

On Learning Lessons from the Russo-Ukrainian War

Moving militaries into the 21st Century may require alliances for marketing and manufacturing.



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Anonymous opinions about the situation in the Russo-Ukrainian War have been characterizing the military situation as stalemated. I assess that this whisper campaign is more designed to justify political decisions by the Biden Administration than to assess both the tactical situation and the broader technological dynamics of modern warfare. A more honest debate about what is possible and plausible in modern warfare, underway for several years, has been greatly informed by feedback from the front. Many 20th-century military systems are showing obsolescence because 21st-century surveillance and strike systems have been limiting their battlefield potential, inflicting high losses for little countervailing value. This in turn has been exposing the high costs and long production lead-times of the old-and-obvious.

The question for technologists and industrialists is whether the strategists will learn the relevant lessons, and how soon. The 21st century will unfold more slowly than some pundits predict, but more quickly than conservative military sentiments will allow. Fixing that problem will require vigorous marketing, and judicious timing in scaling manufacturing. Corporate alliances between emerging and established firms continue to offer an excellent way to solve that problem, and sometimes as far forward as Ukraine.

Lessons not learned.

Over the past week, the *Washington Post*, the *New York Times*, the *Wall Street Journal*, and others have published a series of articles alleging that (for example) while “Kyiv’s forces can still break through Russia defenses, but time is running out.” So say “Washington officials.” (*WSJ*, 24 August 2023). Who these officials may be remains unknown, as the naysayers are never named. They have been advancing a collection of questionable opinions, which seem calculated more to apologize for the Biden Administration’s policies to date, than to actually advance understanding of the situation on the ground:

That fighter jets (e.g., F-16s) and long-range precision missile (e.g., ATACMS) would not help the Ukrainian case. If this were true, American taxpayers should be asking the Defense Department and the Congress why they keep paying for new fighter jets and long-range

missiles. If they would not be effective against Russians, how would they be effective against the Chinese, a more challenging opponent?

That the United States is running out of equipment to send. This is somewhere between breathless and flat-out false. The Defense Department is placing contract to expand munitions production six-fold, and still has huge stocks of armored vehicles to donate: thousands of Paladins, Bradleys and Abrams; yet more venerable M113s; and ten thousand MRAPs for driving through those minefields.

That a breakthrough is necessary, but not possible. As West Point Professor Jan Kallberg recently wrote, the Ukrainians need not fight all the way to the coast to defeat the Russians in the south. If the Ukrainians take as few as another ten miles of ground, GMLRS launchers can bring the coastal road and rail lines under fire. This will greatly interdict the resupply of both soldiers and civilians anywhere between Kherson and Sevastopol. Without munitions and fuel to the Russians, progress for the Ukrainians will accelerate, and their sappers can clear mines more quickly and widely without the threat of overhead shrapnel too.

Learning how to learn.

Indeed, some of these articles have provided countervailing opinions from actually named retired generals, such as Philip Breedlove and Mick Ryan, arguing that the situation is hardly *stalemated*, as seems circulating as a new view. This debate of sorts is akin to that over the how the nature of warfare may have changed with recent developments in technologies of autonomy and precision. Plenty of warriors and scholars have inveighed on the side of *yes much has changed*, including Max Boot of the Council on Foreign Relations, T. X. Hammes of the National Defense University, Phillips Payson O'Brien of Saint Andrews University, and the late David Johnson of RAND. The side of *no not so much* is mostly defended by Stephen Biddle of Columbia University.

In quick summary, consider the assessment from Dara Massicott of RAND in April. All along and behind the front, Ukrainians and Russians have been trying to hide, in trees and trenches. It has simply not been enough to beat the high resolution of the drones, which have been finding and killing individual soldiers. The tanks have been easier targets. This should be unsurprising, as the US Air Force, the Royal Air Force, and other air arms have been doing this for decades over the Middle East. In June, Karin von Hippel of the Royal United Services Institute characterized this as improvisational compensation of "remarkable ingenuity," of do-it-yourself methods "to compensate for the uneven military balance between the two countries." In July, Ben Hickey of the Aspen Institute wrote of how "inexpensive, easy-to-replace, commercial technologies have proved themselves to be an essential part of Kyiv's war effort." The Ukrainians have been endorsing this view, with officials writing columns where Washington think tanks will provide space (Mykhailo Fedorov, 17 August 2023).

Shashank Joshi, the defense editor of the *Economist* magazine, immediately replied on Twitter (X, whatever) that "the basic problem with this popular view is that expensive, hard-to-replace technologies have also been essential."

Perhaps we think of the issue of what technologies to build for the battlefield not as a solution to be adopted, but a path to be followed. As Richard Rumelt of UCLA's Anderson School of Management has argued, one of the most difficult things as a strategist is to keep to diametrically opposed concepts in mind, particularly when they are both partly true. In perhaps preemptively replying to Joshi. Max Boot may have provided the best summary, well back in May 2022:

This doesn't mean that tanks, manned aircraft or surface ships are necessarily obsolete. Kyiv's desperate desire for more tanks shows that, if properly supported by infantry, air, and artillery, they are still an invaluable instrument of attack. But it does mean that, at least for the time being, it will be increasingly difficult and expensive to protect major weapons systems from low-cost, highly precise drones and missiles linked to pervasive networks of sensors.

Biddle has argued that loss rates of tanks and aircraft have not greatly exceeded those of the Second World War, the 1973 Yom Kippur War, and others. This is true, but it may miss two important points about the senescence of 20th Century military technologies on 21st Century battlefield.

High losses, low value. The first gets to the reason that the Ukrainians have been withholding their tanks. These anonymous American "officials" assert that the Ukrainians just need to learn combined arms tactics. General Valerii Zaluzhnyi, Commander-in-Chief of the Armed Forces of Ukraine, seems to have told some of them, "You don't understand the nature of this conflict. This is not counterinsurgency. This is Kursk." (*WSJ*, 24 August 2023.) As I heard another Ukrainian general say this spring, technologies of surveillance and autonomy have rendered the battlefield more like those of the First World War than even the Second, just with far lower force densities. Lots of tanks have been killed, but without much to show for it.

High cost, slow production. The second is that modern tanks are harder to replace today than the mid-20th-Century models that fought in those earlier wars. As Mark Cancian of the CSIS has noted, MRAP gun trucks are easy to build fast, but tanks can take years. This also helps explain why both the Russians and Ukrainians have mostly kept their manned fighter jets on their own sides of the lines. The Ukrainians have no production capacity, and the Russians little. In the US, the UK, France, and Italy, new jets require about three years of lead-time.

With such technologies, you will go to war with the army you have, but that will remain now way to mobilize. Now, after eighteen months of fighting, both Russians and Ukrainians may have quite sensibly concluded that the combined-arms in contact with the enemy in the 21st Century means small parties of infantry backed by lots of artillery. This means slower going, but even in 1918, enough tanks and Americans broke the Germans—and even after they had defeated the Russians.

My assessment is that the technological trends point towards sparser battlefields of greater defensibility, but not quite dominance. What does this mean for the kinds of weapons to develop and procure? Note how the Ukrainians are asking for all the old kit, like the F-16s, but honestly, would take the F-35s if they could get them. This means that the old inventories are

worth storing, but they increasingly are not worth updating. The situation harkens back to George W. Bush's famous line at the Citadel in 1999 about skipping a generation of weapons. If nothing that drastic, at least modern militaries should consider ending their spending on old-and-obvious systems.

Learning first, then organizational change.

Eugene Gholz and Harvey Sapolsky recently argued that the Americans, at least, will take the point. All these warnings about new developments in military technology, they say, “come from a thriving threat assessment system that continually searches for potential military dangers and technological challenges.” After observing the debacle of the US Army and Marine Corps searching for solutions to their problems with landmines and “improvised explosive devices” (IEDs) from 2003 through 2006, and continuously overlooking what we came to call the MRAP, I am not so sure (see Hasik, 2021). Echoing Peter Drucker's famous line that “culture eats strategy for breakfast,” Michael Kofman of the Center for Naval Analysis has recently added that “culture tends to supersede doctrine.” Too many American officials did not want to see that solution as an option, as it did not fit their preconceived, not-so-improvised notions for how the war should be fought. Today, we may have a similar problem: too many American officials do not want to grapple intellectually with the full implications of the Russo-Ukrainian War, and so are tinkering around the edges with their mental models of warfare.

On the other hand, if they can collectively take the lessons of the war, the strategic situation may favor them. As T. X. Hammes wrote in 2021,

Fortunately, in the two current Great Power competitions, the United States is essentially on the tactical defensive. To achieve regional hegemony, both China and Russia will have to cross borders and seize territory; the United States and its allies only have to defend.

Hammes was writing two years before the emergent need to take back territory from the Russians, which as this essay notes, is the dominant problem today. Against the Russians, though, there is really no choice. As the *Wall Street Journal's* editorial board wrote yesterday,

Prigozhin's demise reveals the brutal politics that now controls Russia. Too many in the West, including on the American left and right, imagine that Mr. Putin can be shamed or appeased into backing away from his ambitions to reconstitute a Greater Russian empire. This underestimates his motivating ideology and ruthlessness. He will kill anyone who stands in his way at home, and he'll do the same abroad—in Ukraine, Poland, or anywhere else, if he believes he can get away with it.

Doing something sooner than later would seem appropriate. Technology is increasingly, but not completely, favoring a tactically defensive orientation. As military forces from the US Marine Corps to the Royal Australian Navy are increasingly considering, operational defensive, this means dispersion, smaller platforms, more autonomy, and much greater stocks of standoff precision munitions, with new capabilities preserving options for localized offensive operations. Even the US Air Force is official adopting the concept of mission command, which was

essentially anathema after development of the hyper-centralized air tasking order concept of the 1991 war (see USAF Doctrine Publication 1-1, below).

Action, at a pace, and through alliances.

This requires managing the marketing of a technological and organizational process of reform, in which not everything happens everywhere all at once. Software, we have been hearing for almost a decade, has eaten the war (see Wallace, 2017; and Hasik, 2014)—but still not all of it. As noted, howitzers have not been totally displaced by drones, and cyber seems a fizzle. Not every ballyhooed technology is ready quickly. Long-range precision bombing was a recurring fiasco for 40 years, from the 1920s until at least the 1960s, when the US Air Force started adopting precision-guidance technologies. Despite signals from the front, we still have much work to do in predicting which technologies will matter, and how soon.

In Ukraine and elsewhere of late, the startups have done amazing work, but some of their work still looks like flying and swimming IEDs. Their weapons show performance that seems impressive for what it is, but still far from its potential. If Ukraine's Sea Baby drones are holding the whole Russian Black Sea Fleet at bay, just imagine how a more robust thousand-kilometer torpedo could change naval warfare. Ukraine, however, is just the first place where military-industrialists should be looking for alliances. What comes next is the hard institutional and engineering work in marketing and manufacturing, which is facilitated by alliances of a different kind.

As Margaux Hoar and Robyn M. Bolton argued this month in *Defense One*, companies need to “consider scaling requirements at the optimum time: right after concluding that a proposed product fits a market sufficiently large to justify the investment.” That stretches the minimum viable product concept that has become fashionable in startup talk. The US military, after all, had a minimal operational capability with a dozen MRAPs in 2000, but still could not figure out what to do with them. Officialdom fretted about scale until real automotive firms like Oshkosh and Navistar showed them how quickly they could accomplish that. In contrast, industry innovator Force Protection continuously chose to work at the center of a manufacturing enterprise for almost its entire decade-long history, and perhaps to predictable effect.

This argues once again for corporate alliances in military contracting. In the US, the Defense Department, the Justice Department, and the Federal Trade Commission have all taken a dim view of the potential for mergers to forestall innovation. Alliances mostly sidestep that opposition. They can also take the best from multiple firms of at least two aspects of resource-based strategy: durability of industrial capabilities, so that the advantage is not fleeting; and dynamism, so that the combined organization can reconfigure rapidly to address pending change (see David Teece *et alia*, 1997).

Big firms have gradually been warming to the idea, though some more thoroughly, and even with investment. At the Offset Symposium this past May in Washington DC, Jeff Cunningham of Lockheed Martin Ventures noted that his activity had invested in 70 companies since 2007, but that Lockheed Martin had never acquired any of those companies. Adam Sheipe, head of

corporate development at Leidos, spoke of how until recently, “partnering” meant teaming for specific programs. Military contractors are increasingly thinking that longer-term, broader alliances between emerging and established firms can combine previously unimagined technologies with classified manufacturing capabilities, and without the huge venture backing of a SpaceX. Cultural fit between firms matters, though less so when they are intentionally not merging. What remains less clear, Sheipe acknowledged, is why entrants like Google, Microsoft, Accenture, IBM, (or I might add) General Motors cannot outperform the legacy military specialists, as they are “not saddled by legacy ways of doing business.”

In short, all this is probably relatively good news for the missile makers and automotive manufacturers, and less so for the shipbuilders and aircraft makers. Some of this will return to Ukraine after the war, as that country will have built powerful industries for innovation and agile manufacturing of battlefield robotics. As I have written previously, any military contractor to the west of Ukraine that does not yet have an office there needs to consider a presence on the ground, and now.

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