Chinks in the Armour*

Intro: To acquire the great navy status, we must rely more on the indigenous industry even if it is in the private sector

By Adm. Arun Prakash (retd)

Following a successful German airborne assault on Crete in May 1941, the Allied forces found themselves trapped in a Dunkirk-like situation, and it was decided to evacuate them by sea-lift under the supervision of C-in-C Mediterranean, Admiral Sir Andrew Cunningham. Over four successive nights, 16,000 troops were evacuated to Egypt by Royal Navy (RN) warships under intense Luftwaffe attack; at the cost of three cruisers and six destroyers sunk (including one commanded by Captain Louis Mountbatten), and fifteen other major warships damaged.

Cunningham had determined not to let the army down, and when warned about the possibility of heavy losses, he famously declared: “It takes three years to build a ship; it takes three centuries to build a tradition”. This sentiment has been subliminally internalised by the Indian Navy (IN).

When he spoke these words, the British Admiral was, no doubt, conscious of his distinguished lineage, represented by the likes of Drake, Nelson, and Beatty. The IN, as a young Service, can neither compress history nor accelerate the passage of time, but must always remember that it is also the heir to a hoary maritime tradition.

Our Maritime Past

The world’s oldest dry-dock, at Lothal in Gujarat shows that India’s ancient shipbuilding history harks back to the second millennium BCE. Thousands of years before the arrival of European interlopers on our shores, the outstanding skills and expertise of local shipbuilders had been producing robust and seaworthy craft for intrepid Indian mariners to undertake long oceanic voyages. That is how India sustained a vigorous maritime trade with the Red Sea, Persian Gulf and Mediterranean and, for centuries, exported its culture, languages and religions all over SE Asia till the arrival of the Moghuls.

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A combination of historical as well as geographic factors, coupled with a lack of strategic vision, prevented any of India's early rulers from creating a proper navy. Nevertheless, the exploits of naval leaders like the Zamorins and Ali Marrakars of Calicut, and the Angres of the Maratha Navy should be the cause for tremendous pride for Indians in their maritime tradition. In this context, we need to emulate the Chinese who have expended a great deal of money, energy and effort to build a mythology of maritime tradition around the voyages of 15th century Admiral Cheng Ho.

During the 17th, 18th and 19th centuries, sailing ships built of stout Malabar teak emerged from Indian shipyards to serve, world-wide, under the East India Company's colours. In the 150 years between 1735 and 1884, a succession of master shipbuilders of Mumbai's Wadia family built 300 ships in the Mazagon Dock for private owners as well as the Royal Navy. Of these, the 193-year-old HMS *Trincomalee* is the oldest surviving ship in the world today, and remains afloat in Hartlepool harbour in the UK as a museum.

The Navy's Leap of Faith

The Indian Navy recognised, at a very early stage after Independence, that it could easily build up numbers in its fleet with WW II surplus vessels that the UK was keen to dispose off. But it would never become a maritime force of substance unless its warships and submarines were built in Indian shipyards. In the face of great scepticism both at home and abroad, the IN made a great leap of faith and, in 1960, bought out the design of the Leander Class frigate from M/S Vickers-Armstrong and Yarrow of UK, for a building project to be undertaken by Mazagon Docks Ltd (MDL).

The first Indian Leander, INS *Nilgiri* was commissioned in 1972, about nine years after her RN counterpart, and has been followed by 11 other ships, built as variations of the same basic hull design, and with the same propulsion package, over the next 33 years.

Our ingenuous naval architects modified and enlarged the Leander hull to, first, take the heavy Sea King helicopter, instead of the Alouette, for anti-submarine warfare (ASW), and then (in the Project 16 ships) to accommodate surface-to-surface missiles as well as a second Sea King helicopter. Ships of the final version (Project 16-A), constructed by the Garden Reach Shipyard in Kolkata, bear little resemblance, other than the steam engines, to their progenitor. For their size these are possibly the most heavily-

armed and potent warships anywhere; being packed with weapons and sensors of diverse origin.

Submarine Building

As in most other fields of security, Pakistan trumped us by leasing the USS *Diablo*, a Tench class submarine, re-named PNS *Ghazi*, from the US in 1963. It was only five years later, in 1968, that the first of our own eight Foxtrot Class boat arrived from the USSR. After briefly considering retention of a former U-boat designer for consultancy, the navy obtained government approval to acquire four Type 1500 hunter-killer (SSK) submarines from the HDW yard in Germany. Of these, two were to be built in Germany and two in MDL Mumbai, with an option to build/buy two more.

This Type 1500 programme could have, belatedly, laid a firm foundation for submarine construction in India, and put us firmly on the road to self-reliance in this crucial area. The project, unfortunately, became embroiled in allegations of corruption, and the government, in its wisdom, decided to terminate it, after import of two boats in 1986 and the assembly of another two by MDL in 1992 and 1994.

Whatever submarine building expertise had been accumulated by MDL was wasted out over the next decade and a fresh beginning had to be made by the shipyard when construction of the French Scorpene class boat started a decade later. One of the predictable consequences of this has been that our submarine strength will drop to unacceptably low levels by 2015, and it will take nearly two decades of sustained production before we can regain the desired force levels. And this, when the PLA Navy is knocking at our doorstep.

Current State of Play

As far as the navy's surface ship accretion plans are concerned, to all outward appearances, they seem well in hand and seem to be progressing on schedule; barring some time and cost overruns. Its dream of becoming a 'builder's Navy' seems to be coming true. Appearances can, however, be deceptive and the factual position is somewhat less palatable. The navy's passionate espousal of indigenisation has not received the kind of support it deserved, either from the government, or from the two

main agencies involved: the DRDO and the defence PSUs (DPSU). Consequently, our dependency factor has been progressively rising.

At the commissioning of the last Project 16-A frigate INS *Beas*, in 2005, it was announced that this warship had an indigenous content of 85 per cent. Such statements are frequently heard, but unless their context is specifically clarified, they can be very misleading. This has regrettably been the case, both with our DPSUs as well as the DRDO. When speaking about weapon systems or platforms, it must be clearly indicated whether the percentage of indigenisation claimed in the product is by weight, volume, cost or technology content.

To take the specific example of INS *Beas;* the ship's hull, engines and auxiliary machinery (like air conditioning, power generation or hydraulic systems) could easily constitute 75-85 per cent of its weight and volume, and since these are largely manufactured in India, the statement about '85 per cent indigenous content' would be technically correct. However, it needs to be borne in mind that these are low-cost, low-tech items. On the other hand, key weapons, sensors and electronic components which are at the 'heart' of its combat capability are of Russian, Israeli, French, Italian and Dutch origin.

Such equipment may constitute only 10-15 per cent of the ship by weight and volume, but could be as much as 60-70 per cent by cost and technology content. But far more importantly, if we are unable to design and produce these systems indigenously, we are merely producing hulls rather than warships and falsely claiming high levels of 'indigenisation'.

This is equally true in many other fields of defence R&D as well as defence production, and I quote four typical examples:

- Bharat Electronics Limited (BEL) has been making a whole range of radars for the IN, under licence from M/S Signaal/Thales of Holland, since the 1970s, but has yet to offer an advanced product of its own design. One of the reasons is that our scientists have not yet developed the magnetrons and travelling-wave-tubes which form the core of a radar transmitter, and which are still being imported.
- Bharat Heavy Electricals (BHEL) has been manufacturing 76 mm naval gun turrets under licence from the Italian company, OTO Melara since 1994, and similarly

ordnance factory Medak has been turning out 30 mm gun mounts of Russian origin for the IN. However, neither has so far thought of designing nor producing a naval gun on its own; nor even of buying out the production rights. Consequently, we remain dependent for a ship's basic armament on Russia or Italy. An adverse spin-off is that since they have no indigenous gun available, Indian shipyards are unable to offer patrol vessels for sale to neighbouring countries, which are keen to acquire them.

- In the case of the Light Combat Aircraft (LCA) it is most creditable that the airframe, avionics, flight-control and weapon-aiming systems of this fighter are all of Indian design and manufacture. However the 'heart' of the machine; the aero-engine which will power this fighter, and determine its performance, is going to be an imported item, because the indigenous Kaveri aero-engine project has been languishing for decades. Similarly, DRDO was unable to keep its promise to develop its 'eyes'; the airborne radar, and an imported sensor is now being fitted. What percentage of indigenisation can be claimed for the LCA if it flies with an American engine and Israeli radar?
- The Arjun may be a world class main battle tank and the Indian Army will hopefully induct it into regimental service after the recent round of comparative trials. Since, at least 50 per cent of the tank's main components including the engine, transmission, gun barrel, tracks, and fire control system are imported; its claim to being an indigenous product has to be treated with great caution.

It is neither possible, nor desirable for any country to be totally autarchic in the field of defence production; even the US arms industry probably imports many vital components. However, unless we can establish design and production capabilities in respect of major items like diesel engines, gas turbines, rocket motors, radars and fire-control systems, as well as weapons and ammunition; our claims to major power status will remain hollow.

The Navy's Technology Wish-list

In 2004, Naval HQ had presented, to the secretary DRDO, a 20-year forecast of the technologies that the navy wanted developed indigenously in pursuit of its maritime security roles and missions. The fate of this 20-year forecast was a foregone conclusion, because the DRDO has a vision of its own; generally fixated on pursuit of technology

demonstration, in which the operational needs of the armed forces find a very low priority.

The resultant dependence of the IN on foreign sources for high-tech weapons, sensors and propulsion packages not only has extremely adverse security implications, but has also been the main cause of the embarrassing time and cost-overruns consistently faced by our indigenous warship-building programmes. The navy's dream of building its own ships as well as traditions could founder on the shoals of foreign dependence, and this is an issue which needs to be addressed with seriousness in all three dimensions of maritime warfare:

- The navy's in-house Directorate of Naval Design has grown into a very versatile and capable organisation for surface ship design. But the key to the combat effectiveness of a warship lies in the quality of guns, missiles, radars, sonars and ASW as well as electronic warfare suites that equip it. While the choice of a propulsion package for small and medium sized vessels is confined to diesel engines and gas-turbines, larger ships aircraft-carriers benefit from nuclear propulsion. Except for sonars and certain areas of electronics, in all other cases we are years away from self-reliance, and each of these systems has to be imported.
- As far as submarine design is concerned, the experience gained from the ATV project has not benefited the Navy because of security firewalls. Apart from hull design, a powerful diesel engine, a high-capacity battery bank, acoustic and electronic sensors, underwater weapons and communications and periscopes are just some of the arcane technologies that go into building a submarine. Of these, we have some competence in the field of submarine batteries, sonars and combat management systems. The rest come from abroad.
- In the field of naval aviation, there is a requirement for ship-borne fighters and helicopters as well as reconnaissance aircraft and unmanned aerial vehicles (UAV). While fighters, helicopters and UAVs can be adapted for maritime operations from land-based versions, reconnaissance aircraft are usually modified airliners. What our scientists need to evolve are, an array of airborne sensors and weapons with maritime warfare applications, like; radars, sonars, sonobuoys, infra-red sensors, EW suites, torpedoes and depth-charges. Currently, all these come from foreign sources.

A Hollow Navy?

The world is looking with a lot of respect, not unmixed with a degree of surprise and apprehension, at the impressive acquisition programmes of the IN as well as the Maritime Strategy recently articulated by the Service. Some observers see India contemplating regional hegemony, but most view these efforts as part of a broad naval transformation, which aims to enhance the country's power projection capabilities at sea and eventually to develop a capable blue-water force to serve national interests.

Such a force may become the fourth or fifth largest navy in the world, in the very near future, but its continuing dependence for weapons, sensors and systems on foreign sources will remain an Achilles heel and act as a major impediment, not just in its force accretion process, but also in its rise to regional or global stature. Till we attain self-sufficiency, any supplier country can dictate policy, or even bring us to our knees by imposing restrictions, embargoes or sanctions.

Conclusion

The People's Republic of China started assembling its first Soviet designed submarines and warships in the mid-1950s. The Central Military Commission decreed in 1956 that the indigenous development of naval weapons and equipment, including guided missiles and submarines was to be given special impetus. Today, the PLAN ranks amongst the world's leading navies, if not in technical sophistication, at least in size and self-reliance.

It is difficult to break moulds, and resistance to change can be a hugely retrograde force, but if the DRDO and DPSUs have failed to deliver for the past three-four decades, and are unwilling to work in convergence with the aims of the armed forces, the IN must find a new paradigm to meet its indigenisation and force planning targets. It is very late in the day to make a fresh start, but if we do not start even now, we will never get anywhere. The recently announced 'Make India' option offered under the Defence Procurement Procedure (DPP) opens a window of opportunity in this context.

The IN has a captive centre for technological excellence in the Weapons and Electronics Systems Engineering Establishment (WESEE). An attractive prospect could be for NHQ to enlist the services of WESEE to launch a 20-year development

programme, for a few vital technologies involving weapons and sensors in partnership with our world class IITs. Collaboration can then be sought with India's innovative private sector. The private sector companies may seek foreign collaboration on the condition that transfer of key technology will be completed within the first five years, after which a Mark II product will be jointly developed and marketed in partnership.

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