



U.S. Military Training Assistance to Ukraine

Impact Assessment

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ABOUT THE PROJECT

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Executive Summary

- Training since 2014, and SOF training since 2020, are seen by most experts as significant force multipliers.
- Shortened weapons' training cycles seem sufficient for basic operator instruction but fail to instill or adjust a user culture commonly associated with U.S. weapons' systems (particularly concerning the firing rate). This has been associated with higher-than-usual repair rates (approximately one third of all equipment at any given time being serviced) and has worsened the challenge of ammunition shortages.
- Limited training on maintenance and repairs is presently considered the biggest shortfall.
- Moving out equipment (for repairs) and Ukrainians (for training) are seen as a serious challenge in an active war, but most experts and policy makers still considered it too risky to send any U.S. personnel into Ukraine for training.
- Remote support by U.S. special forces to their Ukrainian counterparts, while appreciated, faced cultural and language barriers and was likely to be increasingly impeded by the lack of U.S. battlefield familiarity.
- Independently operating military veterans from the United States (and other Western countries) play an increasingly prominent—and often underestimated—role in supplementing tactical training, as well as boosting on-the-ground repairs capabilities for recently transferred advanced equipment.

Introduction

The focus and contribution of this study is assessing the different types of military training provided by various branches of the U.S. armed forces through different phases of the war in Ukraine over the course of 2022. Due to the significant cumulative impact of training assistance, a relatively more detailed analysis is provided on the historical patterns of U.S. training assistance to Ukraine and the 2022 phase immediately antecedent to the war. Since Russia's launch of a conventional war against Ukraine in February 2022, the key developments, in terms of U.S. forces and volunteers (re)organizing to provide training to the Ukrainians, are traced during the early stages of the war: (1) initial battles countering Russia's invasion over February and March, and (2) Ukraine's sustained resistance and the arrival of more Western aid over March and April. Starting with the summer of 2022, few new conceptual developments were seen in the provision of training. The study subsequently assesses the impact of training ranging from tactical, to Resistance Operating Concept (ROC), to arms operator training.

While much has been made of the role that U.S. arms transfers are playing in the war in Ukraine since 2022, the key contributions of training have been made in the years—rather than months—preceding the present state of the conflict. Assistance in reorganizing and modernizing the regular armed forces of Ukraine, as well as training the special forces units, were, by broad assessment, among the key factors enabling Ukraine's adaptability and resilience.¹ Furthermore, U.S. special forces operators described the relationships built during those years of training as taking on a particular significance, as U.S. personnel were unable to be present on the ground since the start of the Russian invasion.² As the conflict wore on, auxiliary support training tasks were increasingly set up outside the country, and, interestingly, supplemented by retired veterans operating outside the government purview, at their own risk and expense or as part of NGO initiatives.

It is worth noting the somewhat limited availability of open-source information on U.S. training efforts. Part of the reason is that such training was largely provided by U.S. special forces operating under limited disclosure. For the purposes of this research, the available material is helpful for understanding the type and flow of these efforts.

Nevertheless, the sparsity of open-source materials suggests the somewhat lesser use of training operations as a signaling tool—to adversarial, allied, or domestic audiences.

Nevertheless, the sparsity of open-source materials suggests the somewhat lesser use of training operations as a signaling tool—to adversarial, allied, or domestic audiences. For instance, Russia was well aware of U.S. training activities and the presence of American assets (and, unsurprisingly, tried to leverage that in information campaigns), exaggerating their role. But this narrative did not seem to

¹ See, e.g., McConville, J. C. (Nov 16, 2022). *Politico Defense Summit*. <https://www.politico.com/live-events/1997/07/21/at-a-crossroads-americas-defense-strategy-00001398>; Roberson, P. (Apr 5, 2022). *The Surprisingly Unsurprising Russo-Ukraine War: Learning and Teaching the Right Lessons for Integrated Deterrence*. NSI. <https://nsiteam.com/the-surprisingly-unsurprising-russo-ukraine-war-learning-and-teaching-the-right-lessons-for-integrated-deterrence/>.

² Edwards, S. (Sep 21, 2022). *What is the Role of Special Operations Forces in Ukraine?: Signaling the Future*. <https://www.youtube.com/watch?v=wHm8E3o0Z2I>.

change as the types of training changed from instructing Ukrainian Special Operations Forces (SOF) inside Ukraine to, e.g., providing medical or use-of-arms instructions outside the country.

This study focuses on training provided by the U.S. armed forces, but it is important to recognize the significance of the concerted effort that includes other types of U.S. military and non-military assistance, as well as assistance provided by other NATO and global allies, and Ukraine's own ingenuity and socio-political structural developments.

The study is based on public sources and elicitations from American, Polish, and Lithuanian experts. The ten experts interviewed specifically for this effort included high level officials who have recently left the intelligence and military service, some of whom had first-hand experience in Ukraine in 2022, as well as diplomats, and heads of prominent security-focused think tanks. In addition, in analyzing the different phases of the 2022 war, where available, the corresponding Russian narratives, reactions, and maneuvers are also identified, providing situational snapshots from multiple vantage points.

This paper is part of the broader research effort to assess several tools short of war that the U.S. has used to help Ukraine: the first two papers in this series focused on arms transfers,³ and cooperation in the information domain,⁴ while a forthcoming publication will analyze the use of U.S. naval assets in this conflict over the course of 2022. This effort bridges the coverage gap between classified tactical-level military briefs and media commentary and draws on top-level regional expertise. These practical reflections offer a systematic integrated perspective and capture timely perspectives to be built upon as more insights become available over time.

Historical Background

The U.S. National Guard has partnered with the regular armed forces of Ukraine since 1993, facilitating gradual reforms, including the training to delegate swift decision making to lower lever officers on the ground.⁵

The U.S.—and NATO—special forces have been training their Ukrainian counterparts for approximately eight years, starting in 2015—shortly after Russia's incursion into Crimea. The U.S. Army's 10th Special Forces Group operating with the EUCOM and Socom have handled the bulk of training for Ukrainian commandos.⁶ The training reportedly included reconnaissance, communications,

³ Murauskaite, E. E. (Jan 2023). *U.S. Arms Transfers to Ukraine: Impact Assessment*. START, University of Maryland. <https://www.start.umd.edu/publication/us-arms-transfers-ukraine-impact-assessment>.

⁴ Murauskaite, E. E. (Jan 2023). *U.S. Assistance to Ukraine in the Information Space: Intelligence, Cyber, and Signaling*. START, University of Maryland.

⁵ Barranco, J. (Aug 2022). *Six Months Twenty, Three Lessons: What the World Has Learned from Russia's War in Ukraine*. Atlantic Council. <https://www.atlanticcouncil.org/blogs/new-atlanticist/six-months-twenty-three-lessons-what-the-world-has-learned-from-russias-war-in-ukraine/>.

⁶ Leigh, N. (July 13, 2022). *Are Western Special Operations Forces in Ukraine? Overt Defense*. <https://www.overtdefense.com/2022/07/13/are-western-special-operations-forces-in-ukraine/>; Schmitt, E., Barnes, J. E. and Cooper, H. (June 25, 2022). *Commando Network Coordinates Flow of Weapons in Ukraine, Officials Say*. New York Times.

and battlefield medicine, in addition to modern small-team tactics.⁷ Since 2020, the training has reportedly come to include resistance operations, based on tactics from NATO's Resistance Operating Concept (ROC). Handled by the Green Berets and the 20th Special Forces Group from Florida National Guard,⁸ this training was being conducted at the Yavoriv military base in Ukraine and was still ongoing well into January 2022.⁹ The total number of U.S. instructors operating on the ground in Ukraine was estimated at 150; between 2015 and 2022, they have reportedly trained around 27,000 members of the Ukrainian special forces.¹⁰ Interestingly, published Russian estimates of Ukrainians trained at Yavoriv were at around 6,000.¹¹

In addition, an unspecified number of the U.S. Army's 1st Special Forces Operational Detachment-Delta (SFOD-D) has reportedly been operating in Ukraine "since the start of the war"¹² (presumably meaning 2014, rather than 2022).

2022 Trends

Various analysts have separated the war of 2022 into three to five different phases, based on their perceived shifts to the extent of Russia's territorial conquest ambitions¹³ and changes in tactical dynamics

<https://archive.ph/X6JQb#selection-393.0-393.70>; Pincus, W. (April 12, 2022). *U.S. SOCOM Has History with Ukraine's Special Forces*. The Cipher. https://www.thecipherbrief.com/column_article/u-s-socom-has-history-with-ukraines-special-forces.

⁷ Schmitt, E., Barnes, J. E. and Cooper, H. (June 25, 2022). *Commando Network Coordinates Flow of Weapons in Ukraine, Officials Say*. New York Times. <https://archive.ph/X6JQb#selection-393.0-393.70>.

⁸ Sharma, A. (April 11, 2022). *Elite US-UK forces in Ukraine since beginning of conflict with Russia, says French daily*. India Narrative. <https://www.indianarrative.com/world-news/elite-us-uk-forces-in-ukraine-since-beginning-of-conflict-with-russia-says-french-daily-34432.html>; Lee, M. (March 24, 2022). *The US Army's Green Berets quietly helped tilt the battlefield a little bit more toward Ukraine*. Fox News. <https://www.foxnews.com/politics/us-armys-green-berets-have-lasting-impact-on-fight-in-ukraine>; Pincus, W. (April 12, 2022). *U.S. SOCOM Has History with Ukraine's Special Forces*. The Cipher. https://www.thecipherbrief.com/column_article/u-s-socom-has-history-with-ukraines-special-forces.

⁹ Vandiver, J. (Jan 19, 2022). *US special operations presses on in Ukraine amid threat of Russian invasion*. Stars and Stripes. <https://www.stripes.com/theaters/europe/2022-01-19/special-forces-press-on-in-ukraine-amid-threat-of-russian-invasion-4343248.html>.

¹⁰ Schmitt, E., Barnes, J. E. and Cooper, H. (June 25, 2022). *Commando Network Coordinates Flow of Weapons in Ukraine, Officials Say*. New York Times. <https://archive.ph/X6JQb#selection-393.0-393.70>.

¹¹ Falichev, O. (Sep 29, 2022). *How the US and NATO train Ukrainian soldiers*. https://nvo-ng-ru.translate.goog/realty/2022-09-29/3_1208_army.html?_x_tr_sl=ru&_x_tr_tl=en&_x_tr_hl=en&_x_tr_pto=wapp.

¹² Sharma, A. (April 11, 2022). *Elite US-UK forces in Ukraine since beginning of conflict with Russia, says French daily*. India Narrative. <https://www.indianarrative.com/world-news/elite-us-uk-forces-in-ukraine-since-beginning-of-conflict-with-russia-says-french-daily-34432.html>.

¹³ Kofman, M. and Evans, R. (Dec 9, 2022). *Winter and Beyond: An Inflection Point in the War Over Ukraine*. War on the Rocks. <https://warontherocks.com/2022/12/winter-and-beyond-an-inflection-point-in-the-war-over-ukraine/>; Freedman, L. (July/Aug 2022). *Why War Fails: Russia's Invasion of Ukraine and the Limits of Military Power*. Foreign Affairs;

on both sides.¹⁴ For the purpose of the broader research effort that this paper is a part of, we have identified five phases in the 2022 war effort, starting the discussion with an antecedent phase to the war (and U.S. assistance in Ukraine's preparations for it) as running from January 1 to February 23. The first phase (February-March) covers the initial scramble to counter the Russian invasion, with relatively limited foreign assistance available. The second phase (April-May) shows a serious boost in military assistance, inspired largely by the unexpected Ukrainian resilience and ingenuity.¹⁵ These two initial phases are when the bulk of Western training assistance efforts were set up, continuing in scope and nature through the remainder of the year with few notable developments. The third phase (June-July) of the war is termed variously a stalemate, incremental advances, or attrition, and reflects a period of relatively little territory changing hands. The start of the fourth phase, identified by different sources at different dates in August (and by some in September), is marked by a major Ukrainian counter-offensive campaign that changed the stalemate dynamic and succeeded in giving Ukraine the battlefield advantage. We mark the start of the fifth phase with Ukraine's bombing of the Kerch bridge: while it was part of the speeding counter-offensive, Russia responded to this particular move by launching a massive bombing campaign against civilian infrastructure. Again, in terms of the training provided, little has changed over the third-to-fifth phase—with key developments concerning trainings on particularly advanced U.S. arms systems transferred towards the end of 2022 or to be transferred in 2023.

Phase 0: January 1 to February 23 — Antecedent

By February 2022, as U.S. intelligence was pointing to an impending Russian invasion, all members of the special forces delivering trainings had reportedly left Ukraine. All U.S. assets have reportedly been withdrawn, except for an unspecified number of CIA operatives, and possible special operations units under missions other than training.¹⁶ Meanwhile, in his speech on February 21, Russian President Vladimir Putin spoke of the threat of impending Ukrainian aggression, explicitly pointing out Western efforts not just to train (and equip) but also to integrate with the Ukrainian armed forces.¹⁷

Psaropoulos, J. (Aug 24, 2022). *Timeline: Six months of Russia's war in Ukraine*. Al-Jazeera.

<https://www.aljazeera.com/news/2022/8/24/timeline-six-months-of-russias-war-in-ukraine>; Bloomberg. *A Visual Guide to the Russian Invasion of Ukraine*. <https://www.bloomberg.com/graphics/2022-ukraine-russia-us-nato-conflict/?leadSource=uverify%20wall>.

¹⁴ (Nov 3, 2022). Jacek Bartosiak, John R. Deni (US Army War College) *on the observation from the battlefield in Ukraine*.

<https://www.youtube.com/watch?v=BmnwMjIUEzQ>; Yaffa, J. (Oct 17, 2022). *Inside the U.S. Effort to Arm Ukraine*. New Yorker. <https://www.newyorker.com/magazine/2022/10/24/inside-the-us-effort-to-arm-ukraine>.

¹⁵ Some analysts merge these two phases into one; among those that do not, one of the central shift is Russia's refocusing of war goals away from conquering the entire Ukraine in late March.

¹⁶ DeCamp, D. (Oct 7, 2022). *Report: US Special Operations Forces Are on the Ground in Ukraine*. Scheerpost. <https://scheerpost.com/2022/10/07/report-us-special-operations-forces-are-on-the-ground-in-ukraine/>.

¹⁷ See, e.g., see *Russian Media Analysis* (Feb 25, 2022). Center for Naval Analyses. <https://www.cna.org/Newsletters/Russian%20Media%20Analysis/Russian-Media-Analysis-Report-Issue-10.pdf>.

Phase 1: February 24 to March 30 — Full Invasion

With Ukrainian forces mounting sustained resistance, U.S. training operations were soon resumed—albeit mostly outside of Ukrainian territory. Shortly after invasion a planning and coordination cell was established in Ramstein, Germany, with members of the U.S. Air Force and Air National Guard were providing support and specific tactical training to the Ukrainian Air Force.¹⁸

Meanwhile, Russia bombed the Yavoriv training base in Ukraine on March 13, injuring 134 and killing 35 people.¹⁹ While all active-duty members of U.S. armed forces had been evacuated by February, the base was a hub for arriving individual foreign fighters—including Americans—joining Ukraine's cause. Aside from much discussed contributions to the ranks of fighters with the International Legion of Ukraine, it is worth noting the role of U.S. veterans in providing training particularly early in the war. This included professionals not only sharing battlefield experience with the units they ended up being embedded with, but also supporting auxiliary roles.

For instance, by March, four special forces veterans from the U.S. had come to Ukraine of their own initiative and were offering a basic training course to Ukrainian civilians at the newly set up Self-Defense Training Center in Lviv.²⁰ By the end of May, some 50 Ukrainians were receiving instruction on basic weapons handling, battle drills, first aid, hand-to-hand combat, and other resistance tactics.²¹

In addition, ten retired medics from the U.S. special forces headed to the front lines in Ukraine to provide emergency treatment, as well as train Ukrainian counterparts to do so²²—contributing to the filling of an urgent gap of battlefield medical services.

Furthermore, as the war started, several Ukrainians who were studying in U.S. military institutions at the time received two-day training on the Switchblade drones that were subsequently delivered to Ukraine in April.²³

¹⁸ Schmitt, E., Barnes, J. E. and Cooper, H. (June 25, 2022). *Commando Network Coordinates Flow of Weapons in Ukraine, Officials Say*. New York Times. <https://archive.ph/X6JQb#selection-393.0-393.70>.

¹⁹ Harding, L., Beaumont, P., and Tondo, L (March 13, 2022). *Russia targets Ukrainian military base near Polish border in escalation*. Guardian. <https://www.theguardian.com/world/2022/mar/13/russia-widens-attacks-on-ukraine-with-missile-strike-on-base-close-to-polish-border>.

²⁰ Bishop, M.W. (March 12, 2022). *U.S. Veterans Start a 'Resistance Academy' in Ukraine. Will It Backfire?* Rolling Stone. <https://www.rollingstone.com/culture/culture-features/american-veterans-resistance-academy-ukraine-1319830/>; Kryt, J. (May 30, 2022). *Here's How Ex-U.S. Special Forces Are Training Civilians to Crush Putin's Army*. Daily Beast. <https://www.thedailybeast.com/heres-how-ex-us-special-forces-are-training-civilians-to-crush-putins-army>.

²¹ Bishop, M.W. (March 12, 2022). *U.S. Veterans Start a 'Resistance Academy' in Ukraine. Will It Backfire?* Rolling Stone. <https://www.rollingstone.com/culture/culture-features/american-veterans-resistance-academy-ukraine-1319830/>; Kryt, J. (May 30, 2022). *Here's How Ex-U.S. Special Forces Are Training Civilians to Crush Putin's Army*. Daily Beast. <https://www.thedailybeast.com/heres-how-ex-us-special-forces-are-training-civilians-to-crush-putins-army>.

²² Noyes, D. (March 5, 2022). *EXCLUSIVE: Retired US Special Forces sergeant from Bay Area headed to Ukraine on medical mission*. ABC News. <https://abc7news.com/russia-ukraine-war-russian-news-gsmg-us-special-forces/11621588/>.

²³ Watson, E. (April 6, 2022). *Pentagon training a small number of Ukrainians in the U.S. on new weapons*. CBS News. <https://www.cbsnews.com/news/ukrainians-in-america-training-weapons-pentagon/>.

Phase 2: April 1 to May 11 — Western Boost

The training offered by U.S. armed forces as the war wore on largely focused on the direct handling of weapons and weapons systems, as well as medical assistance—all conducted outside of Ukraine.

By April, the United States—and other NATO members—started to offer trainings outside Ukraine on how to operate the weapons systems that were arriving as part of the various packages of international military aid (e.g., howitzers, counter artillery radar systems).²⁴

Ukraine had received some *Javelin* missiles in 2018, and there were a number of Ukrainian troops already trained to operate them and able to act as trainers for others. The training for new operators, provided outside Ukraine, was shortened from the U.S. standard of 10 days to 1.5 days.²⁵ Within a month of the start of the war, the 160 U.S. trainers moved from Ukraine to Germany had instructed more than 300 Ukrainians to operate the *M777* howitzers and 50 more Ukrainians to maintain them in a program designed to train-the-trainers.²⁶ In addition, 15 Ukrainians were trained to operate the *Sentinel* mobile air defense radars, and 20 have completed one-week training on the *Phoenix Ghost* drones.²⁷ The training on the *HIMARS* (starting in June) was shortened to three weeks for operators, with additional two weeks of instruction on maintenance (the standard *HIMARS* training for U.S. troops lasts several months).²⁸ Indeed, several experts interviewed for this effort noted the efficient *HIMARS* training as a key enabling factor in Ukrainian counter-offensives that followed.

Towards late May, medics with the U.S. Army Green Berets were starting to train Ukrainians in Germany on battlefield evacuation and emergency medical services.²⁹

²⁴ (Aug 9, 2022). *A Case for More Oversight of Military Aid to Ukraine*. Arms Control Today. <https://www.armscontrol.org/issue-briefs/2022-08/case-more-oversight-military-aid-ukraine>.

²⁵ Horton, A. (June 15, 2022). *U.S. sends gear to Ukraine, but no tech support*. Washington Post.

²⁶ Doornbos, K. (Apr 18, 2022). *US troops to train Ukrainian forces on howitzers in coming days*. Stars and Stripes. <https://www.stripes.com/theaters/us/2022-04-18/ukraine-russia-war-american-howitzers-training-pentagon-5726775.html>; Losey, S. and Gould, J. (May 9, 2022). *From howitzers to suicide drones: Pentagon seeks right 'balance' on training Ukrainians on new arms*. Defense News. <https://www.defensenews.com/pentagon/2022/05/09/from-howitzers-to-suicide-drones-pentagon-seeks-right-balance-on-training-ukrainians-on-new-arms/>.

²⁷ Losey, S. and Gould, J. (May 9, 2022). *From howitzers to suicide drones: Pentagon seeks right 'balance' on training Ukrainians on new arms*. Defense News. <https://www.defensenews.com/pentagon/2022/05/09/from-howitzers-to-suicide-drones-pentagon-seeks-right-balance-on-training-ukrainians-on-new-arms/>.

²⁸ Youssef, N.A. and Salama, V. (June 1, 2022). *Ukrainians to Have Tight Training Schedule on Advanced U.S. Rockets*. Wall Street Journal. <https://www.wsj.com/articles/ukrainians-to-have-tight-training-schedule-on-advanced-u-s-rockets-11654115574>; *Ukraine forces need deliberate training on new rocket system*. (June 9, 2022). France24. <https://www.france24.com/en/live-news/20220609-ukraine-forces-need-deliberate-training-on-new-rocket-system-us>.

²⁹ Schmitt, E., Barnes, J. E. and Cooper, H. (June 25, 2022). *Commando Network Coordinates Flow of Weapons in Ukraine, Officials Say*. New York Times. <https://archive.ph/X6JQb#selection-393.0-393.70>.

Meanwhile, retired veterans of the U.S. armed forces were setting up independent initiatives to train Ukrainian fighters in Ukraine. The most notable of such initiatives was the Mozart Group, operating in Ukraine since April: they were not only delivering supplies, but also offering sniper training and close quarters battle training, as well as basic medical training.³⁰ These volunteering U.S. veteran trainers were offering five-day training courses to Ukrainian fighters (both with and without prior military experience)—shortened from the standard six-months training, although many were leaving for battle after just two or three days.³¹ For instance, a unit of two retired volunteer veterans associated with the Mozart Group operating near Kyiv was able to train nine Ukrainian civilians in basic handling of arms and first aid over the course of two weeks.³² The Mozart Group was explicit about not taking part in active combat, even though they did view themselves as an extension of U.S. foreign policy.³³ By their own estimates, some 30 Mozart Group veterans were helping around 2,500 Ukrainian fighters (both civilians and members of the armed forces) with basic military instruction and training on handling American weapons.³⁴ According to Chris Marsh, who heads the research department at the Joint Special

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³⁰ Colombini, S. (April 14, 2022). *A former U.S. Special Operations commander from the Tampa area is in Ukraine training soldiers*. WUSF Public Media. <https://news.wgcu.org/2022-04-14/a-former-u-s-special-operations-commander-from-the-tampa-area-is-in-ukraine-training-soldiers>; Philips, D. (July 4, 2022). *In Ukraine, U.S. Veterans Step In Where the Military Will Not*. New York Times. <https://www.nytimes.com/2022/07/03/us/politics/american-combat-volunteers-ukraine.html>.

³¹ Shkolnikova, S. (Nov 9, 2022). *American veterans race to train Ukrainian soldiers as war with Russia sweeps more troops into battle*. Stars and Stripes. <https://www.stripes.com/veterans/2022-11-09/ukraine-american-veterans-train-troops-7972157.html>; Milburn, A. (June 27, 2022). *Time is not on Kyiv's Side: Training, Weapons, and Attrition in Ukraine*. Modern War Institute, West Point. <https://mwi.usma.edu/time-is-not-on-kyivs-side-training-weapons-and-attrition-in-ukraine/>.

³² Gibbons-Neff, T. and Yermak, N. (June 7, 2022). *Arms Expedience Presents Hurdle in Ukraine Fight*. New York Times.

³³ Philips, D. (July 4, 2022). *In Ukraine, U.S. Veterans Step In Where the Military Will Not*. New York Times; Colombini, S. (April 14, 2022). *A former U.S. Special Operations commander from the Tampa area is in Ukraine training soldiers*. WUSF Public Media. <https://news.wgcu.org/2022-04-14/a-former-u-s-special-operations-commander-from-the-tampa-area-is-in-ukraine-training-soldiers>. <https://www.nytimes.com/2022/07/03/us/politics/american-combat-volunteers-ukraine.html>.

³⁴ Shkolnikova, S. (Nov 9, 2022). *American veterans race to train Ukrainian soldiers as war with Russia sweeps more troops into battle*. Stars and Stripes. <https://www.stripes.com/veterans/2022-11-09/ukraine-american-veterans-train-troops-7972157.html>; Colombini, S. (April 14, 2022). *A former U.S. Special Operations commander from the Tampa area is in Ukraine training soldiers*. WUSF Public Media. <https://news.wgcu.org/2022-04-14/a-former-u-s-special-operations-commander-from-the-tampa-area-is-in-ukraine-training-soldiers>; Philips, D. (July 4, 2022). *In Ukraine, U.S. Veterans Step In Where the Military Will Not*. New York Times. <https://www.nytimes.com/2022/07/03/us/politics/american-combat-volunteers-ukraine.html>.

Operations University, the Mozart Group's role in increasing the battlefield capacity and expertise of both Ukrainian SOF and regular forces has been significantly underestimated.³⁵

Summer/Fall 2022

As the war unfolded throughout the rest of 2022, the types of activities described above continued to ebb and flow, and no additional training types or actors were introduced.

In October when two NASAMS were allocated and more were pledged to boost Ukraine's air defenses, the offered training course was condensed from six to two months.³⁶ As of November 2022, the U.S. training efforts were mainly focused on operating the modern arms being transferred, although a remaining dire need was recognized to offer training in planning and logistics support to the Ukrainian armed forces.³⁷

As the fighting was predicted to slow down during the early winter months of 2023, the United States was planning to start organizing advanced tactical training in Germany for 600-800 (i.e., one battalion) Ukrainians each month, hoping to address some of the operational culture challenges.³⁸

Starting in January 2023, this will be the first systematic U.S. effort to offer foreign troop training on its territory

In addition, one significant new development initiated in late December 2022 was to train the Ukrainian troops in the United States on operating the *Patriot* system.³⁹ The required training was estimated at around six months and around 90 persons are required to operate a single *Patriot* battery.⁴⁰

Starting in January 2023, this will be the first systematic U.S. effort to offer foreign troop training on its territory—an institutionalized step forward from the abovementioned ad hoc drone operator training.

³⁵ Marsh, C. (Oct 3, 2022). *ThinkJSOU Panel: Update on the Ukraine / Russia Conflict*. <https://www.youtube.com/watch?v=Sz3IC1vHNEI>.

³⁶ Hudson, L. (Dec 1, 2022). *U.S. looks to shift air defense systems from Middle East to Ukraine, Raytheon chief says*. Politico. <https://www.politico.com/news/2022/12/01/raytheon-air-defense-ukraine-middle-east-00071687>.

³⁷ Bowen, A.S. (Nov 3, 2022). *Ukrainian Military Performance and Outlook*. Congressional Research Service, IF12150. <https://crsreports.congress.gov/product/pdf/IF/IF12150>.

³⁸ Schmitt, E. and Kramer, A. E. (Dec 15, 2022). *The U.S. plans to more than double the number of Ukrainian troops it trains in Germany*. New York Times. <https://www.nytimes.com/live/2022/12/15/world/russia-ukraine-news/the-us-plans-to-more-than-double-the-number-of-ukrainian-troops-it-trains-in-germany?smid=url-share>; Lamothe, D. and DeYoung, K. (Dec 1, 2022). *Pentagon eyes major expansion of Ukraine military training*. Washington Post. <https://www.washingtonpost.com/national-security/2022/12/01/ukraine-us-military-training/>.

³⁹ Seligman, L. (Dec 22, 2022). *Military weighs training Ukrainians on Patriot in United States*. Politico. <https://www.politico.com/news/2022/12/22/military-training-ukrainians-patriot-united-states-00075284>; Liebermann, O. and Britzky, H. (Jan 11, 2023). *Ukrainians to start training on Patriot missiles in US as soon as next week*. CNN. <https://amp.cnn.com/cnn/2023/01/10/politics/ukrainians-patriot-missiles-fort-sill/index.html>.

⁴⁰ Kronfield, M. and Javaid, M. (Dec 21, 2022). *Here's everything you need to know about Patriot missiles*. Washington Post. <https://www.washingtonpost.com/nation/2022/12/21/what-patriot-missile-system-why-does-ukraine-need/>.

Impact: Concerns and Realities

Pre-War Training

The years of training that the Ukrainian armed forces have been receiving from the United States since 2015 have been described as one of the key factors contributing to their success,⁴¹ especially in the early phases of this war.⁴² Admiral Stavridis has emphasized the role of joint exercises with NATO in making the Ukrainian armed forces more adaptable and improving their ability to provide forward support to their fighting units.⁴³ Furthermore, learning and adaptability, as well as good leadership and decision-making among the middle- and lower-ranks were identified as the key force multipliers in this war.⁴⁴

Notably, logistical and auxiliary units have rarely been trained: in exercises, their role has traditionally been simply to support the particular exercise, rather than receive training on how to carry out their functions under battle stress.⁴⁵ Indeed, poor logistics support and support planning has considerably imperiled the Russian forces.⁴⁶ Thus, the learned adaptability, combined with exercised skills of organizing operational support, was deemed to play an important role in the successes of Ukrainian armed forces.

Still, the training (along with the arms provided since 2015) was understood to be insufficient to deter Russia from conventional territorial warfare⁴⁷—necessitating future effort reassessments in that respect.

⁴¹ Roberson, P. (Apr 5, 2022). *The Surprisingly Unsurprising Russo-Ukraine War*. NSI Briefing. <https://nsiteam.com/the-surprisingly-unsurprising-russo-ukraine-war-learning-and-teaching-the-right-lessons-for-integrated-deterrence/>; White, A. (March 4, 2022). *Ukraine Conflict: Ukrainian Special Operations Forces in Focus*. Jane's IHS.

⁴² Gilliam, J. B. and Van Wie, R. C. (May 2022). *Interim Security Insights and Implications from the First Two Months of the Russia-Ukraine War*. Brookings Institution. https://www.brookings.edu/wp-content/uploads/2022/05/FP_20220512_ukraine_war_gilliam_van_wie.pdf.

⁴³ Stavridis, J. (Sep 14, 2022). *How Ukraine Turned the Tide Against Russia*. Time. <https://time.com/6213007/ukraine-offensive-against-russia/>.

⁴⁴ Ryan, M. (Nov 8, 2022). *What weapons are significant for current and future warfare? Lessons learned from recent conflicts*. SIPRI Conference; Bowen, A. S. (Sep 14, 2022). *Russia's War in Ukraine: Military and Intelligence Aspects*. Congressional Research Service, Report R47068. <https://crsreports.congress.gov/product/pdf/R/R47068>.

⁴⁵ Cranny-Evans, S. (Nov 8, 2022). *What weapons are significant for current and future warfare? Lessons learned from recent conflicts*. SIPRI Conference.

⁴⁶ Stavridis, J. (Sep 14, 2022). *How Ukraine Turned the Tide Against Russia*. Time. <https://time.com/6213007/ukraine-offensive-against-russia/>.

⁴⁷ Gilliam, J. B. and Van Wie, R. C. (May 2022). *Interim Security Insights and Implications from the First Two Months of the Russia-Ukraine War*. Brookings Institution. https://www.brookings.edu/wp-content/uploads/2022/05/FP_20220512_ukraine_war_gilliam_van_wie.pdf.

Resistance Operating Concept (ROC)

The U.S. Army Special Operations commander Gen. Clarke and Col. Stringer (who led the ROC development effort) have both reported seeing the ROC training being actively used on the battlefield.⁴⁸ The concept includes both operations by the special forces that have been trained in such tactics for 18 months prior to the war, as well as civilians providing various types of support to the fighting force (e.g., intelligence, fuel, food etc.) and maintaining an overall willingness to resist—an aspect generally underestimated prior to the war.

American,⁴⁹ as well as Russian,⁵⁰ experts and observers have recognized aspects of the ROC training in the operations of Ukrainian SOF deep behind the enemy lines, claiming it has contributed to the success of these operations in enabling Ukraine's counter-offensive campaign. Nevertheless, the ROC is by nature intended to be adapted to the specific needs of each country.

The ROC manual had been translated to Ukrainian prior to the February Russian incursion, but no civilian training exercises were conducted. Several experts interviewed for this effort considered civilians unable to self-generate resistance in Russian-occupied territories and pointed to efforts spearheaded by Ukrainian SOF to organize and coordinate resistance and support in the days following the invasion. Nevertheless, civilian support became a significant enabling factor as the war raged on: it played a prominent role in providing intelligence (operating drones and offering targeting information,⁵¹ sharing the knowledge of local terrain, visually reporting Russian asset movements, and gathering human intelligence⁵²), as well as providing material supplies and joining the fighter ranks.

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⁴⁸ Liebermann, O. (Aug 27, 2022). *How Ukraine is using resistance warfare developed by the US to fight back against Russia*. CNN. <https://edition.cnn.com/2022/08/27/politics/russia-ukraine-resistance-warfare/index.html>; Pincus, W. (April 12, 2022). *U.S. SOCOM Has History with Ukraine's Special Forces*. The Cipher. https://www.thecipherbrief.com/column_article/u-s-socom-has-history-with-ukraines-special-forces.

⁴⁹ Balestrieri, S. (Sep 12, 2022). *Ukraine's Big Offensive Against Russia: Designed by U.S. Special Forces? 1945*. <https://www.19fortyfive.com/2022/09/russia-routed-in-east-what-happens-now/>.

⁵⁰ Ivanov, V. (Sep 22, 2022). *US learns from Ukrainian crisis*. Nezavisimaya Gazeta. https://nvo-ng-ru.translate.google.com/2022-09-22/11_1207_usa.html?_x_tr_sl=ru&_x_tr_tl=en&_x_tr_hl=en&_x_tr_pto=wapp.

⁵¹ Singer, P. W. (April 19, 2022). *The Lessons of Ukraine So Far*. Deep State Radio. <https://thedsrnetwork.com/lessons-of-ukraine/>; Lushenko, P. (Oct 26, 2022). *How Ukraine built an 'army of drones' to fight Russia*. CBS. https://www.youtube.com/watch?v=Fs66-_Rr5cQ.

⁵² Costello, N. and Mironova, V. (Nov 21, 2022). *Ukraine Has a Secret Resistance Operating Behind Russian Lines*. Foreign Policy. <https://foreignpolicy.com/2022/11/21/ukraine-has-a-secret-resistance-operating-behind-russian-lines/?tpcc=recirc062921>.

The overall civilian and military campaign against Russia is an unsurprisingly unique effort, with specific credit difficult to assign—although there seems to be an agreement about the ROC training making an important contribution.⁵³ Still, there are assessments at each of the opposing ends of the spectrum, ranging from the ROC training being completely irrelevant to view that the U.S. special forces are actively directing the Ukrainian special operations on the battlefield.⁵⁴ Interestingly, Western officials have confirmed that U.S. special forces continue to remotely play an advisory role, with their training support being “tangible on the battlefield.”⁵⁵ However, members of the special forces have described these remote support efforts as posing a significant challenge and being less efficacious.⁵⁶

Weapons Systems Training

Ensuring adequate training and support services on the complex weapons systems provided to Ukraine turned out to be a challenge for the U.S. and NATO allies. According to experts interviewed for this effort, the initial efforts focused on providing the bare minimum training for operators, shifting gradually to train-the-trainers approaches in the early fall of 2022. While some noted the pro-forma U.S. measures of efficacy that focused on the number of trained Ukrainians, rather than their effectiveness, many did acknowledge U.S. trainer efforts to follow up and keep in touch with their trainees after the courses, including attempts to adjust future trainings offered.

By September, around 50 active-duty U.S. service members based in Poland were providing online guidance and support via chat and video calls.⁵⁷ Several experts interviewed for this effort pointed out the cultural and language barriers that made these exchanges difficult and also noted the potential issue of these trainers increasingly lacking credibility in the eyes of their trainees for not having seen the battlefield conditions on the ground.

⁵³ For discussion of the impact of ROC in other historical cases, and preliminary insights on the use of ROC in Ukraine, see Journal of Baltic Studies. *Special Issue on the Resistance Operating Concept*. (Aug 2022).

⁵⁴ Krohley, N. (Oct 5, 2022). *Guerrillas on the Bench: Operationalizing Resistance in Ukraine and Beyond*. Small Wars Journal. <https://smallwarsjournal.com/jrnl/art/guerrillas-bench-operationalizing-resistance-ukraine-and-beyond>.

⁵⁵ Schmitt, E., Barnes, J. E. and Cooper, H. (June 25, 2022). *Commando Network Coordinates Flow of Weapons in Ukraine, Officials Say*. New York Times. <https://archive.ph/X6JQb#selection-393.0-393.70>.

⁵⁶ Musselman, P. (Sep 21, 2022). *What is the Role of Special Operations Forces in Ukraine?: Signaling the Future*. <https://www.youtube.com/watch?v=wHm8E3o0Z2I>.

⁵⁷ Tucker, P. (Sep 18, 2022). *US Soldiers Provide Telemaintenance as Ukrainians MacGyver Their Weapons*. Defense One. <https://www.defenseone.com/technology/2022/09/us-soldiers-provide-telemaintenance-ukrainians-macgyver-their-weapons/377306/>.

However, the bulk of training and maintenance tasks inside Ukraine were taken on by retired veterans volunteering as foreign fighters—specifically in the role of trainers.

However, the bulk of training and maintenance tasks *inside* Ukraine were taken on by retired veterans volunteering as foreign fighters—specifically in the role of trainers.⁵⁸

By May, there were some discussions about the United States sending private contractors (including persons specifically tasked by the manufacturers of the weapons systems) to perform these tasks—as has been a common practice during engagements in the Middle East.⁵⁹ However, it appears that no

such persons from the United States have been hired or officially sent to Ukraine. Most experts interviewed for this effort largely saw this as too politically risky and potentially playing into the Russian narrative. Some have also emphasized the emerging greater need for mass training in operational and strategic planning—which private contractors would not be in a position to provide.

In terms of specific systems, the *Javelins* that the Ukrainians have been operating for a longer while were still plagued by maintenance and training challenges. Reportedly, computer trainings or manufacturer support hot lines were not available to Ukrainians, the 258-page user manual was only available in English, and U.S. veteran volunteers had to help them jerry-rig broken components from other electronic devices.⁶⁰ Similarly, Ukrainians reported learning how to operate *NLA*Ws from online videos, and struggling to operate some of the targeting equipment that used a NATO standard system of coordinates (which had to subsequently be converted for the Soviet weapons systems in use in Ukraine).⁶¹ Furthermore, while the training to maintain and operate the *M777* howitzers was initiated early in the war, the wrenches needed to maintain them—made in U.S. imperial size, as opposed to European metric system—took a while to arrive on the battlefield, delaying the use of some of the available equipment.⁶² Overall, every expert interviewed for this effort emphasized maintenance and repairs training as currently being the most crucial shortfall.

It is also possible that internal communication was working at cross purposes in Ukraine: while some fighting units were requesting training courses, the Ministry of Defense maintained that the training was sufficient⁶³—potentially out of concern that the supply of new weapons systems would pause if additional training were to be initiated.

⁵⁸ Horton, A. (June 15, 2022). *U.S. sends gear to Ukraine, but no tech support*. Washington Post.

⁵⁹ Tegler, E. (May 6, 2022). *Is The U.S. Training Ukrainian Troops On New Weapons Inside Ukraine?* Forbes. <https://www.forbes.com/sites/erictegler/2022/05/06/ukraine-is-receiving-many-weapons-is-america-training-ukrainian-forces-inside-ukraine/?sh=73185513c515>.

⁶⁰ Horton, A. (June 15, 2022). *U.S. sends gear to Ukraine, but no tech support*. Washington Post.

⁶¹ Gibbons-Neff, T. and Yermak, N. (June 7, 2022). *Arms Expedience Presents Hurdle in Ukraine Fight*. New York Times.

⁶² Gibbons-Neff, T. and Yermak, N. (June 7, 2022). *Arms Expedience Presents Hurdle in Ukraine Fight*. New York Times.

⁶³ Horton, A. (June 15, 2022). *U.S. sends gear to Ukraine, but no tech support*. Washington Post.

Overall, one of the key choke points for any weapons training was arranging to bring operators in and out of Ukraine, even for the abbreviated courses, as the war raged on.⁶⁴ Another factor was the differences in the way the Ukrainian armed forces were integrating and operating the equipment into their specific mode of operations—seen by U.S. experts and veterans as reducing the efficacy of systems such as HIMARS.⁶⁵ For instance, the operational culture of shooting Soviet howitzers (one shell per round) and pausing only after several rounds—doing the same with American howitzers (multiple shells per round) was said to be the cause of rapid overheating and damage of their barrel, putting many out of commission. Reportedly, one-third of the howitzers were out of commission being serviced at any given time,⁶⁶ with several experts interviewed attributing this to Ukrainian attitudes towards using the system, rather than damage caused by Russian attacks, although other interviewed experts saw the high rate of munitions' use as a feature inherent to both sides of this war. Other examples include volunteer veteran U.S. trainers having to adjust the tactics they were teaching to the specifics of their Ukrainian cadre, as the civilians serving in the Territorial Defense Units were, unsurprisingly, older and less experienced than the typical armed forces recruits, while units of the Ukrainian army still had markings of the Soviet training tradition.⁶⁷ Many experts,⁶⁸ including several interviewed for this effort, saw the shortened training cycles on the new weapons systems as insufficient to instill a different operational culture.

instructors arriving from different countries to assist the Ukrainians, as well as the variety of simulators they have put to use, have revealed the subtle tactical differences that make scaling and unifying the operations a challenge.

Finally, a number of NATO member state officials in charge of training and education programs have highlighted the issue of limited interoperability brought forth by the conflict in Ukraine: instructors arriving from different countries to assist the Ukrainians, as well as the variety of simulators they have

⁶⁴ Gibbons-Neff, T. and Yermak, N. (June 7, 2022). *Arms Expedience Presents Hurdle in Ukraine Fight*. New York Times; Milburn, A. (June 27, 2022). *Time is not on Kyiv's Side: Training, Weapons, and Attrition in Ukraine*. Modern War Institute, West Point. <https://mwi.usma.edu/time-is-not-on-kyivs-side-training-weapons-and-attrition-in-ukraine/>; *Ukraine forces need deliberate training on new rocket system*. (June 9, 2022). France24. <https://www.france24.com/en/live-news/20220609-ukraine-forces-need-deliberate-training-on-new-rocket-system-us>.

⁶⁵ Milburn, A. (June 27, 2022). *Time is not on Kyiv's Side: Training, Weapons, and Attrition in Ukraine*. Modern War Institute, West Point. <https://mwi.usma.edu/time-is-not-on-kyivs-side-training-weapons-and-attrition-in-ukraine/>.

⁶⁶ Ismay, J. and Gibbons-Neff, T. (Nov 25, 2022). *Artillery Is Breaking in Ukraine. It's Becoming a Problem for the Pentagon*. New York Times. <https://www.nytimes.com/2022/11/25/us/ukraine-artillery-breakdown.html?searchResultPosition=66>.

⁶⁷ Shkolnikova, S. (Nov 9, 2022). *American veterans race to train Ukrainian soldiers as war with Russia sweeps more troops into battle*. Stars and Stripes. <https://www.stripes.com/veterans/2022-11-09/ukraine-american-veterans-train-troops-7972157.html>.

⁶⁸ See, e.g., Ismay, J. and Gibbons-Neff, T. (Nov 25, 2022). *Artillery Is Breaking in Ukraine. It's Becoming a Problem for the Pentagon*. New York Times. <https://www.nytimes.com/2022/11/25/us/ukraine-artillery-breakdown.html?searchResultPosition=66>.

put to use, have revealed the subtle tactical differences that make scaling and unifying the operations a challenge.⁶⁹

Conclusions

This study has traced the key aspects of U.S. military training provided to Ukraine prior to the war in 2022 and during its early phases, assessing their perceived impact from a multitude of expert vantage points—U.S., European, and Russian.

The emerging consensus concerning the tactical training and unit interoperability was that the SOF training received since 2015, particularly in the year leading up to the 2022 war, has played a key role in modernizing and enabling the Ukrainian forces to resist effectively. In addition, internal institutional changes that have come about in Ukraine following President Zelensky's election were also seen as an important aspect in facilitating exchanges with Western military partners.

Regarding the training provided to operate the advanced Western weapons systems sent to Ukraine, several challenges remained a year into the war. Firstly, arranging time off for Ukrainians from the active ongoing combat was difficult—particularly for training outside the country. Secondly, the significantly compressed training cycles were only imparting the basic operator instructions—but not the user culture commonly associated with U.S. weapons systems. The subsequent manner in which these Western systems were operated in Ukraine meant significantly higher breakage rates, with around one-third of howitzers being out of commission at any given time, and increasingly pressing ammunition shortages.

Indeed, the training to repair these weapons systems remained the biggest shortfall—such courses were considerably longer than operator training, with few Ukrainian fighters able to take them abroad, and moving the damaged equipment for repairs into neighboring Poland, Lithuania, and Czech Republic continued to pose logistical challenges.

Most experts interviewed for this effort, as well as policy makers across the Atlantic, consider it too risky to send U.S. personnel—private contractors or active-duty armed forces—into Ukraine for support or training purposes. Instead, U.S. counterparts were providing various types of remote support—but that was plagued by cultural challenges, as well as the lack of first-hand experience by the U.S. operators with the on the ground situation in Ukraine.

Finally, independently operating U.S. veterans and veteran organizations providing various types of training and auxiliary support on the ground in Ukraine have played an increasingly prominent role during 2022, especially during the early phases of the war. Many see this type of foreign presence as having a much more significant impact than the foreign fighters joining the Ukrainian ranks.

⁶⁹ Cohen, R. S. (Dec 3, 2022). *Military officials look to Ukraine war for new lessons in training*. AirForce Times. <https://www.airforcetimes.com/news/your-air-force/2022/12/03/military-officials-look-to-ukraine-war-for-new-lessons-in-training/>.



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