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EXCERPT FROM INTERVIEW WITH H.I. SUTTON ON THE FUTURE OF UNDERWATER WARFARE IN THE INDO-PACIFIC REGION

By
Franz-Stefan Gady

The Diplomat's Franz-Stefan Gady speaks to H.I. Sutton about the changing character of underwater warfare, submarine procurement in the Indo-Pacific, and some of the future strategic and technological challenges to submarine forces in the region. H.I. is a defense analyst and one of the world's leading experts on underwater warfare and submarine technology.

Sutton writes about the secretive and under-reported submarines as well as the unusual and interesting vessels and technologies involved in fighting beneath the waves. He combines the latest methods in open source intelligence (OSINT) with traditional defense analysis.

Sutton runs the website Covert Shores and is a contributor to both *Forbes* and *Jane's*. His most recent book, co-authored with C. Edward Davis, is *World Submarines: Covert Shores Recognition Guide*. He tweets @CovertShores

The Diplomat: First off, why are most navies in the Indo-Pacific region pursuing large-scale submarine procurement programs? Why invest in a powerful submarine force?

Sutton: Submarines are the unsaid capital ships of today, only competing with aircraft carriers for the top slot. And while the carriers (and there is also a carrier arms race going on in the region) are more visible in terms of power projection, submarines happen to be their natural predator. So nearly all regional players have submarines near the top of their priorities.

The larger navies' programs are interesting, but generally well covered. But smaller regional navies such as Bangladesh, Myanmar, Thailand, and the Philippines are also embarking on this journey. For me that's a largely untold story that is part of a bigger trend, which is seeing submarines proliferate.

What are modern submarines primarily used for?

Even the least sophisticated submarines are apex predators in the naval environment. They have been an asymmetrical weapon since long before that became a buzzword. So they offer the capability to take out enemy warships, even if the enemy fleet is on paper much more powerful.

In operational terms they are also used for intelligence gathering, commerce raiding, and special forces missions.

Only the best submarines are likely to be useful in countering other submarines, however, so there is still an advantage to being a bigger player.

What are the advantages and disadvantages of conventionally- and nuclear-powered submarines respectively?

The main advantages of nuclear-powered submarines are range, speed, and additional power. This latter point is sometimes overlooked, but it means that nuclear submarines can generally have much larger sonar arrays, so they can hear targets and threats much farther away.

But it is not all one-sided. Conventional boats have advantages of cost, crewing requirements, and, in some circumstances, stealth. The biggest one is cost. So conventional boats are still very formidable and make most sense for many navies.

What are some of the challenges that developing countries like Vietnam, which operates a fleet of Russian-made Project 636M (improved Kilo-class) diesel electric attack submarines, face in maintaining and deploying such a force?

Navies which are relatively new to the submarine game will have to build the human aspects of submarine operations. The safety culture, the maintenance culture, and so on. And also the tactics and leadership, which should be tailored to the specific navy. And all this is without covering logistics, maintenance, and upgrades.

Vietnam is an interesting example. They have just commissioned a specialized submarine rescue ship, and also announced an indigenous submarine program. They will build a small 100-ton submarine, which I think is a pragmatic approach.

How difficult is it to establish an indigenous submarine construction program? For example, Taiwan is attempting to build a fleet of eight diesel-electric attack subs without any prior experience but some international support. What makes or breaks such a program?

Taiwan has some unique political challenges. Their indigenous design is grounded in their own experience of Dutch submarines, however, so it is low risk. The x-rudder may add complications perhaps, but overall the design is conservative. This is probably a very good thing as it will minimize unknowns.

The bigger question is whether it will be modern enough to stand up to improving Chinese submarines? And whether four boats will ever be enough?

Besides, the traditional suppliers (e.g., Russia, France, Germany, Sweden etc.) do you see any new players in the submarine procurement market emerging in the Indo-Pacific region?

South Korea is stepping into the market, and China is upping its export game.

For a few years Japan has looked to be a possible supplier. They did offer their subs to Australia, losing to the French proposal, but have been slow elsewhere. One factor is that they are very advanced, and there are questions as to how much of its technology Japan is willing to share. But they are an interesting possibility, and with the construction gap between their latest Soryu-class boats and the next generation 29SS design, they could benefit from additional orders to keep their skills honed.

Explain some of the biggest changes in undersea warfare technology since the end of the Cold War.

The first one which comes to mind is the increased use of conventionally armed land attack cruise missiles. The U.S. Navy's Tomahawk actually entered service at the end of the Cold War but as a trend, it's something which has matured since then.

Behind the scenes better sensors, such as sonar, optronic masts, and navigation systems have improved. Even many smaller patrol submarines now have flank sonar arrays and towed sonar arrays, something only the leading navies had during the Cold War.

To what degree has new submarine technology been able to offset advances in anti-submarine warfare?

This is a tricky one, but my feeling is that submarines still hold a natural advantage. The oceans have not gotten any smaller, and actually anti-submarine warfare is under-invested and under-rehearsed in most navies it seems.

Many experts express concern that sea-based nuclear-powered ballistic submarines will be easier to detect and destroy given the gradual introduction of more accurate detection and tracking technologies. This could negatively impact strategic stability in a political crisis between two nuclear powers. Do you share this concern?

I would agree, if it happens. I'll pick on the word "gradual." I think that submarine stealth and situational awareness will continue to advance in parallel, or ahead, of these new detection technologies. We will see.

With the emergence of smaller unmanned underwater vehicles, will we see an end to manned submarine missions in the coming decades?

I think that it's inevitable, but it may take longer than some predictions. The U.S. Navy's Orca XLUUV will probably go down in history as the first proper drone submarine, but several countries in the region are working on relatively large autonomous underwater vehicles (AUVs). China, South Korea, and Japan all have projects.

One twist may be that smaller navies can catch up quick with large armed AUV adoption, especially if they are single purpose designs. While the maritime environment represents its own challenges, the AI aspect is a democratized skill available in every country. It's a hard space to predict and I think that the future may hold some surprises.

How will underwater warfare change in the near future with the emergence of artificial intelligence (AI)?

AI is already leading to a revolution in undersea warfare. Most visibly in autonomous vehicles, but inside crewed submarines also. Navigation, system automation and so on. So submarine crews could get smaller.

In your opinion, what is the most common misperception that nonexperts have about underwater warfare and submarines?

Good question. For the conventional submarines operated by most countries in the region, people forget that they spend most of their time tied up in port. Their endurance is limited and longer patrols take a lot of preparation. This is a major factor in submarine operations which rarely (if ever) crops up in internet discussions on submarine capabilities.

This interview has been edited.

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