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# Lessons and Recommendations from the War in Ukraine

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# THE ISSUE

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Shortly before dawn on the morning of July 11, 2014, elements of Ukraine's 24th Mechanized Brigade met a catastrophic end near the Ukrainian border town of Zelenopillya. After a mass rocket artillery barrage lasting just three minutes, the combat power of two battalions of the 24th Mechanized Brigade was gone. What remained was a devastated landscape, burning vehicles and equipment, 30 dead and 90 wounded. According to multiple accounts, the Ukrainians were on the receiving end of a new and dangerous Russian weapon: the 122-mm Tornado Multiple Launch Rocket System (MLRS). Capable of covering a wide fire area with a deadly combination of Dual-Purpose Improved Conventional Munitions (DPICMs), scatter mines and thermobaric warheads, the attack had not only destroyed the combat power of the Ukrainian forces, it offered a glimpse into the changing nature of Land Warfare in Europe. The battlefield was becoming deadlier.



# The Ukrainian Proving Ground

Since its eruption in 2014, the war for Ukraine has been a humanitarian crisis, a set-back for the rules-based international order, and—importantly for this analysis—a proving ground for new Russian strategies, tactics, and weapons. In many ways, the fighting in Ukraine conforms to the template of other “testbed” conflicts in the 20th century, notably the Spanish Civil War (1936-1939) and the Yom Kippur War (1973). Like Ukraine, these too were proving grounds for testing new warfighting concepts and capabilities under real world conditions.

Lessons from these conflicts abound. The fighting in Spain previewed a paradigm shift in air power and its potential strategic use against civilians. The Yom Kippur War revealed the limitations of main battle tanks against low-cost Anti-Tank Guided Missiles (ATGMs) and rocket propelled grenades. The Ukraine War holds similar insights into the rising lethality of the mass strike artillery barrage and augers a perilous future for mechanized infantry who enter battle in last-gen vehicles. If the emerging trends from Ukraine hold true, then the 21st century European battlespace is going to be an exceptionally dangerous one for armies that under invest in territorial defense and Land Warfare capabilities.

## The Big Four: Lessons from Ukraine

There are potentially scores of lessons, which can be drawn from the fighting in Ukraine. The battlespace was (and largely remains) a complex hybrid of old and new—a place where World War-II era artillery duelled with late Soviet-era equipment; and Do-It-Yourself drones squared off against 21st century Electronic Countermeasures (ECM) and Intelligence, Surveillance and Reconnaissance (ISR) platforms. This *Intelligence Brief* does not endeavor to cover all of the potential lessons from the Ukraine War, but rather to isolate the ones, which have the most bearing on the future of Land Warfare in Europe.<sup>1</sup> Scanning this horizon, four points are particularly prominent.

### **(Lesson 1) Send in the Drones:**

During the Russo-Georgian War (2008), Russian forces woefully underutilized Unmanned Aerial Vehicles (UAVs) for ISR missions—creating a deficiency of real-time reconnaissance and targeting in the battlespace. Now in Ukraine, Russia has changed course. It has fully embraced the use of drones and—significantly—fielded high-tech ECM suites to deny the use of UAVs to opposing forces. As such, the use of ISR from drones and sensor nets has been a game-changer for Russia’s mass strike fire missions (see below), providing real-time surveillance and targeting for artillery and MLRS units. Indeed, the lag between the appearance of a Russian drone and a subsequent artillery attack can now be as short as 15 minutes.<sup>2</sup>

**(Lesson 2) Indirect fire is the Queen of Battle (again):**

New MLRS systems like the Tornado, as well as other older variants like the 122-mm Grad, mobile howitzers and mortars, are making mass fire barrages relatively cheap and lethal for Russia. This is especially true for thermobaric and DPICM payloads. In Ukraine, artillery has become so deadly it has accounted for 70-85 percent of all casualties (on both sides). The extensive use of indirect fire in Ukraine—coupled with the static nature of the fighting—has brought about a return to trench warfare, artillery duels, and the use of indirect fire to disperse and destroy concentrated land forces—methods more familiar to European Land Warfare in the early 20th century.<sup>3</sup>

**(Lesson 3) Heavy tanks are back in business:**

One legacy of the Yom Kippur War was the wide-spread adoption of reactive armor to defend against ATGMs. Tandem-charge ATGM warheads (features of the Spike, Javelin, and TOW-II missiles) were designed to counter this defense. In Ukraine (and most recently Syria), Russia has taken the next step in this cycle by equipping some of its most advanced main battle tanks with an active protection system against missiles. The results have been compelling. During the battle for Donetsk, for example, Ukrainian anti-tank crews dubbed it the “magic shield,” which inexplicably protected Russian T-90s on the battlefield.<sup>4</sup> The net impact of this system has been to decrease the relative combat power of anti-tank infantry and increase the shock and survivability of Russian heavy armor.



Russian 9A52-4 MLRS. Credit - Vitaly V. Kuzmin.

## (Lesson 4) RIP last-gen IFV:

Perhaps the biggest causality on the battlefield is the Soviet-era IFV. These vehicles are becoming death traps for mechanized infantry. In Ukraine, BMPs and BTRs provide obsolete protection against thermobaric warheads and other dangers from mines, artillery and ATGMs. The vulnerability is so great that Ukrainian mechanized infantry now ride into combat on-top of their vehicles, rather than inside them; and tend to dismount far from the battle line. Unfortunately, this practice also exposes slow moving, dismounted infantry to indirect fire and mass strike artillery—thus closing the loop on Russia’s new warfighting techniques (namely the convergence of drones, ISR and lethal indirect fire). NATO armies take note: last-gen IFVs and BMPs are prolific in Western inventories.<sup>5</sup> This could lead to unacceptably high casualty rates for NATO’s mechanized infantry in the event of a future Land Warfare scenario.

# Gaining Altitude: The Strategic Challenge for NATO

Lessons from Ukraine should cause concern for NATO planners. Today, many allied armies are still grappling with the hangover of Iraq and Afghanistan. They have collected years of experience deploying to out-of-area, counter-insurgency or peacekeeping missions. Their doctrines, capabilities, and force postures are underprepared for the new challenges of Land Warfare. This is understandable. The mantra inside NATO used to be: “out-of-area or out of business.”<sup>6</sup> The United States encouraged this outlook; and Member States subsequently channeled their finite defense budgets into deployable, out-of-area capabilities. Unfortunately, this was at the cost of less-deployable Land Warfare capabilities. Adding to this trend was the impact of the global economic crisis. As elected leaders cut their defense budgets, spending on the expensive weapons, skills and systems needed to win a limited conventional war in Europe disproportionately suffered.<sup>7</sup> As a result, many of today’s NATO armies are primed to fight low-intensity insurgencies overseas, but notably under-prepared for fulfilling their original mission: defending real estate at home.

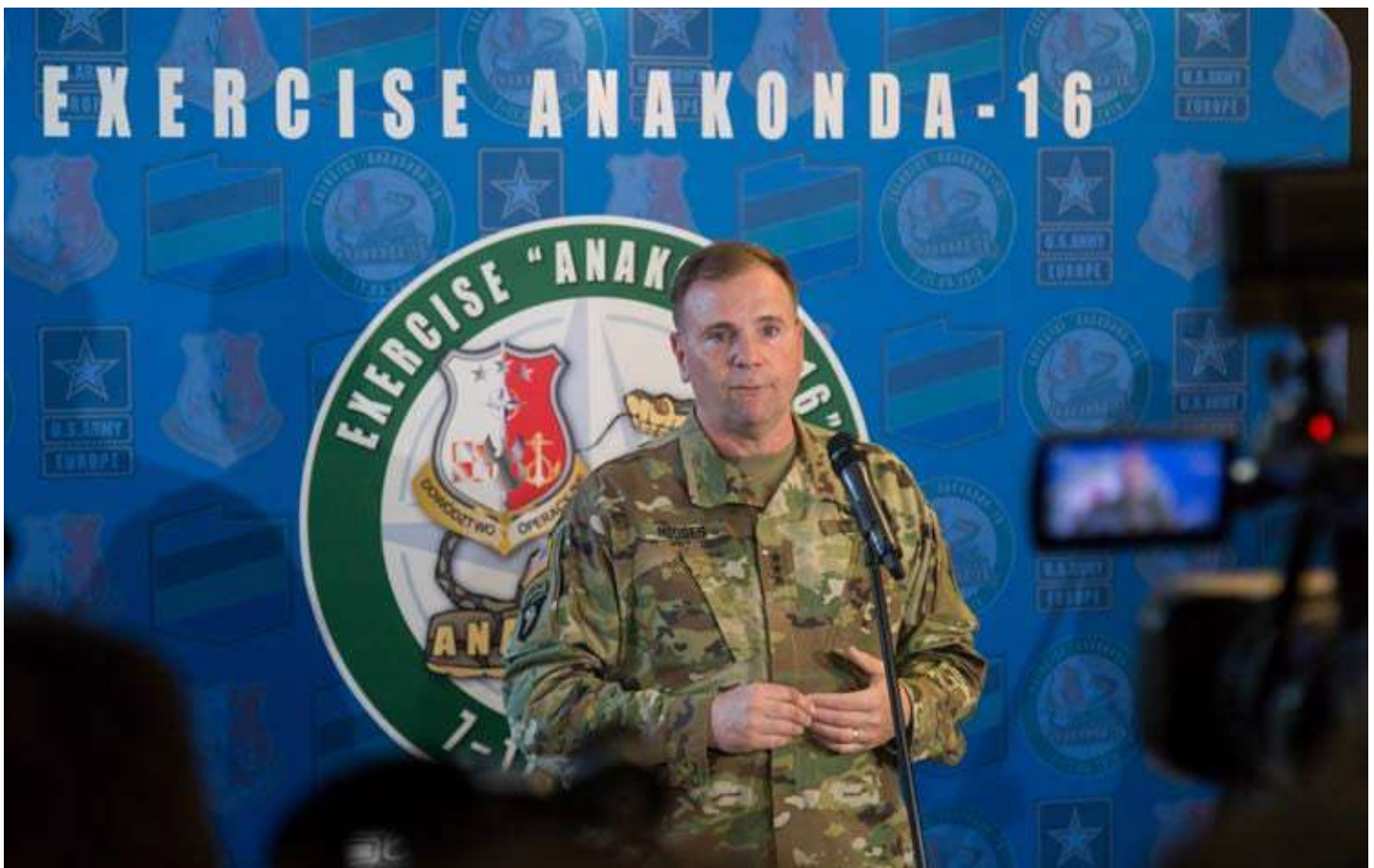
Inside NATO, the plight of the main battle tank is illustrative of the wider trend in Land Warfare. Heavy armor is expensive. It also offers limited marginal utility for fighting an overseas insurgency. This has made investments in lighter, less expensive vehicles more appealing to NATO’s cash-strapped armies. To date:

- The Netherlands cut 1/6 of its military and entirely eliminated the main battle tank from its inventory;
- Germany slashed its order for updated Leopard 2 tanks by 36 percent (down to 225);
- The United Kingdom cut its roster of Challenger 2 tanks from 400 to 227; and while
- France still employs 240 Leclerc tanks in active service, a notable refrain from French experts is: ‘When are we ever going to use them?’<sup>8</sup>

In the best of all possible worlds the answer is: never. Except, Europe's border zones are becoming dangerous; and Russian Land Warfare capabilities are growing ever-more potent.

Regrettably, NATO's under-investment in heavy land power has reached such a point, that a recent analysis by the RAND Corporation made a surprising calculation: no allied main battle tanks would be available to repulse a hypothetical Russian invasion of the Baltic States (under current conditions).<sup>9</sup> While there was a great deal of public kibitzing over the *conclusions* of this analysis, the underlying calculation stands: NATO has developed an unnerving gap in its ability to defend exposed Member States from attack. If Allied militaries were ever called upon to fight a limited conventional war on the European frontier, they may be hard pressed to field their best defenses in time.

This is the organizing problem facing allied planners in 2016. Deep cuts to land power have been pennywise and pound foolish. As Lt. Gen. Frederick (Ben) Hodges, Commander of U.S. Army Forces in Europe, has explained, "Our tradition after every war has been repeating the mistake of reducing land forces to save money, believing that we can avoid casualties in future wars by relying more on air and sea power...and each time, we are required to hastily rebuild land forces to meet the threats the nation consistently fails to accurately anticipate."<sup>10</sup> Hodges is correct; and in Ukraine, Russia has shown us the kinds of threats we might anticipate—and deter.



Lt. Gen. Frederick (Ben) Hodges during a press conference in Warsaw, Poland.  
Credit - Mateusz Wlodarczyk/NurPhoto.





Russian T-14 Armata tanks parade in front of Red Square. Credit - Sergei Karpukhin/Reuters

## Conclusions and Recommendations

Great powers still fight. Since defense preparations can take years to complete, decisions made today will determine how NATO armies will respond to an unwanted crisis tomorrow. The fighting in Ukraine indicates that new trends are afoot in Land Warfare, but it also leaves open many questions. On one hand, Russian planners are actively learning from past mistakes and improving on them. But will they repeat the practices of the Donbas (and Syrian) campaigns in a future conflict, or again alter course? Identifying the pattern and pattern *breaks* in Russian thinking will be crucial for anticipating how a future conflict can be deterred. For example, Russia has not—as yet—shown a penchant for deep strikes in enemy territory. This could change. Prudent steps in either case indicate a greater need for unit survivability and mobility; the defense of counter-force assets in rear areas; and improved command and control for different allied forces operating in a shared battlespace. Additional recommendations include:

**More bangs, more bucks:** NATO Member States need to invest more money in defense; and spend these finite resources on the right things. Land Warfare capabilities are an excellent place to start, particularly when it comes to heavy armor and mechanized infantry that can move fast, hit hard, and survive on the lethal battlefields of the 21st century.

**The return of counter-batteries:** The ability to both protect forces from indirect fire and suppress it are essential capabilities. Equipping frontline units with counter-battery radars (similar to the ANTPQ 35/36 in the U.S. inventory) and intensified training in counter-battery fire during NATO exercises could be highly advantageous. Even if counter-batteries only displace an opponent, the lesson from Ukraine is: when an enemy's artillery is moving, it is not firing.

**The drone war is real:** Preparations to establish air superiority over a battlefield should include special attention to the survivability and endurance of UAVs. Russia is not only learning to use these platforms, but also to deny their use to opponents. NATO armies should prepare to fight an ECM battle to keep their drones aloft *in addition* to the Anti-Access/Area Denial fight for the skies.

**Winning means living:** NATO armies should give careful consideration to the survivability of the IFVs in their inventories. Russia's use of thermobaric warheads and mass strike artillery could significantly degrade the combat power of NATO's last-gen IFVs under certain circumstances. High casualty rates from older vehicles could impede Western ground forces from achieving operational success on the battlefield or worse—contribute to the victory of an aggressor. Accelerating the rollout of next-gen IFVs could save lives and increase NATO's deterrence.

# Endnotes

1. For an excellent review of these lessons, see: Phillip A. Karber, “Lessons Learned from the Russo-Ukrainian War,” Johns Hopkins Applied Physics Laboratory & U.S. Army Capabilities Center, July 6, 2015. This assessment from the frontlines is exceptionally thought-provoking. A debt of gratitude is owed to the author for their reporting and analysis.
2. Ibid., Karber.
3. Recent (and regrettable) changes to U.S. Army cadences notwithstanding, artillery was the *Queen* of Battle and remains so.
4. Ibid., Karber.
5. Such as the Polish BWP-1 and BWP-2 variants.
6. Stewart Patrick, “Out of Area, Out of Business?” *The National Interest*, March 25, 2009.
7. Guillaume Lasconjarias, “NATO’s Land Forces: Losing Ground,” American Enterprise Institute, June 4, 2016.
8. In an embarrassing turn, the integrated Dutch brigade operating under Germany’s 1st Panzer Division must now lease their Leopard 2A6s from Germany; the German government has since re-purchased an old stockpile of mothballed Leopards, bringing its total inventory of main battle tanks to 328; see also Sebastien Roblin, “France’s Leclerc Super-Tank: Better than American or Russian Armor?” *The National Interest*, July 16, 2016.
9. David A. Shlapak and Michael Johnson, “Reinforcing Deterrence on NATO’s Eastern Flank Wargaming the Defense of the Baltics,” RAND Corporation, 2016.
10. Interview with Lt. Gen. Hodges, “Ensuring That Land Forces Remain Decisive for NATO,” AUSA, May 2013.



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