station with 11 vehicles, 43 sleds and 625 tonnes of supplies. It was completed on 27 January 2009. The station provides a unique opportunity for meteorological, climate and geological observations, with its access to what may be the oldest ice cores to be found on the continent. It is used only in summer and is designed to accommodate 20 people. It is the second closest station to the South Pole, the closest one being the United States' Amundsen-Scott station, which is located at the South Pole itself.

The station has an airstrip where a landing by China's first fixed-wing aircraft *Xueying* (Snow Eagle) 601 was accomplished on 08 January 2017.

Figure 8: An Aerial View of Kunlun Station



Figure 9: *Xueying* (Snow Eagle) 601 Aircraft at Kunlun Station



4. **Taishan Station.** This is China's fourth Antarctic Station. Like the *Kunlun* station, it too is located in the interior of the continent in Princess Elizabeth Land ($73^{\circ}51'50''\text{S}$, $76^{\circ}58'27''\text{E}$), 522 km from and *Zhongshan* Station, and 600 km from Kunlun Station. It has an altitude of 2,621 m above sea level. Construction of the station commenced on 26 December 2013 and it was officially opened on 08

February 2014. It was renovated a few years later and equipped with improved support facilities, wind and solar power systems, improved sewage systems and more efficient diesel generators, so as to reduce its carbon footprint. The station is used for studying geology, glaciers, and climate change. It has a runway for fixed-wing aircraft. One of its functions is also to serve as a logistics relay point between the Zhongshan and Kunlun stations. The station is manned only in summer and is capable of accommodating 20 people.

Figure 10: *Taishan* Station Soon After Construction (Left) and After Augmentation (Right)



5. **Qinling Station.** This is China's fifth and newest station in the Antarctic. It is located on Inexpressible Island in Terra Nova Bay ($74^{\circ}56'04''S$, $163^{\circ}42'55''E$). On completion of construction, it was officially named and opened on 07 February 2024. It is China's largest research base in Antarctica and is designed to operate all year, hosting up to 80 people in the summer and 30 during winter. With a covered area of 5,244 square m, the station is designed in the shape of the Southern Cross constellation. It has a helipad which is located at a distance of one km. The station is built to a state-of-the-art design. Sixty per cent of its power requirement is met by renewable sources for which it has a hydrogen power room with a storage tank, 26 solar panels, 10 wind turbines and other associated equipment.

6. **Proposed 6th Station.** In early 2025, China forwarded a draft environmental evaluation request to the Secretariat of the Antarctic Treaty for the construction and operation of a new summer research station at Marie Byrd Land, West Antarctica. The matter is scheduled to come up for discussion during the next Antarctic Treaty

Figure 11: *Qinling* Station Under Construction (Left) and Completed (Right)



Consultative Meeting scheduled to be held in Italy in June 2025. The base will have a main building of 900 square m and a scientific research Centre of 500 square m. It will be capable of accommodating 25 researchers and support staff in summers. It is expected to be operational by 2027.

Figure 12: Location of all Chinese Antarctic Stations Encircled in Red



A summary of China's Antarctic stations is tabulated below.

Table 1: Summary of China's Antarctic Stations

Station	Location	Date Inaugurated	Type	No. of Personnel
Chang Cheng	62°12'59"S, 58°57'52"W	20 Feb 1985	Perennial (Coastal)	Summer - 40 Winter - 25
Zhongsan	69°22'24"S, 76°22'40"E	26 Feb 1989	Perennial (Coastal)	Summer - 120 Winter - 25
Kunlun	80°25'01"S, 77°06'58"E	27 Jan 2009	Summer Only (Interior)	Summer – Nil Winter - 20
Taishan	73°51'50"S, 76°58'27"E	08 Feb 2014	Summer Only (Interior)	Summer - Nil Winter - 20
Qinling	74°56'04"S, 163°42'55" E	07 Feb 2024	Perennial (Coastal)	Summer - 80 Winter - 30
New Station	Exact Coordinates not known	2027 (Expected)	Summer Only (Coastal)	Summer – 25 Winter - Nil

Assessment

China has been expanding its footprint in the Antarctic at a relentless pace. With the commissioning of the planned sixth station in 2027, it would cement its place amongst nations with the highest number of stations on the continent. In addition to research bases, it has invested substantially in their logistics support by operating a fleet of five icebreakers, two helicopters and one fixed wing aircraft.

Notwithstanding territorial claims put forth by countries, as an outcome of the ATS, the regulatory framework that prevails in the Antarctic is akin to it being a part of the global commons. China knows that the currency that holds maximum heft, when it comes to revisiting the prevailing framework in any of the commons is 'presence'.

The principal edifice of the ATS that regulates the extraction of resources from the continent is the 'Protocol on Environmental Protection' Article 7 which states that "*any activity relating to mineral resources, other than scientific research, shall be prohibited*". Article 25 of the same document, however, provides a future loophole to this stipulation where it states, "*If, after the expiration of 50 years, (which is 2048) any*

of the Antarctic Treaty Consultative Parties so requests, a conference shall be held as soon as practicable to review the operation of this Protocol". With climate change accelerating almost unchecked, the potential commercial opportunities for extraction of resources that the Antarctic could provide are limitless. China is putting the building blocks in place to ensure that should the revision of the protocol come down to a contestation between the parties involved, its voice will carry adequate weight to ensure that its interests on the continent are protected.

11 April 2025

About the Author

Rear Admiral Monty Khanna (Retd), is the member of India's National Security Advisory Board (NSAB); and is also an Honorary Adjunct Fellow at the National Maritime Foundation.

Guangzhou Shipyard Delivers China's Fifth Ice Breaker in Record Time

Rear Admiral Monty Khanna (Retd)

China's fifth icebreaker, the Tan Suo San Hao (Exploration No 3), set sail from Guangzhou on 26 December 2024 and arrived at Sanya on 29 December 2024. She was designed by the China State Shipbuilding Corporation's 704th Research Institute and constructed by Guangzhou Shipyard International Company Limited (GSI).

She formally entered service with the Institute of Deep-Sea Science and Engineering (IDSSE), Sanya, of the Chinese Academy of Sciences (CAS), at the Nanshan Port Public Scientific Research Pier in Sanya, Yazhou Bay Science and

Figure 1: Tan Suo San Hao (Exploration No 3)



Technology City, on the same day. The IDSSE website describes her as ‘*China’s first deep-sea multifunctional scientific research and cultural relic archaeology vessel designed with completely independent intellectual property rights.*’

Figure 2: Induction Ceremony of Tan Suo San Hao (Exploration No 3)



The basic parameters of the vessel are as follows:

- (a) Displacement (Full Load): 9,300 Metric Tons
- (b) Max Speed: 16 Knots
- (c) Polar Classification: PC 4
- (d) Endurance: 15,000 NM
- (e) Crew: 80 (32 Seafarers and 48 Researchers)
- (f) Propulsion: 2 x DI1400 ABB Azipods (4,500 Kw each)
- (g) Power Generation: 4 x Wartsila 6L32 (3,300 Kw each)

The vessel was constructed by Guangzhou Shipyard International (GSI), a subsidiary of the China State Shipbuilding Corporation (CSSC), on an extremely aggressive timeline. The steel cutting reportedly commenced on 25 June 2023. Subsequently, she was launched in April 2024 in a record time of ten months. Her

unusual shape tends to make her look smaller than her actual displacement. A better appreciation of her size can be gained when she is observed in comparison with a yard worker on the dock floor in the photograph below.

Figure 3: Tan Suo San Hao (Exploration No 3) in Dry Dock



She underwent sea trials in October 2024. While most sources initially estimated the delivery to take place in the first quarter of 2025, the timeline was beaten with formal handover on 29 December 2024. The entire build period, from the commencement of steel cutting to final delivery, thus came down to 20 months.

As a PC-4 class icebreaker, she is capable of year-round operations in thick first-year ice, which may include old ice inclusions. Like the *Xue Long 2*, she is designed to break ice while moving ahead as well as astern.

She is an all-electric ship and is powered by two DI1400 ABB Azipods and two bow thrusters. The power is generated by four Wartsila 6L32 generators, each rated for 3,300 KW. She has extensive switchgear to cater to the power management.

Figure 4: Tan Suo San Hao (Exploration No 3) undergoing sea trials



Figure 5: Electrical Power control room of Tan Suo San Hao (Exploration No 3)



Insofar as the vessel's abilities to operate submersibles are concerned, to an extent, they mimic the capabilities of her two sister ships, the *Tan Suo Yi Hao* (Exploration No 1) and *Tan Suo Er Hao* (Exploration No 2). She has a large 'A frame' at the stern with four winches, each with a Safe Working Load (SWL) of 50 tons. The maximum combined SWL for the entire frame is 100 tons.

Figure 6: submersibles operating equipment on Tan Suo San Hao (Exploration No 3)



The capacity of the winches is adequate to handle both the manned deep-sea submersibles operated by the IDDSE, the *Shen Hai Yong Shi* (Deep Sea Warrior) and the *Fendouzhe* (Striver), the former weighing 20 tons and the latter 36 tons. The weight difference is primarily due to the former being designed to dive to 4,500 metres and the latter more than 10,000 metres (it recorded a depth of 10,909 metres on 10 November 2020 in the Mariana Trench).

As it may not be possible to deploy submersibles from the 'A Frame' in ice-covered waters, the vessel is also equipped with a moon-pool of dimensions 6 x 4.8 m. This is likely to be used for operating unmanned submersibles.

She is not equipped with a hangar (for helicopters) or a helicopter deck. She, however, does have a platform to support vertical replenishment.

Figure 7: Images of manned deep-sea submersibles *Shen Hai Yong Shi* (Deep Sea Warrior) and *Fendouzhe* (Striver) that can be carried aboard Tan Suo San Hao



Figure 8: The Moon Pool in Tan Suo San Hao (Exploration No 3)



The vessel, which is operated by the Institute of Deep-Sea Science and Engineering (IDSSE), Sanya, affiliated to the Chinese Academy of Sciences (CAS), will be jointly supported by the People’s Government of Hainan Province and the Development and Construction Limited Company of Sanya Yazhou Bay Science and Technology City. She carries the emblem of the CAS on her funnel.

Figure 9: Vertical Replenishment Platform on Tan Suo San Hao (Exploration No 3)



Figure 10: Emblem of Chinese Academy of Sciences (CAS) on Tan Suo San Hao



Analysis

So far, Russia has been the only known country to have sent a manned submersible to the Arctic seabed at the North Pole. With the *Tan Suo San Hao*, China will have a similar capability, albeit with unmanned assets. More importantly, the speed at which this vessel has been constructed has cemented China's position as a capable

manufacturer of ice-breakers. Hitherto, all the vessels they have constructed (*Xu Long 2*, *Ji Di* and *Tan Suo San Huo*) have been for scientific exploration as well as to meet the logistical requirements of their stations in polar waters. Given Russia's commitment to commence year-round operations on the Northern Sea Route (NSR), the requirement for commercial ice-breakers is going to increase substantially. Russia's RosAtomFlot is unlikely to be able to meet this requirement if it were to depend solely on domestic shipyards. These are hard-pressed to service the requirements of the ongoing conflict with Ukraine, in addition to being confronted by supply chain disruptions due to the imposition of sanctions. With the increasing capabilities of conventionally powered ice-breakers, Chinese shipyards are ideally suited to bridge this gap.

08 January 2025

About the Author

Rear Admiral Monty Khanna (Retd), is the member of India's National Security Advisory Board (NSAB); and is also an Honorary Adjunct Fellow at the National Maritime Foundation.

China's Deep Sea Research Capabilities (Part I) – National Deep Sea Centre, Qingdao

Rear Admiral Monty Khanna (Retd)

China's deep sea exploration capabilities have grown over the years. It is now, arguably the nation with the largest investment in this field. Support for such exploration has come from the apex level with President Xi Jinping, in a speech in end May 2021, encouraging the Chinese scientific community to make strides in four vital frontiers, one of which is ocean research. This is a follow up to an earlier speech made by him in 2013 where he stated, “*Care about the ocean, understand the ocean, and strategically manage the ocean.*”

China has two large, well-resourced institutions that are engaged in deep sea research. These are the National Deep Sea Centre (NDSC), Qingdao, Jiangsu Province that operates under the Ministry of Natural Resources (MNR) and the Institute of Deep-sea Science and Engineering, Sanya City, Hainan Province that functions under the China Academy of Sciences (CAS).

This subject will be covered in two parts. This brief (Part I) focuses on the NDSC.

National Deep-Sea Centre

The NDSC is a department-level institution. It used to operate under the State Oceanic Administration (SOA) but with the SOA being subsumed under the MNR at the 19 Mar 2018 reorganisation, it now functions directly under the MNR. Located at Qingdao (36°20'.1 N, 120°43'.2 E) it has an area of 25.75 hectares with

a total construction area of 24,526 square meters. The first phase of its construction, which took place between 2014 and 2015 cost RMB 495 million.

Figure 1: National Deep Sea Base Management Centre (Main Building)



Responsibilities. The responsibilities of the NDSC as listed on their website¹ are as given below: -

- (a) To undertake deep-sea resource exploration, scientific investigation, environmental observation and other tasks;
- (b) To be responsible for the operation and management of deep-sea base survey ships, major equipment, etc.;
- (c) To undertake the purchase and transformation of deep-sea equipment, and to carry out research and development and testing of deep-sea technical equipment;
- (d) To be responsible for the selection, training and management of divers and major equipment operators;
- (e) To undertake the publicity, education and popularisation of deep-sea science and technology;

- (f) To carry out industrial transformation and services of deep-sea technological achievements;
- (g) To carry out international cooperation and exchanges in deep-sea scientific investigations;
- (h) To undertake other matters assigned by the Ministry of Natural Resources.

Leadership. The leadership of the organisation is as listed below: -

- (a) Zhang Chunlei - Director and Party Committee Secretary
- (b) Song Chengbing - Deputy Director (Chief Engineer)

Layout of Facilities. The broad layout of facilities at the NDSC is as given below:

Figure 2: Layout of NDSC Main Base, Qingdao



Jetty. The facility has a jetty that encloses a basin. The jetty comprises of two segments, the first being narrow with the length of 300 m and the second that incorporates a 50 m wide hard and with a length of 280 m.

The hard has a jetty services support building at its northern end.

Storage Bay for Submersibles. The NDSC Main Base has a large circular building (just North of the jetty) that serves the purpose of a hanger for the storage of submersibles. It also incorporates a test tank for carrying out necessary checks while ashore.



Figure 3: Layout of the Jetty

Figure 4: Jetty Services Support Building



Figure 5: Storage Hanger for Submersibles



Mother Ships for Submersibles

The NDSC operates two ships as carriers for Deep Sea submersibles. These are as follows: -

(a) *Xiang Yang Hong 09 (Facing the Red Sun 09)*. The Xiang Yang Hong 09 is a 4,500- ton distant-water research vessel built in 1978 by Hudong-Zhonghua Shipbuilding to a design provided by the 708th Research Institute of the China State Shipbuilding Corporation. In the first 27 years of her life, she took part in several oceanographic experiments and research projects under the ambit of the State

Figure 6: Xiang Yang Hong 09



Oceanic Administration. In 2006, despite being over 27 years old, she was selected to undergo upgradation to undertake the role of a mothership for China's deep sea submersible programme. She has been used in this role extensively and made history by being the mothership for the submersible Jiaolong when she did her first dive to a depth of 7,000 m in June 2012.

Figure 7: *Shen Hai Yi Hao*



(b) *Shen Hai Yi Hao* (Deep Sea Number 1). The vessel has been built by the Wuchang Shipbuilding Industrial Group at their yard in Wuhan. She was launched on December 8, 2018 and handed over to NDSC in 2019. She has a length of 90.2 metres, beam of 16.8 metres, and a design draught of 5.5 metres. She has a designed endurance of 60 days. She is fitted with a large A-frame at the stern and has been designed as a mother ship for the submersible *Jiaolong*. She will replace the *Xiang Yang Hong 09* in this role in due course.

Funnel Marking. Both the vessels carry the symbol of China Ocean Mineral Resource R&D Association (COMRA) on their funnels. COMRA is the organisation responsible for undertaking activities of exploration and exploitation in the seabed, ocean floor and subsoil thereof beyond the limits of national jurisdiction ('the Area').



Figure 8: Symbol of COMRA

***Jiaolong* Manned Submersible**

The *Jiaolong* is the first Chinese manned submersible in the 7,000 metres class. The submersible did its first dive in 2009. This was followed by an extensive trial phase during which dives of increasing depth were conducted, finally culminating in a dive to a depth of 7,015 m, just above its maximum designed operating depth of 7,000 m on June 23, 2012 in the Mariana Trench. The event received national acclaim as

exemplified by a meeting between Xi Jinping, Li Keqiang and other party and state leaders with representatives of advanced manned deep-sea diving units at Great Hall of the People in May 2013.

Figure 9: The *Jiaolong* Submersible - Being Launched (Left), Interior (Right)



The brief parameters of the submersible are as follows

- (a) Weight: 22 tons
- (b) Length: 8 meters
- (c) Beam: 3 meters
- (d) Crew: 3
- (e) Class: 7,000 m submersible

The submersible completed her 300th dive on 18 August 2024. As of January 2025, the number of dives completed stood at 317. As per the website of the NSDC, the submersible is fitted with several features to facilitate deep-sea research. These include:

- (a) A high-precision fixed-point hovering operation capability that allows the vessel to conduct high-temperature hydrothermal sampling and continuous observation in the seabed chimney vents.
- (b) A high-precision target search operation capability enables the accurate positioning, deployment and recovery of seabed abyss scientific instruments.
- (c) A digital hydroacoustic communication system with a transmission accuracy rate of more than 90%.

- (d) A high-resolution bathymetric side-scan sonar to draw large-area three-dimensional bathymetric and side-scan maps of the seabed.

Over the years, the submersible has been used for several deep-sea expeditions in the Western Pacific and Indian Ocean. These include the East Pacific polymetallic nodule exploration area, the West Pacific seamount crust exploration area, the Southwest Indian Ridge polymetallic sulphide exploration area, the Northwest Indian Ridge polymetallic sulphide survey area, the West Pacific Yap Trench area, and the West Pacific Mariana Trench area.

04 March 2025

Endnotes

- 1 “National Deep Sea Centre,” <https://www.ndsc.org.cn/>.

About the Author

Rear Admiral Monty Khanna (Retd), is the member of India’s National Security Advisory Board (NSAB); and is also an Honorary Adjunct Fellow at the National Maritime Foundation.

China's Deep Sea Research Capabilities (Part II) – Institute of Deep-Sea Science and Engineering, Sanya City

Rear Admiral Monty Khanna (Retd)

This brief is in follow up to the 'China's Deep Sea Research Capabilities Report Part I', which dealt with National Deep Sea Centre (NDSC), Qingdao, Jiangsu Province. This part studies a sister organisation engaged in similar research i.e. the Institute of Deep-sea Science and Engineering.

Institute of Deep-sea Science and Engineering

The Institute of Deep-sea Science and Engineering, Chinese Academy of Sciences (IDSSE) is a scientific research institution that functions directly under the Chinese Academy of Sciences (CAS). It is located in the Luhuitou Peninsula, Sanya City, Hainan Province (18° 12'9 N, 109° 28'.3 E). It is a relatively new organisation that

Figure 1: An Aerial view of the Institute of Deep-sea Science and Engineering



was jointly approved by the People's Government of Hainan Province, Sanya City and the Chinese Academy of Sciences in 2011. It commenced functioning in May 2016.

The institute has an area of about 109 acres and a total construction area of 50,183.95 square m. In addition, it has a living complex about a kilometer away covering an area of about 90 acres and a total construction area of 134,259.60 square m. This complex includes housing and auxiliary living facilities for institute employees, researchers, and graduate students.

Organisation

The IDSSE attempts to bring synergies between marine science and engineering, deep-sea research and development, and offshore operations and tests. To do so, it is organised into three departments, each with several sub-units subordinate to it. These are as follows:

1. **Deep Sea Science Research Department.** It has eight research units:

- (a) Deep Sea Biology Laboratory
- (b) Deep Sea Geology and Geochemistry Laboratory
- (c) Deep Sea Geophysics and Resources Laboratory
- (d) Ocean Circulation Observation and Numerical Simulation Laboratory
- (e) Deep Sea Extreme Environment Simulation Research Laboratory
- (f) Extraterrestrial Ocean System Laboratory
- (g) Marine Mammal and Marine Bioacoustics Laboratory
- (h) Analysis and Testing Center

2. **Deep Sea Engineering Technology Department.** It has seven basic research units:

- (a) Deep Sea Exploration Technology Laboratory
- (b) Deep Sea Information Technology Laboratory
- (c) Deep Sea Resource Development Laboratory

- (d) Deep Diving Technology Laboratory
- (e) Deep Sea Video Technology Laboratory
- (f) Network Security/Deep Sea Software Evaluation and R&D Laboratory
- (g) Engineering Laboratory.

3. Marine Equipment and Operation Management Centre. It is the main administrative wing of the IDDSE and is responsible for the management of construction activity and operations of scientific research vessels, piers and deep-sea equipment. It is also responsible for the management and training of crew members and engineering and technical personnel.

Staffing. The IDSSE has a formal sanction for a staff of 300. As of 31 January 2024, there were 260 employees, including 215 professional and technical positions, 42 staff positions, and 3 workers. Among the employees, 89 have doctoral degrees and 118 have master’s degrees. There is also a sanction for a floating staff of 350.

Layout of Facilities. The broad layout of facilities of the IDSSE is as given below:-

Figure 2: Institute of Deep-sea Science and Engineering, Sanya City



Waterfront Facilities. While the institute does not have a dedicated jetty adjacent to its premises, it uses a pier located 3 kilometers to its North-East for berthing of its vessels. It is possible such activity may shift to the newly constructed Nanshan Port

Public Scientific Research Pier in Sanya Yazhou Bay Science and Technology City in future.

Figure 3: Jetty for Berthing IDSSE Ships



Vessels Operated

The IDSSC is very well resourced in this respect. It operates three large vessels, all of which are designed to embark Deep Sea manned submersibles. These are as follows:

1. *Tan Suo Yi Hao* (Exploration No 1) - IMO 8315451, MMSI 413523770. She was built as a research vessel in 1984 by Amels Shipyard in Makkum, Holland. She has had several owners since then and has sailed under the names *Hai Yang Shi Yo 299*, *Seaway Explorer*, *Northern Explorer* and *Explorer II*. In 2016, she was renamed *Tan Suo Yi Hao*, fitted out for her current role of a mother ship for deep-sea manned submersibles, and handed over to the just created IDSSE. She is 94.45 meters long, has a beam of 17.9 meters, and displaces 6,250 tons. She has four generators each rated at 2205 KW and two motors for propulsion. She has a designed endurance of 60 days covering 10,000 nautical miles. She has a compliment of 60 (25 crew and 35 researchers). She is equipped with eleven laboratories. In addition, the vessel is also equipped with

an A-Frame with a deep-sea winch system, sounding system, sediment collection equipment, seismic air compressor system, and auxiliary machinery such as a crane. She has two notable events to her credit, these being the conduct of China's first 10,000-m submersible dive in Challenger Deep of the Mariana Trench in 2016 and a subsequent one to a depth of 10909 m in November 2020. The submersible *Fendouzhe* was used for both these expeditions.

Figure 4: *Tan Suo Yi Hao*



2. *Tan Suo Er Hao* (Exploration No 2) - IMO 9743071, MMSI 413229620. Built in China, she was delivered to the IDSSE in June 2020. She is 87.25 m long, has a beam of 18.8 m and displaces 6,832.6 tons (full load). She has four generators each rated at 1760 KW and two motors for propulsion, each rated at 2000 KW. She has a designed endurance of 60 days covering 15,000 nautical miles. She has a compliment of 60 (25 crew and 35 researchers). She has 13 laboratories, an acoustic control room and a data processing center. She is equipped with a 100-ton stern A-Frame (with a 50-ton guide mechanism) and a 10-ton telescopic jib crane. She has systems for underwater acoustic communication and multi-beam sounding for carrying out manned deep-diving submersible operations, deep-sea comprehensive scientific operations, engineering equipment sea trials and other scientific tasks.

Figure 5: *Shen Hai Er Hao*



3. *Tan Suo San Hao* (Exploration No 3) – IMO 1024637, MMSI 413595860.

The vessel was constructed by Guangzhou Shipyard International (GSI), a subsidiary of the China State Shipbuilding Corporation (CSSC) on an extremely aggressive timeline. Steel cutting reportedly commenced on 25 June 2023. She was subsequently launched in April 2024 in a record time of ten months. She underwent sea trials in October 2024 and was delivered to the IDSSE on 29 Dec 2024. The entire build period from commencement of steel cutting to final delivery took just 20 months. She is 98.445 m long, has a beam of 19.7 m and displaces 9,300 tons (full load). She has four Wartsila 6L32 generators, each rated for 3,300 KW. For propulsion, she is fitted with two DI1400 ABB Azipods (4,500 KW each) and two bow thrusters. She has a designed endurance of 75 days covering 15,000 nautical miles. She has a compliment of 80 (32 crew and 48 researchers). As a PC-4 class icebreaker, she is capable of year-round operations in thick first-year ice which may include old ice inclusions. She is designed to break ice while moving ahead as well as astern. Like her sister ships, she too has a large 'A frame' at the stern with four winches, each with a Safe Working Load (SWL) of 50 tons. The max combined SWL for the entire frame is 100 tons.

Figure 6: *Tan Suo San Hao*



Funnel Marking. IDSSE ships carry the symbol of China Academy of Science (CAS) on their funnels.

Manned Submersibles

The IDSSE operates two highly capable manned submersibles, details of which are given below:

1. *Shenhai Yongshi (Deep Sea Warrior)*. She is a 4,500-meter class manned submersible. On completion of its sea-trial in October 2017, she was delivered to the Institute of Deep-sea Science and Engineering, Chinese Academy of Sciences for operations. She is reported to have a localisation rate of 95 per cent. She has been used extensively and has completed 778 dives as of 13 December 2024. As per the website of the NSDC, the submersible is fitted with several features to facilitate deep-sea research. These include:

- A high-precision fixed-point hovering operation capability that allows for conduct of high-temperature hydrothermal sampling and continuous observation in the seabed chimney vents.



Figure 7: Symbol of CAS

- A high-precision target search operation capability that enables accurate positioning, deployment and recovery of seabed abyss scientific instruments.
- A digital hydroacoustic communication system with a transmission accuracy rate of more than 90%.
- A high-resolution bathymetric side-scan sonar to draw large-area three-dimensional bathymetric and side-scan maps of the seabed.

Figure 8: *Shenhai Yongshi* Submersible



Technical Specifications

- Weight: 20 tons
- Dimensions: Length - 9.3 m; Beam - 3 m; Height – 4 m
- Manned Sphere Diameter- 2.1 m
- Science Payload – 220 kg

- Crew: 3
- Class: 4,500 m submersible
- Max Sea State: Launch – 4; Recovery – 5
- Dive Duration: Routine – 8 to 10 hours; Emergency – 72 Hours

2. *Fendouzhe* (Striver). She is a 11,000-meter class submersible that was developed by the China Ship Scientific Research Centre (CSSRC), affiliated to the China Shipbuilding Industry Corporation. She was launched in 2016, and after completing a series of test dives including one to a depth of 10,909 meters on 10 Nov 2020, she was handed over to the IDSSE on 16 Mar 2021. She has completed 336 dives as of 13 Dec 2024 of which 25 have been to a depth of more than 10,000 meters.

Figure 9: *Fendouzhe* Submersible



Technical Specifications

- Weight: 36 tons
- Dimensions: Length - 10.3 m; Beam – 3.2 m; Height – 4.4 m
- Manned Sphere Diameter- 1.8 m
- Science Payload – 220 Kg
- Crew: 3
- Class: 11,000 m submersible
- Max Sea State: Launch – 4; Recovery – 5
- Dive Duration: Routine – 6 to 15 hours; Emergency – 72 Hours

Assessment

China's three manned submersibles *Shenhai Youngshi* and *Fendouzhe* (operated by the IDSSE) and *Jiaolong* (operated by NDSE) have cumulatively done more than half of world's deep-dive missions over the past three years. China's investment in this field continues to grow as exemplified by its announced project to build a deep-sea research centre permanently stationed at a depth of 2,000 m. Continued research in this field will give China a head-start to commercially exploit seabed resources as and when norms to do so get established. The dual-use nature of such submersibles also needs to be kept in mind, particularly in the context of interfering with undersea fibre-optic cables, the incidences of which have witnessed a sharp increase over the last two years.

10 March 2025

About the Author

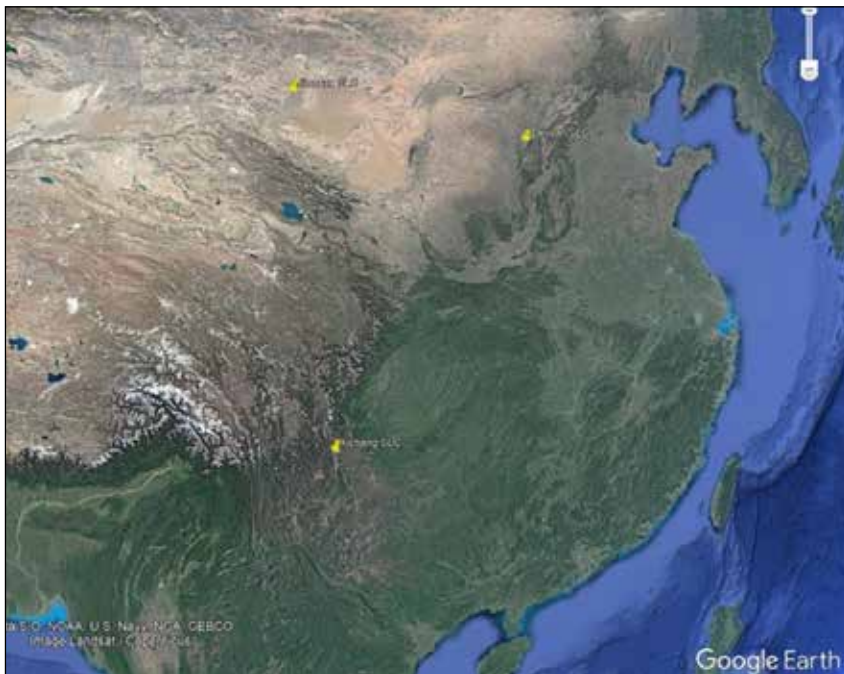
Rear Admiral Monty Khanna (Retd), is the member of India's National Security Advisory Board (NSAB); and is also an Honorary Adjunct Fellow at the National Maritime Foundation.

China's Wenchang Satellite Launch Centre and Yuan Wang Rocket Transport Ships

Rear Admiral Monty Khanna (Retd)

China has been in the business of launching rockets for several decades, with its first Space Launch Centre (SLC) having been established at Jiuquan, Gansu Province in 1958. This was followed by the establishment of two additional SLCs in Taiyuan, Shanxi Province in 1968 and Xichang, Sichuan Province in 1970. All the stations are located inland far from the coast.

Figure 1: Legacy Satellite Launch Centres of China



The construction of China's fourth Space Launch Centre at Wenchang, Hainan Province was approved by the State Council and the Central Military Commission (CMC) of the People's Republic of China on 22 September 2007. The Centre has been designed to support launch missions of China's new-generation of liquid fuelled launch vehicles; the heavy load Long March-5/5B and the medium load Long March-7. Subsequently, it will even support the launch of the super heavy load Long March-9. The choice of Wenchang was governed by several factors, the predominant ones of which are as listed below: -

- (a) The proximity to the equator (19° N) gives the launch vehicle a performance boost gained from the Earth's rotational speed as well as the smaller inclination change manoeuvre needed to reach geosynchronous orbit. This effectively reduces the amount of propellant required for the satellite's manoeuvre from the transit orbit to GEO, thus increasing the service life of satellites.
- (b) The coastal location of the launch complex allows the much larger rocket engine segments associated with heavy and super heavy lift launchers to be transported by ship from the China Aerospace Science and Technology Corporation (CASC) plant in Tianjin, where they are manufactured. In contrast, the earlier three SLCs can only receive such shipments by rail with its associated size limitations.
- (c) The launch vehicle can fly from the SLC in an easterly direction into the Pacific, avoiding the possibility of rocket debris falling into any populated area.
- (d) Coastal locations are far better suited for using reusable rockets, particularly when recovery is done on a floating platform.

Work on the construction of the SLC at Wenchang commenced in 2009 and the station witnessed its inaugural rocket launch on 25 June 2016, with the successful launch of a Long March-7 rocket.

Facilities

When constructed, the SLC comprised of two Vehicle Assembly Buildings (VABs), viz, '501' for Long March-5/5B rockets and '502' for Long March-7 rockets. The

buildings are similar in design with minor differences in height – ‘501’ being 99.4 metres and ‘502’ being 96.6 metres in height. Once fully assembled and made ready for launch, rockets are transported vertically to their respective launch pads (‘101’ for Long March-5/5B and ‘201’ for Long March-7) on Mobile Launch Platforms (MLPs) that run for a distance of about 2,800 metres on 20 metres wide rails. This process is understood to take about three hours. The launch pads comprise a fixed umbilical tower, underground flame deflector trenches with ducts, and four lightning rods.

The rockets themselves are made by China Aerospace Science and Technology Corporation (CASC) at their facilities located in the new space industry compound, Tianjin Industrialization Base, Tianjin. The production of components, assembly and testing of the rockets are all undertaken at this facility.



Figure 2: Layout of Wenchang Satellite Launch Centre (WSLC)

Figure 3: China Aerospace Science & Technology Corporation (CASC) Facilities, Tianjin



Once complete, the assemblies are put into large containers and taken to Tianjin port from where they are shipped to Qinglan, Hainan using two specially designed ships; Yuan Wang 21 and Yuan Wang 22. Qinglan is located 16 km southwest of Wenchang SLC and was selected as the point of disembarkation as the SLC does not have a dedicated harbour of its own. To facilitate its use for handling over-sized cargo, the jetty at the harbour was refurbished and the road from the waterfront to WSLC was widened and its curvatures adjusted.

Figure 4: Modifications Undertaken at Qinglan Harbour, Hainan



Rocket Transportation Ships

Rocket transportation ships Yuan Wang 21 and Yuan Wang 22 were designed by the 708 Research Institute and built by Jiangnan Shipyard. Construction of Yuan Wang 21 commenced on 01 April 2012 and the ship entered service on 06 May 2013. Yuan Wang 22, a ship built to the same design entered service in 2024. These are China's first ships made exclusively to transport rockets. The vessels have a length of 130 m, beam of 19 m and draught of 5.8 m. They displace 9,080 tonnes and are equipped with two 120-tonne cranes for handling cargo. Since the launch vehicle's

requirements for temperature, humidity, and overload acceleration are stringent, the vessels are fitted with stabilisers and robust environmental control systems in their cargo holds.

Figure 5: Rocket Transportation Ship Yuan Wang 21 (Left); Loading Cargo (Right)



The ships are home-ported at Jiangyin with the rest of the Yuan Wang fleet and they remain berthed there when not in use.

Figure 6: Yuan Wang 21 & 22 Berthed at Jiangyin



Expansion of WSLC

Expansion of the WSLC commenced in mid-2022 and is currently ongoing. The augmentation of facilities includes the construction of a new VAB which unlike the first two, has two bays within it for the stacking and assembly of rockets.

Figure 7: New VAB Under Construction at WSLC



There is also a new larger VAB along with a launch pad and associated rail transfer system under construction west of the original facilities. It is assessed that this will be for the super-heavy Long March-9 rockets.

Wenchang International Aerospace City

China's first commercial spacecraft launch site, the Wenchang International Aerospace City operated by Hainan International Commercial Aerospace Launch Company, Ltd. (HICAL), a joint venture between the Hainan provincial government, the China Aerospace Science and Technology Corporation (CASC), the China Aerospace Science and Industry Corporation (CASIC), and the China Satellite Network Group Company Ltd., has been constructed adjacent to WSLC.

The facility has come up within a very short span of time, with construction having commenced in July 2022 and the launch of the first rocket from the site, a Long March-12, taking place on 30 November 2024. It currently incorporates two launch pads for liquid fuelled rockets, with LP No 1, designed for China's new generation medium-lift carrier rockets, having been completed in December 2023, and LP No 2 designed for the launch of commercial rockets of various diameters, having been completed in June 2024. The site will also soon include two launch pads for solid fuelled rockets.

Assessment

The launch facilities at WSLC and the co-located Wenchang International Aerospace City operated by HICAL are expanding rapidly. They will soon eclipse all launch



Figure 8: Launch Infrastructure for Long March-9 Under Construction at WSLC



Figure 9: Location of Wenchang International Aerospace City Operated by HICAL

Figure 10: Lay Out of Wenchang International Aerospace City



activities conducted by the other three SLCs, some of which may consequently be closed down. As the number of launches done from Wenchang increases, the two rocket transportation ships Yuan Wang 21 & 22 may soon be inadequate and will have to be augmented by more vessels for this task.

21 February 2025

About the Author

Rear Admiral Monty Khanna (Retd), is the member of India's National Security Advisory Board (NSAB); and is also an Honorary Adjunct Fellow at the National Maritime Foundation.

Book Reviews

Book Review

Modern Psychological Warfare: A Case Study of India

Author: Arun Kumar Bhatt
Lancer Publishers, 2015, 357 pages
ISBN 978817062133

Mr Shrey Shaurya Singh Bisht

Dr Arunkumar Bhatt's *Modern Psychological Warfare: A Case Study of India* makes a seminal contribution to the study of military strategy and psychological operations. Bhatt grounds his analysis in a profound assertion: "*Wars are born in the human mind.*" This thought-provoking premise serves as the substructure for an in-depth examination of the evolution of psychological warfare, identifying its roots from ancient civilisations to contemporary battlefields. Through meticulous research and critical insights, the book sheds light on the strategic use of psychological tactics in shaping conflicts and influencing adversaries.

The author begins with a comprehensive analysis of psychological warfare (psywar) development as well as its strategic role and operational requirements. Following this segment the author first discusses how psychological warfare evolved to become a systematic military operation from its random battlefield application during the initial use of the term. Modern military doctrines demonstrate complete psywar integration through analytical inspections of how key theorists such as General JFC Fuller, Captain EM Zacharias, and Paul Linebarger, have contributed. Psychological Operations (PsyOps) have gone beyond conventional warfare and play very important roles even during peacetime strategic manoeuvres. By calling

attention to the power of language and propaganda framing, the book illustrates how psywar shapes public perception and enemy responses, making it a dominant tool in both military and political arenas.

Chapter 2 effectively examines the core attributes, operational scope, and strategic value of Psychological Warfare (Psywar). It highlights Psywar's multidisciplinary nature, drawing from psychology, military science, and propaganda, while emphasising its ability to influence enemy cognition, attitudes, and behaviours beyond traditional battlefields. The strategic use of perceptual influence over direct military engagement enables Psywar to be an affordable operational approach to obtain military objectives. The comprehensive part displays a major advantage by examining Psywar utilisation in multiple military scenarios including conventional warfare and insurgencies as well as diplomatic engagement. The deceptive strategies implemented during the Vietnam War and Gulf War periods demonstrated successful direction of enemy behaviour towards crucial strategic aims by completely eliminating resistance reactions from combat. Additionally, its integration into modern warfare, particularly Command and Control Warfare (C2W), underscores its continued relevance. Although the text fails to provide clear outcomes and explanations about Psywar, it nevertheless introduces multiple fundamental Psywar concepts in multiple sections, describing how Psywar works to change public backing and military morale.

Psywar is dealt-with in great detail in Chapters 3 and 4, wherein the authors cover operational practices and the historical growth of this tactic. Chapter 3 conducts a systematic evaluation of Psywar's operational process in addition to its intelligence acquisition and psychological control methods using meticulous planning and collecting intelligence through HUMINT and SIGINT sources. The analysis gains strength through historical examples about Goebbels's propaganda activities which demonstrate cases of actual implementation of these techniques. The succeeding chapter follows a developmental timeline of Psywar from its ancient military and religious origins to its role to geopolitical warfare strategies of today. A review of Psywar's historical background combines ancient Hindu and Judeo-Christian scriptures with the storeys of Genghis Khan and Alexander the Great to demonstrate its enduring significance. More contemporary conflicts such as the American Revolution, WW-II and the Cold War, clearly show how Psywar developed into a systemised and advanced method of control.

The subsequent segment of the book follows Psywar's historical development from ancient, initial deceptive methods toward contemporary organised systems of warfare. In due course of time, geopolitical choices have become essential for warfare, with military strategy and public opinion being influenced by Psywar methods. The book analyses developments of World War I, which transformed psychological warfare from flexible voluntary methods into official government-directed operations. Two main propaganda organisations, including the War Propaganda Bureau (WPB), were developed by Britain while hiring notable writers to create compelling messages. The psychological warfare tactics employed a number of steps, including the dropping of leaflets to weaken or break the morale of enemy combatants, manipulating worldwide news platforms, and messages specially designed to win over politically unaffiliated countries to the British cause. Britain focused its strategies on controlling American opinion through strategic information techniques including the propaganda-based Zimmermann Telegram incident in order to achieve Allied support. Due to Nazi Germany's employment of Goebbels' centralised propaganda to handle media-based public perception control, the use of Psywar developed greater sophistication during World War II. Propaganda messages focused on anti-communism together with racial superiority but the levels of censorship undermined public belief. The Allies countered with radio broadcasts, and films to challenge Nazi narratives and support resistance efforts.

The analysis dispenses details of how technological developments have transformed both the range and coherence of psychological warfare (PsyWar), throughout history. PsyWar has developed from primitive vocal and illustrative strategies to present-day digital disinformation activities, which the book efficaciously examines. The analysis demonstrates how each historical technical breakthrough — starting with printing and continuing through radio and cinema and ending with the internet — steadily widened the power of psychological operations. The chapter is fascinating because of its thorough investigation of historical periods and because it shows how psychological warfare transformed between different communication platforms. The analysis of World War I and II displays how psychological warfare techniques expanded into organised methods through leaflet distribution along with State-controlled radio broadcasts. The gradation between the Cold War period and

the contemporary age of digital warfare provides an essential understanding about disinformation tactics and cyber warfare strategies alongside AI-powered information narratives for modern conflict situations. By integrating theoretical insights from Clausewitz with those from Bernays and McLuhan, the analysis takes shape at a deep level to prove how information control surpasses traditional military force. However, additional discussion about ethical aspects and security measures to defend against contemporary PsyWar threats could have been included as these would have enhanced the chapter's content.

In the latter section of the book the author effectively demonstrates how India has failed to develop a structured psychological warfare (PsyWar) approach despite the proven demonstration of effectiveness of the latter in global conflicts. The British Empire applied psychological warfare extensively in colonial India through regulation of education as well as through its divide-and-rule policy, combined with propaganda techniques against nationalist resistance. The examination of World War-era Psychological Warfare demonstrates the skilful British use of media and recruitment techniques for preserving British colonial power. Indian institutions should preserve archival knowledge of previous experiences because this heritage would prepare the country to execute contemporary psychological warfare operations effectively. The study presents compelling information but requires more details about present methods or future plans related to Indian PsyWar advancement.

Post-Independence India continues to face psychological warfare challenges that stem from multiple factors, including governmental indifference, military neglect, and a marked susceptibility to foreign propaganda. Although PsyWar proved demonstrably important during a number of global conflicts, India maintains no established PsyWar capabilities because it lacks both dedicated military PsyWar units and comprehensive strategic communication protocols. The vast range of media platforms work without coordination to counter hostile messages so India stays vulnerable to false information including social media disinformation. Experience from China, together with that from US and Pakistani operations, shows how vital it is to develop an organised PsyWar methodology. A National PsyWar Division needs to be urgently established, while incorporating PsyWar into military strategy along with media utilisation for strategic influence and implementation of cybersecurity measures to counter foreign disinformation.

The final chapter effectively emphasises the pressing need for India to institutionalise psychological warfare (PsyWar) as a strategic necessity rather than an afterthought. Future wars will unfold both through information domains and actual fields of combat. Consequently, an active PsyWar strategy is essential to defend national security. One of the strongest assertions in the *“Last Strategic Argument”* lays out the strategic position by showing that adversaries presently conduct PsyWar against India and emphasising that a refusal to master this discipline will result in serious strategic setbacks for the nation. The final segment summarises essential points including India’s past inattention to PsyWar. The suggested actions comprise operational steps that combine creation of a department of PsyWar, with security policy inclusion and propaganda defence along with digital weaponisation tactics for information warfare. Through this chapter, the author demonstrates how psychological and information warfare methods will determine future conflicts before advocating for India to create a structured psychological warfare strategic plan.

The author concludes by recommending specific way-ahead approaches. To strengthen India’s psychological warfare (PsyWar) strategy, it is crucial to examine successful models from other nations. China’s “Three Warfares” doctrine — comprising public opinion warfare, psychological warfare, and legal warfare — has been highly effective in shaping global narratives, intimidating adversaries, and influencing diplomatic outcomes. The United States’ Psychological Operations (PSYOPS) have played a decisive role in conflicts such as the Cold War, the Gulf War, and the Global War on Terror, using advanced media strategies, leaflet drops, and digital campaigns to control enemy morale and public perception. Similarly, Russia’s information warfare tactics — exemplified by its interference in the 2016 U.S. elections — demonstrate the power of disinformation, cyber propaganda, and deepfake technology in manipulating public opinion.

In the digital age, AI-driven PsyWar has emerged as a formidable tool, with algorithms enabling the large-scale spread of misinformation, bot-generated narratives, and deepfake propaganda. Cybersecurity threats, such as data breaches, targeted influence campaigns, and social engineering attacks, pose significant risks to national security. India’s vast digital population makes it highly vulnerable to foreign PsyWar attacks through social media manipulation, fake news, and cyber

espionage. Strengthening cybersecurity infrastructure and deploying AI-powered countermeasures are essential to safeguarding India's information ecosystem.

Beyond military and governmental efforts, civilian involvement is crucial in building national resilience against psychological warfare. Media literacy programs, public awareness campaigns, and educational reforms can equip citizens with the skills to critically analyse information, detect misinformation, and resist psychological manipulation. Governments should collaborate with tech companies, educators, and civil society to promote fact-checking initiatives and counter-disinformation efforts. By integrating strategic PsyWar measures with public engagement, India can enhance its ability to counter external threats and maintain information sovereignty in an increasingly contested global landscape.

Viewers must ponder what nations should do to prepare for psychological warfare in a paradigm within which perceptions are stronger than reality. Through its analysis, the book encourages readers to deliberate upon the social impacts of psychological warfare. What standards of ethical conduct and frameworks should countries employ to handle this quickly advancing technology-PsyWar convergence? By provoking such questions, "Psychological Warfare" ensures its lasting significance in security studies and strategic thought.

06 February 2025

About the Reviewer

Mr Shrey Shaurya Singh Bisht is a Research Intern at the National Maritime Foundation, New Delhi. He holds a Masters' degree in Political Science from the University of Delhi and is currently pursuing a Diploma in Conflict Transformation and Peacebuilding from Lady Shri Ram College, University of Delhi. His primary research interests encompass Chinese naval diplomacy, soft power dynamics in the Indo-Pacific Region, and conflict and peace studies. He can be reached at shreybisht2@gmail.com

Book Review

Gallipoli Memories

Author: Compton Mackenzie
Panther Books (London), 1965. 315 pages
ISBN: 9781846649616 (Paperback)

Ms Sonali Talreja

“One is so apt nowadays to regard even one’s own motives and actions during the War with a contemptuous cynicism that it is as well to remind oneself of emotions which were profoundly and sincerely felt.”

–Compton Mackenzie

The “*Gallipoli Memories*” is a book that hovers between archive and art. Compton Mackenzie, who was also a successful novelist when he joined the Royal Marines in 1915, spent most of the Dardanelles campaign working in Intelligence at Sir Ian Hamilton’s headquarters, and staying on the periphery of the battle. His forays to the front were periodic. This memoir recounts those months in 1915 through a multitude of lenses: the eye of a well-established storyteller, a curious staff officer, and the wounded loyalty of a man who still believed that the campaign could have changed the war.

The narrative opens with the beginning of World War I and the mobilisation of troops. Mackenzie, who truly wished to serve in the war, was deemed unfit due to chronic sciatica. However, his literary talent caught the eye of Sir Ian Hamilton, and he was given a commission on his staff. From this point, the narrative moves chronologically: A troop ship voyage to Alexandria; the confusion about GHQ tents

at Kephalo; in the Aegean, comic struggles with the bedding, uniform, and flies; the battle of Fourth June, viewed through binoculars from a shelter at a terrifyingly close range; the desperate months that follow; and, finally, the disastrous Suvla operation in August, during which Mackenzie sat up in his signals tent all night, waiting for news that never quite arrived. The culminating chapters delve into Mackenzie's convalescence in Athens and his lingering conviction that the enterprise was doomed not because of a flawed strategy, but bungled politics. The book's aims seem twofold: to defend the Gallipoli campaign from the blanket of condemnation that had formed against it; and to preserve what life was like behind the lines — the blunders, superstitions, jokes, and stupefying horrors that official histories flatten out.

The book has been written in a hybrid voice. The reader will find it almost classical-essayist in certain sections, and very mess table-style gossipy in others. Sheets of pastoral descriptions — poppies bright as the redcoat battalions on Achi Baba and moonlight frosting the harbours at Mudros — sit next to comic set pieces. The dominant tone is sardonic affection. Mackenzie is acerbic about pomposity, but does value gallantry. Certain points turn incandescently serious. For instance, Mackenzie records stepping in what he believed to be mud only to later realise that it was, in fact, the decomposing, severed head of a Turkish soldier. The switches from mess-room anecdotes to existential horrors are brutally swift, almost imitating the vertigo effect of the campaign itself.

The memoir unfolds in long, loosely stitched chapters. Descriptions of frantic hours of telegraphy, waiting for orders and for ships, abound before digressing into mini essays on the acoustics of naval gunfire, the Australian physique, the whine of shells, etc. However, all these descriptions and digressions lead back to the question of why Gallipoli failed. The argumentative spine appears gradually and almost stealthily towards the end. There are a whole slew of reasons and excuses that Mackenzie starts dispensing. For instance, he believes that had there been better support and supply of guns, shells, and moral backing from London, the peninsula could have been tamed. Indeed, in his opinion, the Suvla campaign failed not because it was impossible, but because the IX Corps commander, "*let his men bathe when by an effort the peninsula might have been straddled.*" This very amalgamation of memoir and apologia is the signature move of the book.

The fact that Mackenzie is an established author is quite evident. The official documents recording history remain flat, but his memoir contains a multiplicity of textures. The details with which the events have been recorded anchor themselves in one's sensory memory. Accurate descriptions of the pitch of a Taube's falling bomb, or the solidarity found within the chorus of frogs around GHQ, for instance, add the lived-in quality.

Mackenzie remains loyal to Hamilton but does not whitewash the headquarters. He describes in detail how the officers cracked under the pervasive heat and boredom, how optimism transformed into pettiness, and how men clung to gossip to avoid the contemplation of failure. To highlight how despair had begun to seep in, Mackenzie offers the reader a phrase that crossed his mind: "*we have lost our amateur status tonight.*"

Mackenzie's text is interspersed with Victorian-style verses and Homeric similes. The contrast between his inherited Edwardian grandeur and the squalid trench outskirts is quite riveting. The classical and imperial mental world that the author had taken residence in was vanishing, and its elements were being used to describe something that was devastating.

The book, with its detailed descriptions, offers itself as a gold mine on the hinterland of Gallipoli: censorship, code-work, inter-ally friction, the Greek islands filling up with refugees and suspected spies, and the micro-politics between them. Entire subplots on the pursuit of the phantom Müller gang rarely appear elsewhere.

Mackenzie simply refrains from entertaining the idea that the entire enterprise was misconceived. He was writing the book as though he were still fighting against the London press of 1915. Journalists, civilians, and a band of timid generals, all come under his fire and are blamed. Detached, flatter accounts may need to be consulted simply to supply a balance.

The book contains moments of sketch-comedy stereotypes of Levantine cunning. Further, the readers of the present day might struggle with the dense classical diction that addresses Virgil, Homer, and Lewis Carroll, and the presence of quotations in Greek or Latin. All these elements mark Mackenzie as a man of his era and community. One may read around them, of course, but they remain.

All in all, “Gallipoli Memories” offers what no strategic study can: a human temperature of the campaign. One look at the official documents, recordings, and videos suffice to inform the reader that Gallipoli has been narrated as a saga of topographical traps mixed with mistimed landings. Within this, however, Mackenzie restores all the gossip, the stubborn idealism that was present before the campaign and continued to linger even after its failure, and, of course, the queasy humour. The book demonstrates that Edwardian confidence was not destroyed immediately by the war and that the pockets of belief survived, and their gradual disillusionment is one of the keys to the mood that gripped post-war Britain.

The book also holds significance for naval historians, highlighting the complexities that go into naval operations, dynamics, and logistics. Mackenzie’s keen eye allows for a detailed description of how trawlers were repurposed and how auxiliary craft kept crucial supply lines running even under fire. He also brings to the fore the sheer difficulty of conducting amphibious assaults as ground troops and naval forces, generals and admirals struggle to synchronise with each other.

The book also offers a mix of entertainment and gravitas. The reader will laugh at his impersonations of a staff colonel and then, forty pages later, be forced to confront a corpse-strewn ravine. And in the end, this very oscillation between comedy and horror is the rhythm of memory. They refuse to separate in the mind. The book is certainly not a definitive history, nor does it try to be one. It is one densely textured witness of an act. It is partisan and exasperating at times, but unquestionably alive. When read alongside sober strategies and official records, the work shows not only what happened at Gallipoli but how it also felt, sounded, and smelt to those who lived through this event.

This volume endures as a significant portrait of the campaign.

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About the Reviewer

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