

Mask or Die

Surviving in the Long Range Precision Fires Battlespace of 2040

Masking is the active and passive ability to make military systems difficult or impossible to identify, locate, and target.

By John Antal

“The tendency towards under-rating firepower...has marked every peace interval in modern military history.” Captain Sir Basil Liddell Hart

Ascendency in war often shifts between offense and defense. In air warfare, to tip the balance in favor of the offense and counter the unblinking eye of new radar systems, stealth aircraft were developed. A similar tug-of-war is happening in land warfare. The convergence of Long Range Precision Fires (LRPFs), sensor networks, and Artificial Intelligence (AI) threatens to dominate the battlefields of the next war. A combination of satellites, Unmanned Aerial Vehicles (UAVs), and Micro- Electro-Mechanical Systems (MEMS) technology has enabled sensor networks that can identify and track targets across the electromagnetic spectrum (EMS). AI enabled automated targeting and fire control is being perfected to engage ground targets. Smart, super-fast, extremely lethal, interconnected LRPF weapons, and extended range artillery systems using cluster bomb munitions, presage the delivery of a level of lethality and accuracy never before seen on the battlefield. This disruption threatens to make the traditional concept of combined arms maneuver impossible.

To achieve this level of tactical overmatch will require ample quantities of artillery and rocket firepower. The Russian Army is often described as an “Artillery Army with lots of tanks.” With the convergence of LRPF, sensor networks, and AI, the Russian vision of an automated, reconnaissance, strike complex (разведывательно-ударный комплекс- RYK) will be realized before 2040. According to the Deputy Chief of Staff of Ground Forces, Major General Vadim Marusin, “Today, the cycle (reconnaissance -- engagement) takes literally 10 seconds.” In short, the Russians intend to rule the battlefield with artillery and rocket firepower.

The traditional method to defeat an enemy’s long-range firepower capability is to employ counter, long-range firepower, knock out the enemy’s fire-units, and gain and maintain fire superiority. The best military minds of WWI tried this method with catastrophic and

unsuccessful results. For the past sixty years, US and NATO forces have reduced their dependency on rockets and artillery by leveraging airpower to gain fire superiority. With the Russians deploying arguably the best air defense systems in the world, including the S-400 “Triumph,” S-500 “Prometheus,” and the new Alabuga Electro-Magnetic Pulse (EMP) missile program, they can challenge, and possibly negate, the US and NATO airpower advantage, especially in the early stages of a conflict. China has similar capabilities. Since the air domain is now contested by potential adversaries — as are the other domains of land, sea, space and cyber — the ability to gain fire superiority over the battle area is now in doubt.

This reconnaissance strike and conventional artillery capability presents a terrifying equation: everything on the battlefield will be sensed, targeted, and rapidly destroyed by LRFs, or massed, conventional artillery firing cluster bombs delivered with great accuracy. Furthermore, in any future conflict with Russia or China, the side that strikes first has a marked advantage. If future war can be considered analogous to a three-dimensional chess game, then the Russians and Chinese are playing the “white” pieces and thus have the first move. In such a case, the survival of troops and vehicles in the extended battle area, which has expanded to depths of 300 miles or greater, will be in jeopardy. Unless we can rapidly dig in deep enough to protect our forces from this intense firepower, we must find a way to hide.

Our Soldiers and systems require a means to mask from enemy sensors and targeting. **Masking is the active and passive ability to make military systems difficult or impossible to identify, locate, and target.** Masking is more than camouflage and stealth. It employs next-generation active and passive means to reduce the EMS signature to render the system difficult to locate and hard to target. Some of these technologies could include:

1. Advanced profile design to lower a vehicle’s radar cross section and reduce its thermal, electronic, and acoustic signature.
2. Low-tech, passive systems such as next-generation camouflage netting;
3. Color-changing materials and radar absorbing paint.
4. Intelligent, multispectral camouflage systems to rapidly blend a vehicle into its surrounding EMS background.
5. Decoys and portrayal of false actions and locations.
6. Cognitive electronic warfare systems employing machine-learning to counter the enemy’s radars.
7. Electronic jamming to protect the emissions of friendly communications and electronic systems against enemy detection.

8. Electronic warfare support measures and signals intelligence.
9. The use of electronic counter measures and digital radio frequency memory (DRFM) to hide beneath the blanket of enemy or friendly jamming.

Is masking possible? Stealth was considered impossible for aircraft until it wasn't. Military leaders and technology developers should think carefully about the character of the future battlefield and then take steps to address what is needed to survive and win on that battlefield. As Liddell Hart warned, we should not make the mistake of under-rating the firepower of our potential adversaries. Masking is a logical necessity and should become a **priority** for land-power systems development, just as stealth became essential for the survival of our airpower platforms.

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