



PERSPECTIVES

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Active Protection Systems in Asymmetric Conflict

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EXECUTIVE SUMMARY: A massive concentration of forces is a disadvantage, not an advantage, in the modern era of asymmetric conflict. Active Protection Systems (APS), by contrast, provide small fighting units with protection and enable them to locate hostiles and discriminate them from the surrounding population. They thus reduce the army's exposure while increasing its effectiveness.

In recent decades, warfare has been characterized by conflict between two unbalanced forces: modern armies, rich with technologies and powerful fighting armaments; and nonmilitary organizations and insurgents equipped with low technology and basic, low-cost weapons like rockets and anti-tank guided missiles (ATGM) that can devastate superior fighting vehicles. A typical scenario is the insurgent surprise attack, whereby a rocket is fired from the shadows, hitting and destroying a valuable platform of a modern army operating in the insurgents' hostile territory. This type of contest is defined as an "asymmetric conflict."

Despite the obvious advantages enjoyed by modern armies and their gigantic investments in armaments, they cannot triumph over insurgents. Why not? Why are the weak able to survive engagements with immeasurably stronger modern armies? Is the problem wrong doctrine, or is it that the armies are not using the right weapons?

Asymmetric combat has several unique elements:

1. Insurgents use low-cost weapons with high kill capabilities relative to the armies they fight, whose platforms are not fully protected
2. Insurgents' weapons are not complex and do not require much training to operate
3. Fighting takes place inside the territory of the weaker party. It thus requires long and heavy logistical trails for the opposing army, producing many vulnerable targets

4. Army forces fight in dense urban areas with populations containing innocent civilians who give the insurgents the advantage of human cover
5. Insurgents choose the timing of their attacks depending on the availability of an easy shot at a vulnerable target, or to minimize risk
6. Insurgents are not in a hurry. On the contrary: their objective is to exhaust the invading army and weaken it through damage and casualties.

As a result of insurgent tactics and rules of engagement, the opposing army fights in what is essentially an empty battlefield that does not contain clear, visible targets. An army in that situation cannot use the advantages of its “smart” pinpoint weapons or rely on higher echelons to get fire support from a long distance. The “dry” target arena dissolves the advantage of sophisticated armaments. Moreover, in most cases, regular army soldiers will hesitate to shoot in areas where there are many civilians and where there is doubt about the legitimacy of the target.

Yet modern armies operating in complex terrain continue to apply the combat doctrine of pouring large forces into the fighting arena. Their object is to intensify offensive mass, crush attacking assailants, and root out the enemy from their hiding places.

In a symmetrical tactical battle, the ratio of forces between attacker and defender is customarily about three to one in favor of the attacker, in order to ensure the attacker succeeds in defeating the defender. In an urban fighting environment, the ratio raises to as much as five to one, which can fill the terrain with soldiers.

But what is the benefit of such a mass when the fight consists of teams of insurgents conducting surprise attacks on small army fighting units? The shooting duration of such engagements rarely lasts longer than a few minutes, after which the insurgents simply disappear. The army units are thus trapped in a hopeless situation: they are essentially unprotected, and they can't locate and target the insurgent positions.

Even if there is a vast number of such army units fighting simultaneously, they all suffer the same problems. They will in fact be at an even greater disadvantage collectively, because their combined mass gives the insurgents multiple targets to attack. There will always be a unit that is easily taken down.

Insurgent units hide in civilian urban areas, in houses or tunnels, from which they fire long-range rockets; or they conduct ambushes on military ground units. Fighting zones in built-up areas are in streets, houses, roads, and urban installations that limit lines of sight and firing capabilities. Fighting arenas are limited to the dozens of meters. Combat takes place in squares, passages, and alleyways. Units that are positioned on streets near one another are essentially operating in separate theaters, with fighting that lasts only a few minutes. Teams that enter an arena to help their comrades meet only friendly forces, as the insurgents vanish back into the shadows.

A large concentration of friendly forces in an urban arena is thus a problem, not an advantage. As long as small combat units remain unprotected from rocket attack and

cannot reply with fast and accurate counter-fire, they will lose, no matter how many of them are deployed at once. A surplus of military forces in an insurgent arena does not contribute to operational capability; it compromises it.

If a modern army is to win battles with armed insurgent bodies, it must be equipped with new capabilities that enable new operational doctrine.

In an insurgent environment, army fighting teams require: 1) intelligence to detect the enemy in real time; and 2) hemispherical armor protection to protect their own fighting platforms from 360-degree attacks.

In urban areas it is almost impossible to discriminate between insurgents and innocent citizens. As for armor protection, the weight limitations of existing platforms and a lack of effective technology prevent the deployment of full, all-around armor protection. The outcome is that “strong modern armies” are deficient in two vital elements: target detection and hostile fire protection (against rockets and ATGM).

Active Protection Systems (APS) increase capabilities in these ways: 1) they neutralize the attacking missile threat on its flight toward the platform enabled by efficient ballistic protection within a low weight system; and 2) they concurrently reveal the insurgents’ location by identifying attack launcher positions through analysis of flight trajectory. APS enables the army to identify insurgents even when they operate from within or close to an innocent civilian population.

Today’s modern armies have two weaknesses – AFV protection and hostile fire detection – and they are seeking advanced solutions and creative armaments. APS provides a solution to both problems. Armies have deployed APS systems over the past few years after years of hesitation, and their cumulative experience in conflict shows that this is the direction to take to return modern armies to their former superiority. This system provides both armor protection against ATGM and hostile fire detection for quick counter-fire.

In the past decade, the ballistic R&D community has developed a variety of APS technologies that can be candidates to enhance fighting platforms and enable domination in land warfare. We are in the spring of a new era of ballistic technologies that will enable ground troops to act freely and produce maximum results, with great flexibility of maneuver and robustness against ambush. And as crucial as APS is in enhancing the fighting ability of units engaged in asymmetric conflicts, it should be efficient for fighting any type of land conflict.

With that said, light fighting platforms are still vulnerable to IED threats from the roadside or from the road itself. The ballistic protection community needs to develop a sophisticated technology to overcome these threats.

When fighting units of the modern army rely on APS, the number of such units required can be reduced, as their capabilities will be enhanced by their being protected

and by their ability to detect hostiles and discriminate them from the rest of the population.

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