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Towards Grey Waters

Building a Comprehensive Approach to
Countering Hybrid Threats in the Black
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Towards Grey Waters

by Air Force Major Patrick ‘Hoesy’ VAN HOESERLANDE

The Growing Grey Zone

When we gaze under the water surface, we can detect different types of military systems, but three are of interest here: submarines, torpedoes and mines. According to the editors of Encyclopaedia Britannica these are defined as (only the naval part of the definitions are withheld):

- Submarine: any naval vessel that is capable of propelling itself beneath the water as well as on the water’s surface.
- Mine: in naval operations, a usually stationary explosive device that is designed to destroy personnel, or ships, when the latter come in contact with it.

- Torpedo¹ : a cigar-shaped, self-propelled underwater missile launched from a submarine, surface vessel or airplane and designed for exploding upon contact with the hulls of surface vessels and submarines.

These are currently three distinct different kind of systems. We can categorize the standard representatives of these systems according to a three-axis system of acoustic signature, size and mobility. With ‘Acoustic Signature’ defined as the noise the system produces, ‘Size’ the external dimensions of it and ‘Mobility’ a combination of speed and maneuverability. Mobility is something different from autonomy, a term nowadays heavily discussed in

other articles. We can easily put our three types of underwater systems into this analytical space:

- Submarine: the silent hunters of the deep are compared to the other two other systems quite large. To execute their mission they must be very mobile and running silent, although they may be noisy at higher speeds.
- Mine: this small device is silently waiting for its victim. Mobility is sacrificed in favor of a extremely low acoustic signature.
- Torpedo: a torpedo penetrates defense systems by speed, even if that means being noisy. Although there exist some big ones, a torpedo is compared to a sub small.

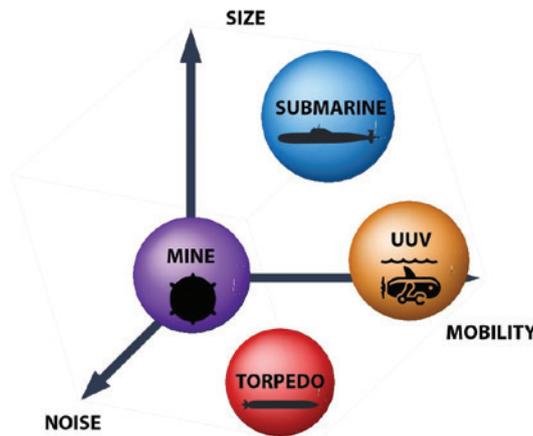
	Acoustic Signature	Size	Mobility
Submarine	Low	Big	High
Torpedo	High	Small	Very High
Mine	None	Small	None

¹ Strangely enough, torpedo is the old name for a naval mine (Tamara M. Melia, ‘Damn the Torpedoes, A Short History of Naval Mine Countermeasures 1777-1991’).

In the last decade, a fourth group has entered the underwater realm: the Unmanned Underwater Vehicles (UUV). These systems are relatively small, quite silent and mobile. In the begin-

ning, they were tethered and in small numbers, but recently with increasing autonomy levels they deserve a group of their own.

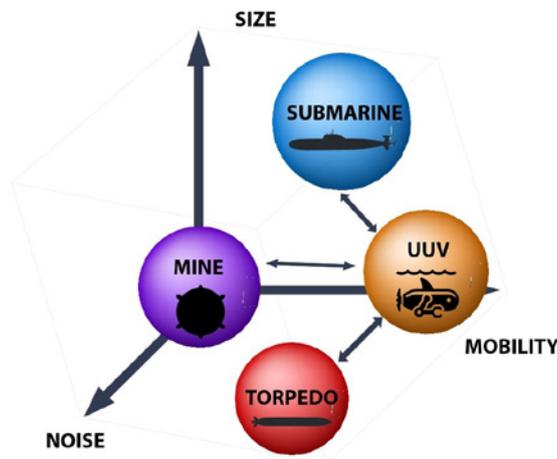
Putting these 4 groups as bubbles, this is just a visual representation of the existing variations within the types to support the reasoning, on our three axes gives the illustration below².



The first three have their own type of warfare and certainly their 'anti': Anti-Submarine Warfare, Mine Counter-Measures and Anti-Torpedo Measures. Nowadays, there is no such domain for UUVs, although they (will) pose a very specific challenge that cannot be solved by the application of the other anti-warfare areas. It is time to think about filling this gap. However, before starting to do this, there are reasons to study the issue more comprehensively. For one, submarines are getting smaller. This is done by adding more intelligent modules to a sub, requiring less people to run the boat and thus a possible reduction of the size for the same type of missions. With a limited set of missions or the application of modu-

larity, it is possible to reduce the size even further and operate in shallower waters. However, because big subs have their own set of advantages, this introduction towards smaller subs will not result in a shift of our submarine bubble along the length axis but in an extension of the bubble touching the UUV bubble. This bubble inturn will inflate along the 'size' axis with the introduction of large UUVs and XLUUVs. Soon, if not already, there will be an overlap between submarines and UUVs blurring the distinction. Is an XLUUV that different from a small unmanned submarine? And what is the different in hunting them? As similar inflation and future overlap will occur between UUVs and mines. The last will become more mobile³

able to swim, when detected or triggered by something else, to another position, and this multiple times. UUVs could be used to move static mines around creating a dynamic minefield or, being equipped with an explosive module, swim somewhere to wait for the right opportunity to hit a target. A torpedo may be fired and go into silent, slow mode while approach a ship. It may even sink to the bottom and wait silently before striking. A UUV can easily be equipped with an explosive head to attack a ship blurring the distinction between a torpedo and a UUV. Considering the paragraphs above, our bubble graphs turns into the following representation.



² Is there a military interest in filling the vacant corners?

³ We do not talk here about mobile mines as they are currently defined as a mine that is able to swim to its position where it will act as a 'normal' mine.

Impact on Under Water Warfare

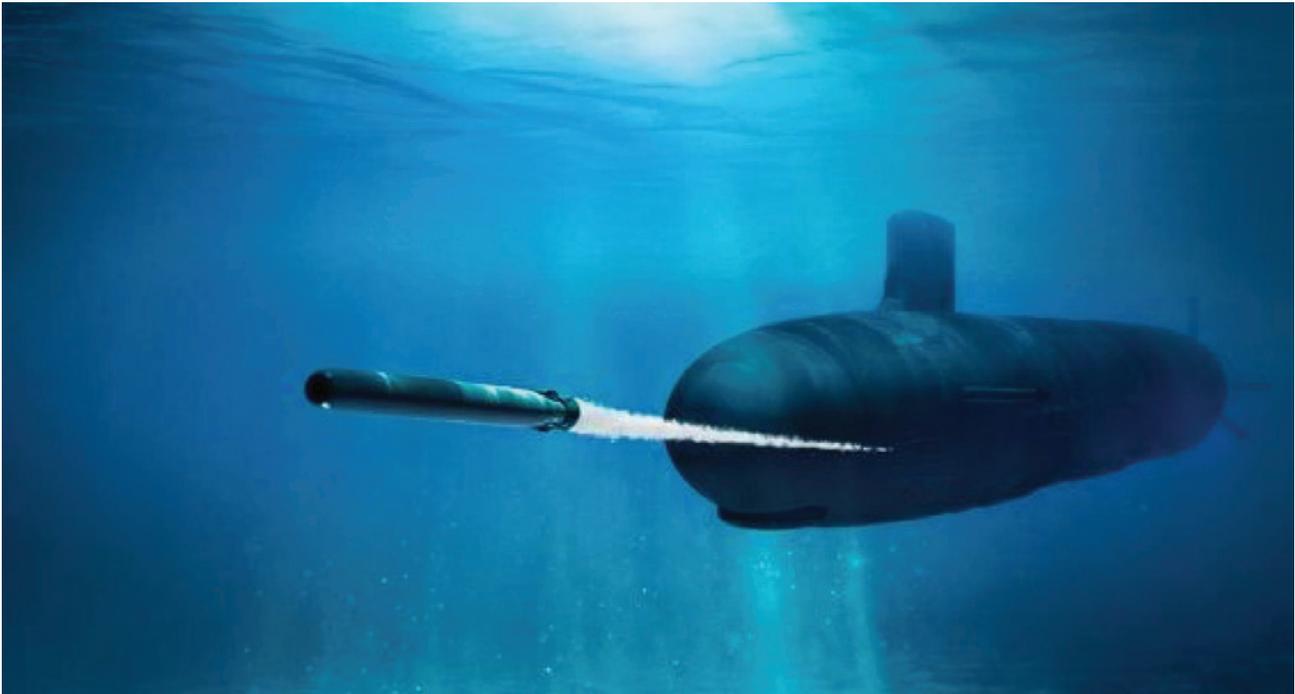
The blurring of the distinctions between the different systems necessitates the creation of a more integrated approach⁴. Systems and TTPs specialized in combatting the corner threats will be too easily outmaneuvered in the near future. For example: although taken into account the low costs of dumb mines, this type of naval mines will stay the preferred weapon for the creation of high-risk areas, but

mixed with a few mobile types or UUVs, the area suddenly turns into a dead trap for a MCM vessel or even a MCM UUV. A submarine detecting a ASW screen can create havoc by launching a large, armed UUV infiltrating the barrier.

It will be hard to marry the three types of warfare, not only from a technical point of view but also from a doctrinal, and indeed from every DOTMLPFI line. History is against us. The lines are cut deep into the fabric of the Navy,

but we do not really have a choice. It is a weakness in our defenses that the other side will certainly seek to exploit if we are not able to plug it.

The overlapping zones will slowly, but surely do away with the distinction between blue and brown water navies to turn our seas and oceans in to gray waters. How to operate in those dangerous waters is question that sounds much like a need to develop a concept.



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Disclaimer:

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⁴ The blurring of the types of systems was also observed during the Naval Mine Warfare Disruptive Technology Assessment Game (DTAG) organized by HQ SACT in November 19.