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The Role of the Submarine in the Fight for Naval Supremacy in the Pacific

by Maxim Worcester

By the end of the Second World War the submarine and the aircraft carrier had established themselves as the dominant weapon of war at sea. The American carriers had soundly defeated the Japanese Navy and the long range submarines had decimated the Japanese merchant navy, 60 % of the over 2,000 Japanese freighters sunk by the Americans were destroyed by the submarine force.

Following the end of the Pacific War it was initially the aircraft carrier which underwent a rapid improvement and not the submarine. The US carriers achieved nuclear strike capability in 1951 and the launch of the first super carrier, USS Forrestal, marked the beginning of a development which continues to this day. The highlight of this development was the launch of the USS Enterprise, a nuclear powered carrier which could theoretically be kept at sea indefinitely if replenished at sea.

An American carrier group at sea is a dramatic and majestic sight which serves well to both project power and to demonstrate who rules the waves. Four years before the keel of the USS Enterprise was laid in 1958, however, a naval revolution took place which would change naval warfare. It was the launch of the world's first nuclear-powered submarine, the USS Nautilus.

For the first time in history the US Navy had a true submarine, not merely a boat which could submerge. It was as fast under water as above and could remain submerged and undetected for days at a time. The Achilles heel of nuclear submarines of the time was the single weapon it could deploy which had not changed much since the Second World War. The drawbacks of the torpedo and the dramatic advances in anti-submarine capabilities did not at the time strike

fear in the hearts of the admirals and it was the carrier groups which remained at the centre of strategic naval thinking.

The launch of the first US ballistic missile boat in 1959 marked a dramatic change in the standing of the submarine and transformed the submarine into an instrument of national strategy. With its Polaris missiles, boats of this class could project power and remain undetected, thus effectively ensuring that a First Strike could not take out the other sides nuclear strike capability. At the same time it became clear that such submarines could only effectively be fought by other submarines, this led to the rapid development of the nuclear attack submarine.

The command of the sea today lies beneath rather than on the surface as the Falkland campaign of 1982 clearly illustrated. The short war in the South Atlantic showed that even well manned and modern surface ships cannot effectively defend themselves from high-performance jets and that they also cannot defend themselves at all from a nuclear powered attack submarine.

A single British submarine sank the Argentinians major surface vessel and ensured that the only aircraft carrier remained in port. Without this submarine and its actions the retaking of the Falkland Islands might easily not have taken place. At the time the sinking of the Argentinian cruiser Belegano was widely criticised as being excessive, in fact it was the single most significant action in the South Atlantic. At the same time, one single Argentinian submarine tied up a good proportion of the British fleet, illustrating how seriously both sides took the submarine threat.

For some years now the Chinese Navy (PLAN) has considered the construction of its own carrier fleet. It has bought three out-dated carriers and has examined these carefully. Clearly, China has the capability and the money to construct a carrier fleet and many observers expect the PLAN to start construction of such vessels shortly. Some observers, however, believe that such a step would not best serve China's strategic interests and would represent an expensive and damaging decision.

In all likelihood the Chinese strategists have taken a close look at the Pacific War between the US and Japan. One striking fact of nearly all encounters between the two opposing navies is the fact that most battles were fought in close proximity to land. Battles such as Midway or the Philippines Sea were the only two significant deep water encounters of the Pacific War. Going further back in history the same pattern emerges, whether Trafalgar, Skagerrak, Copenhagen, and Nile – all such encounters took place close to land.

Any future conflict in the Pacific will be no different; if it comes to a naval conflict involving China it will take place close to the land under dispute, or at least close enough for Chinese land-based aircraft and long range missiles to provide support. Unlike America, China does not need aircraft carriers to project power in its waters. America on the other hand needs carrier capability in order to project power in the Western Pacific and Indian Ocean – at least for the time being.

China, like many of the countries in the region, is investing heavily in the development of the submarine as a method of power projection. The PLAN has gone Nuclear and is in the process of bringing up to 16 Yuan 041 class submarines into the fleet to add to the approximately 50 boat fleet it has today. Much of the current fleet is based upon Russian

designs, the new Yuan boats are however more advanced and potent as they have an Air-independent propulsion system (AIP). This allows submarines to remain submerged for up to 14 days and move silently at 5 knots.

AIP boats are a clear answer to the far more expensive nuclear powered boats. Nuclear power is not only expensive; it also involves highly specialised knowledge. China's attempts to build a nuclear boat appear to have run into difficulties; so far China has not been able to construct a submarine which is comparable to Russian, American, French or British standards. By all accounts they are easy to detect and prone to breakdowns.

Other countries in the region are also taking a close look at upgrading their submarine fleet. Vietnam has placed an order for 10 Russian Kilo-Class boats. This class does not have AIP; will however be a potent threat to any country seeking to make claims to its part of the Yellow Sea. Australia has plans to replace its Collins Class submarines with 12 new boats which will have AIP and will be armed with both torpedoes and cruise missiles. Singapore has ordered 2 Västergötland AIP boats and the Japanese Navy too is constructing AIP boats of the Asashio and Soryu Class. In total around 80 - 100 new submarines will be operating in the Pacific by 2020, many with AIP capability and armed both with cruise missiles and advanced wire-guided torpedoes.

A new weapon, Interactive Defence and Attack System (IDAS), further improves the survivability and tactical use of conventional submarines. IDAS, developed by the German arms manufacturers Diehl, ThyssenKrupp Marine Systems and Kongsberg, is a missile system based on the Diehl IRIS-T air to air missile and is launched against targets such as ASW helicopters through the torpedo tubes of a submarine. The missile can be controlled in flight by means of a fibre optic cable, giving submerged submarines the possibility of attacking aerial targets for the first time. Up to four missiles can be launched from each tube using a revolver magazine. Besides being able to attack helicopters and aircraft, the system can also be used against sea targets without necessarily destroying the target.

This new capability over the use of a torpedo, which would result in the destruction of the target, increases the flexibility of a boat carrying IDAS. Contrary to some reports, the launch of an IDAS missile leaves no track on the surface as the missile is not ejected from the tubes of a boat with compressed air, but floated out. The missile can travel underwater, away from the launch platform, thus when airborne, defenders cannot immediately deduct where the boat is located. Such a weapon is also well suited for asymmetric warfare, such as in the fight against piracy or in low intensity conflicts. It can also be used to attack sites on land in support of an amphibious attack.

IDAS has been tested by the German Navy who has expressed an interest to purchase the system. Even if Germany decides not to go ahead with the deployment of IDAS it can be expected that other Navies, not only in the Pacific region, will consider this revolutionary system when upgrading their submarine fleets.

The Indian Navy is going nuclear and is currently leasing a Russian Akula boat for a period of 10 years. INS Arihant, India's first nuclear boat is undergoing trials; clearly India has no wish to be left behind by China. It has also ordered boats from France and Germany, the final word has not been spoken here, whatever the outcome, India will continue to grow its submarine fleet by ways of technology transfer and direct purchase.

What is further intriguing in India's plans are apparent links to Israel. The Israeli Navy has 5 German built Dolphin class AIP boats armed both with cruise missiles and torpedoes. The Dolphins have both 533 mm and 650 mm torpedo tubes allowing the boats to fire a mix of light and heavy torpedoes as well as Harpoon Cruise Missiles and the Israeli Popeye Turbo Cruise Missile. The latter is a nuclear capable cruise missile with a reputed range of up to 1,500 km. This system was tested by the Israelis off Sri Lanka in the Indian Ocean and it is highly unlikely that India was not a party to this test-firing. From an Indian perspective the acquisition of such a system from Israel would make a great deal of strategic sense, both as a deterrent to Pakistan and a counter to Chinese ambitions.

The US Navy has around 50 nuclear boats in the Pacific. Besides Attack and Ballistic submarines America has two of the four converted former Ohio Class boats in the Pacific fleet. This new class of submarine, known as Cruise Missile Submarines (SSNG), can deploy up to 154 Tomahawk Cruise Missiles, equivalent in power to an entire surface battle group. In all likelihood this class of boat can also launch sub launched intermediate range ballistic missiles (SLIRBM). Besides being able to launch this impressive arsenal of weapons such a SSNG can also land up to 70 Special Forces troops with an Advanced Seal Delivery System (ASDS).

The impact of such a system cannot be underestimated. A SSNG combines the stealth of a submarine with the power projection capability of an Aircraft Carrier. The enemy has no way of knowing where such a boat is at any time and is thus for all practical purposes invulnerable. It is the true naval vessel of the future and the successor to the Aircraft Carrier of the late 20th Century and the Battleship of the late 19th Century.

In future a SSNG will also be able to deploy remotely operated miniature unmanned submarines, thus allowing the mother ship to stand off and remain undetected. This capability is of importance in shallow coastal waters. Much as the UAV has revolutionised the battle on land, such Unmanned Underwater Vehicles will further reinforce the strategic importance of the submarine in the future. It will enable SSNGs to conduct intelligence operations, monitor and block enemy communications, and conduct reconnaissance without being detectable. Using both Cruise Missiles and torpedoes a SSNG can negate any surface threat and is capable of both conventional and nuclear precision land strikes. The SSNG is as much a revolution in underwater warfare as was the launch of USS Nautilus in 1954.

Given the rapid development of the submarine as a vehicle of conventional and nuclear power projection and the huge cost both in terms of money and manpower of running Carrier Battle Groups it is likely that China will not invest massively in the construction of aircraft carriers. The growth in numbers and capability of submarines in the Pacific would place such carriers at great risk of being sunk, much as the British battleships Prince of Wales and Repulse were sunk by Japanese planes in December 1941 after having been spotted and attacked by a Japanese submarine. Today the submarine would have sunk the ships without the help of aircraft.

An event in 2007 further illustrates the danger modern submarines pose to carrier groups. The US Navy could not believe its eyes when a Song Class PLAN submarine surfaced in the midst of the carrier battle group protecting the USS Kitty Hawk. It had not only evaded the submarine screen of the battle group but also the attention the surface screen of destroyers, frigates and cruisers and the attention of the Kitty Hawks patrolling aircraft. In a hostile

encounter the Song Class boat would have been in a position to cripple or even sink the Kitty Hawk.

The era of the submarine as the predominant naval weapon has begun. Since the introduction of the Polaris missile and the Washington Class Ballistic Submarine it has been the instrument of ultimate nuclear deterrence. Today the submarine is also the ultimate capital ship with the capability of both destroying any surface ship entering its zone of operation and able to attack land based targets while remaining undetectable.

If China truly wishes to build a Blue Water navy with which it can project power in the Pacific and beyond it needs to concentrate on submarines rather than aircraft carriers. This is one possible explanation for the continued delay in the construction of a Chinese aircraft carrier to counter the threat of the American carrier fleet. A further problem faced by China in bringing Aircraft Carriers into the fleet is the current lack of suitable aircraft, a problem which cannot be solved by importing from the West due to the arms embargo placed on China following the bloody events at Tiananmen Square in 1989.

Overall the Chinese Navy still has major difficulties to overcome. The two nuclear-powered submarine classes that went into service in 1974 and 1983 (Han Class SSN and Xia Class SSBN) were little more than technology demonstrators and practice vessels. The more recent Jin and Shang Class Boats are an improvement, but no match for Western Nuclear Boats. The main problem with Chinese Nuclear Boats is that they are relatively easy to detect, unlike conventional diesel-electric and AIP Boats.

Given both the problems China is having in developing Nuclear Submarines capable of taking on the US Navy it seems likely, that China will opt for a combination of both Nuclear and AIP/Diesel Electric Boats for some time to come. The larger Nuclear Boats will give the Chinese Navy the range for power projection and a secure launch vehicle for Strategic Missiles. The silent conventional submarines will be useful both in coastal and shallow waters and provide a realistic deterrent to the Carrier Fleets of the US Navy.

The purely Nuclear Submarine fleet of the US Navy, as potent as it might be in deep waters, lacks the ability to navigate in shallow waters and remain undetected. It raises the question, not only in the Pacific, if a sensible mix of Nuclear and Conventional Boats is not a better strategic move in countering the future threats than a purely Nuclear Submarine fleet such as that of the US and Royal Navy. It seems that both China and India have come to this conclusion.

Remarks: Opinions expressed in this contribution are those of the author.



Maxim Worcester

Maxim Worcester is Senior Advisor at ISPSW, Berlin. Before, he was Senior Manager for Advisory Forensic at KPMG International. In the past he was Managing Director of Control Risks Germany, and held senior positions at the Economist Intelligence Unit, the Frankfurter Allgemeine Zeitung and Deutsche Börse AG.