A paratrooper assigned to the 82nd Airborne Division directs supporting fire during a live-fire exercise at Fort Liberty, NC, on 7 May 2024. (Photo by MSG Ashley Huiras)

Boredom and Terror: Fighting at Night

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Nighttime operations introduce increased friction into an already confusing and frightening environment. To paraphrase the adage, operating at night means long periods of tedious boredom punctuated by moments of sheer terror. When coupled with long movements, scarce sustainment, and unreliable communication, tactical actions transform from easily executed, simple battle drills into difficult and complex endeavors. Soldiers must train and prepare for those long periods of boredom just as much as those moments of sheer terror; otherwise, the stress induced by night operations may render them combat ineffective. Equipment must enable units to reduce and overcome friction while imposing the same on the enemy. This article critically examines the challenges of night operations, drawing insights from Ukrainian and Russian experiences during their ongoing conflict. These experiences, when applied to the U.S. Army's training and materiel approaches, can significantly enhance understanding and effectiveness of operating at night in a large-scale combat operations (LSCO) environment.

Aspects of Ukrainian and Russian approaches to LSCO night operations exemplify John Boyd's four critical qualities for successful operations: initiative, harmony, variety, and rapidity. Their actions highlight the importance of harmony and initiative in fostering a cohesive and aggressive effort, which reduces operational friction. Conversely, although they also have the potential to amplify friction, the conditions of variety and rapidity are essential for deception, unpredictability, and managing changing or unforeseen circumstances. Without a balanced integration of all four qualities, operational effectiveness is compromised. Too much focus on variety and rapidity without sufficient harmony and initiative leads to confusion, disorder, and chaos, while prioritizing harmony and initiative without adequate variety and rapidity results in rigid uniformity, predictability, and a lack of adaptability.[1] These qualities are relevant at all levels of war, from the lower tactical through the strategic. Further, they are essential during night operations due to the environment's tendency to impose additional friction.

This article delves into Boyd's four critical qualities as well as other factors, such as the importance of competency gained through realistic night training and the significant role of emerging capabilities (e.g., massed drones). By examining these aspects, I hope to empower the U.S. Army's training and materiel approaches and enhance its capacity for night operations. Operating at night presents risks and opportunities, which can be overcome and taken advantage of using technological means and competencies. The goal is to view the night as a time of confidence and control, not confusion and fear. This is essential as we prepare the Army of 2030-2040, ensuring it is well equipped and trained to own the night.

Lessons from the Russian-Ukrainian War

The Russian-Ukrainian War, which can rightly be described as beginning in February 2014 with Russia's invasion and annexation of Crimea, provides a rich source of lessons for night operations. This article focuses on the actions after Russia's February 2022 full-scale invasion, discussing differing phases of the war from that point. The immediate activities associated with the invasion occurred from February to April 2022, when lines were fluid and Russia's likely overriding military objective was victory through the seizure of Ukraine's political capital, Kyiv. This phase presented many lessons regarding night operations within a fast-paced, maneuver-centric battlespace. Upon its failure to seize Kyiv, Russia shifted to an operational approach centered on seizing territory in Ukraine's southeast and found some success from April through August 2022. This continued until the first Ukrainian counteroffensive, which occurred from August to November 2022, regained portions of lost territory. Following this phase, and up to the present day, both sides have conducted a series of offensive and defensive operations, resulting in greater and greater battlefield stagnation. It is still too early to tell if the attritional warfare seen on the Ukrainian battlefields heralds a lasting change in the character of warfare. However, the lessons gained from this more stag-

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nant mode of conflict offer valuable insights for U.S. Army night operations on par with those obtainable from the war's more dynamic moments.

From February to April 2022, Ukrainian forces effectively employed agile tactics at night to disrupt Russian offensive operations. Mobile units conducted hit-and-run ambushes and raids behind enemy lines, significantly demoralizing Russian troops.[2] This approach to LSCO offers the benefit of reduced visibility, giving small units opportunities to employ infiltration tactics to maneuver without easy detection. Competent Ukrainian night attacks overcame friction by using variety and rapidity to surprise and confuse ineffective Russian forces, decrease morale, and accelerate disintegration.

In November 2023, amidst ongoing defensive operations, Ukrainian forces increased their use of night operations to enhance the effectiveness of their tactical maneuvers. They mainly focused on small tactical gains, often involving nighttime drone strikes. Ukrainian night operations proved effective in critically contested areas by targeting vital operational-level sustainment infrastructure.[3] According to Russian reports, on the night of 23 November, Ukrainian forces conducted a significant drone attack on occupied Crimea. As described by a notable Russian military blogger, Ukrainian forces deployed a total of 13 drones in three separate waves from Kherson Oblast, targeting railway and military infrastructure in the region. Vladimir Saldo, the head of the occupation in Kherson Oblast, stated the Ukrainian air attack was one of the most significant on Crimea since the conflict began.[4] Their use of drones for nighttime targeting challenged Russia's sustainment and seriously reduced its agility, endurance, and ability to extend into the operational depth. This initiative proved effective, as Russian forces could not make operationally significant headway against Ukrainian defenses. This operational strike would have been impossible without first using night tactical maneuvers to enable its launch, and it underscores the potential of night operations to significantly influence the outcome of a conflict.

Grant Hammond summarized Boyd's view on harmony as "the ability to blend one's actions to fit time and circumstance, to co-evolve with the strategic landscape and the tactical realities."[5] Junior leaders must make quick, informed decisions to overcome the dramatic friction and confusion inherent in operating at night. Ukraine's successes are

attributable to competency only gained through consistent small-unit and junior leader tactical night training and shared experiences. This emphasis allowed small, agile lower tactical units to harmonize tactical action within a shared operational approach, outpacing their Russian counterparts and contributing to night battlefield success.[6]

In late March 2022, as the operational environment became clearer, Ukraine forces focused tactical night efforts on gaining terrain critical to bringing their integrated fires complex within range of Russian supply lines. Their maneuver-to-fire operational approach contributed to Ukraine's success in disrupting Russian actions and set the conditions for regaining lost territory.[7] In many cases, Ukraine used night itself to target critical Russian sustainment capabilities through artillery, and later long-range precision fires, maximizing concealment and surprise while exploiting Russian unpreparedness and limiting its operational agility. By striking essential targets such as supply areas, lines of communication, and command-and-control nodes under darkness, Ukrainian forces disrupted Russian agility and extended their operational reach, contributing to a Ukrainian tactical advantage. In response to tactical night operations against its logistics network, Russia withdrew its sustainment nodes to its operational and strategic rear in locations that newly acquired Ukrainian weapons, such as the Army Tactical Missile System (ATACMS) and F-16s, could target.[8] Repositioning sustainment had the added effect of extending Russia's lines of communication, decreasing its operational reach, and increasing the friction it faces. Ukraine showed operational harmony by following a maneuver-to-fire approach and generating and adhering to targeting priorities.

Russia struggled at night as its soldiers were not adequately equipped or trained. Their lack of night-vision devices and a pre-invasion focus on set-piece daytime training designed to impress senior officers made commanders uncomfortable employing their forces at night, significantly constraining tactical options. Conversely, by April 2022 the quality and quantity of night-vision devices on the Ukrainian side and advanced weaponry, such as anti-tank guided missiles (ATGMs), allowed them to maneuver at night to gain localized relative advantages over Russian forces.[9] Again, tactical night maneuvers and the creation of relative advantages enabled Ukrainians to deliver operationally significant indirect fire effects on Russian forces.

As Winter 2023 approached, however, Russia improved its employment of advanced night capabilities to maneuver into positions of tactical advantage and launch substantial strikes. In mid-November 2023, Russia used rapidity by directing several waves of drone attacks over consecutive nights against key Ukrainian areas and infrastructure to negate Ukraine's air defense systems. While Ukrainian systems were successful in destroying many of the drones, Russian use of night to provide concealment and their ability to mass their drones constrained Ukrainian responses. The result was significant; a single wave of attacks caused power outages in 400 towns and villages.[10] At little cost to Russian forces, this initiative significantly disrupted civilian infrastructure, severely increasing the logistical and operational friction Ukraine faced. This single attack highlights the effectiveness of nighttime drone operations to degrade the efficiency of counter-drone sensors and effectors while generating a sense of confusion, disorder, and chaos on the target.

The proliferation of drones at tactical echelons during the Russian-Ukrainian War has provided significant lessons to the U.S. Army. Both sides in the war use drones for nearly every aspect of night operations, but with increased use comes increased system losses. In the first half of 2023, Ukraine experienced losses of 5,000 to 10,000 drones a month due to simple and proliferated electronic warfare (EW) countermeasures such as radio jamming and Global Positioning System (GPS) decoys.[11] Effective countermeasures decreased the range of all types of drones, limiting their usefulness in looking into deep areas. In April 2023, a Ukrainian drone operator told *The Guardian* newspaper that in the south during the previous autumn, it was possible to cross six kilometers beyond the frontline. By December 2022, that number had dropped to three kilometers, and during Spring 2023 fighting in Bakhmut, EW systems were limiting them to one kilometer, which soon dropped to 500 meters.[12]

Ever-decreasing ranges suggest the increasing strength of defensive EW capabilities is making drone use obsolete. However, the correct lesson to draw is that combatants must push down massed drone use to the lowest possible tactical echelon to take advantage of

Agents from Ukraine's SBU intelligence force conduct operations with a drone. (Photo courtesy of Lycksele-Nord via Wikimedia Commons)

A Ranger fire team assigned to the 75th Ranger Regiment provides suppressive fire during training at Fort Johnson, LA. (Photo by SGT Paul Won)

limited ranges. These echelons must have large numbers of cheap and attritable drones to overwhelm defenses with mass. Ukrainian fighters understand the benefits of massing more affordable drones at lower tactical levels over more expensive drones like Gray Eagles. One Ukrainian air force officer told U.S. lawmakers and officials in June 2022, "My opinion is knowing the Russian air defense right now, and knowing that range of the missiles that Gray Eagle, I'll give you a 90 percent chance that it will be shot down."[13]

Changing the U.S. Army's Approaches

The Russian-Ukrainian War has underscored a critical lesson for the U.S. Army: Night operations during LSCO will be difficult, but they are crucial for success. Consequently, the U.S. Army must focus on developing training approaches specifically addressing and incorporating the unique characteristics of fighting at night. Training Circular (TC) 3-20.11, *Training to Proficiency Maneuver Company and Troop*, lays out a generic training pathway. It stipulates Table VI, the combined arms live-fire exercise (CALFEX), is the culminating event.[14] The culmination of what is often over a year of training, the CALFEX is to a company or troop what a combat training center (CTC) rotation is to a brigade. Therefore, it only makes sense when designing a small unit training progression to mirror what the CALFEX entails as closely as possible and, most importantly, the realistic operational conditions playing out in Ukraine.

Commanders consider a maneuver company or troop trained if it completes its CALFEX under the requisite condi-tions. However, when considering how units often execute CALFEXs, it is unreasonable to assume the unit is proficient when conducting night operations. The recommended minimum training pathway in TC 3-20.11 occurs over 13 days. Companies and troops have 10 days if one removes days in which only leadership is present or with optional virtual training. Due to daytime requirements, the two days given to CALFEXs offer minimal benefit to improving night operations proficiency. Consequently, this leaves eight days devoted to training with the goal of "owning the night" at lower tactical echelons. However, this time allocation overlooks important aspects like rest plans, patrol base activities, and the likelihood that most training, including rehearsals and troop leading procedures, occurs during the daytime, negatively affecting the feasibility of units gaining nighttime expertise.

In an attempt to maximize training value during CALFEXs, brigade commanders, as the primary trainers, often direct units to conduct the greatest number of possible iterations and increase throughput, an approach sometimes called "reps and sets." The thinking is simple: The more a unit performs a task, the more competent it will be. This guidance forces planners to begin the unit as far forward as possible, often with support-by-fire elements already in place and reconnaissance notionally completed. This forward-leaning starting position severely limits maneuver opportunities under live-fire conditions at night. As CALFEXs are a company or troop's only chance at a live-fire proficiency gate during a training progression, they lose an opportunity to build confidence and calmness at night with sensors active and munitions flying.

Still, maneuver companies and troops do not simply dive into CALFEX execution. TC 3-20.11 outlines a "crawl, walk, run" training pathway to build proficiency towards a successful CALFEX event. The first events on the training progressions are Table I - Tactical Exercise Without Troops (TEWT) and Table II - Situational Training Exercise-Virtual Training Environment (STX-V). Both events could enable competency at night operations but have fundamental limitations hampering their efficacy. First, TC 3-20.11 only allocates one day to each event. While this allows for one period of darkness for leadership to progress through a scenario, units rarely take advantage of this opportunity. Instead, a walk-through/talk-through is often conducted simultaneously with multiple lower tactical-level units. Second, as these events focus on leadership only, training audiences do not gain experience maneuvering their formations at night.

The next events on the TC 3-20.11 progression — and the most effective for enhancing skill in night operations — are Table III - Situational Training Exercises (STXs) and Table IV - Field Training Exercises (FTXs). The training circular stipulates a minimum of four days for STXs and five days for FTXs. This time allocation provides three and four nights, respectively, to train on night operations. Nighttime STXs and FTXs present unique challenges for maneuver companies and troops as they might meet various difficulties, such as getting lost, unintentionally entering surface danger zones, establishing positions in the wrong locations, or committing other mistakes. Embracing failure is a critical part of learning. Exercises should be deliberately designed to incorporate such challenges, fostering improvement through practical experience. It is crucial to incorporate realistic scenarios that challenge Soldiers' skills and abilities, such as simulating the effects of EW on communications and position, navigation, and timing devices or creating scenarios requiring Soldiers to navigate unfamiliar terrain in darkness.

Similar to CALFEXs, STXs and FTXs present an opportunity for maneuver companies and troops to practice night operations, but there is a risk of misuse by focusing too narrowly on short lanes and static objectives. Instead, training environments, particularly at lower tactical levels, should strive to replicate the complexity, fear-inducing elements, and exhausting nature of night operations as seen on Ukrainian battlefields. Training audiences should have a sense of a dynamic operating environment by being actively targeted by their adversary both during their approach and while conducting actions on the objective. In response, they should implement passive and active counter-sensing and protection measures at all stages of STXs and FTXs. This approach is essential to avoiding the overly simplistic and brief training scenarios commonly practiced. At all portions of the events and to the greatest extent possible, leaders should include training aids, devices, simulators, and simulations (TADSS) to familiarize themselves with multidomain capabilities and impose a more dynamic and less restrictive training environment than the more structured and limited CALFEX.

The only opportunity for a maneuver company or troop to build proficiency at night operations under live-fire conditions before a CALFEX is its Table V - Fire Coordination Exercise (FCX). However, this event is ill-suited to create expertise in night operations for several reasons. First, it often falls prey to the same "reps and sets" mentality as CALFEXs. Bringing together the multitude of multidomain capabilities and integrated warfighting functions is an enormous resource strain on the brigade responsible for planning and coordinating the event. This strain results in the familiar desire to maximize throughput by beginning the exercise with the executing unit as far forward as possible. Secondly, an FCX is leadership training, and subordinate Soldiers do not attend except for what is needed to replicate critical enabling elements. These Soldiers do not benefit from conducting an FCX at night, nor does the unit's leadership benefit from maneuvering its formation at night. Lastly, although the training circular authorizes live munitions, it also allows for sub-caliber ammunition and limits the number of authorized 9mm and 5.56mm rounds. In total, these considerations result in an unrealistically calm night environment, dissimilar from those faced by Ukrainians and Russians and unlikely to familiarize or normalize night operations' actual conditions.

From a training perspective, there are three approaches the U.S. Army should take to maximize the ability of its lower tactical-level units to perform night operations. First, this article dealt primarily with a maneuver company or troop training progression, but units must also consider their platoons, squads, and individual training opportunities. During LSCO, the company or troop commander will achieve the necessary breakthroughs for higher echelons to employ their integrated fires complex to produce operationally significant outcomes. Therefore, there is no substitute for training companies and troops in their entirety for night operations. Integrating and synchronizing capabilities while maneuvering a unit is no easy task, and it is even more complicated at night. Units below company and troop need to use training opportunities beyond those in TC 3-20.11. A prime example of such an opportunity is night land navigation training, ideally conducted with weight. This kind of training is not only readily accessible but also easy to resource, making it an excellent method for units looking to familiarize themselves with the challenges of nighttime operations.

Second, STXs and FTXs must revolve around night training opportunities. The preponderance of training during these events should occur at night, with rest cycles and other work priorities relegated to daylight periods. The scenarios in STXs should be sufficiently long to enable extended movement under night-vision devices while carrying weight. This design might mean prioritizing these aspects over the frequency of repetitions and actions on the objective. Similarly, units should structure FTXs to allow for the possibility of failure, such as getting lost, even if it means reducing the number of "reps and sets." These approaches emphasize realistic challenges over quantity of practice.

Third, the U.S. Army should reevaluate CALFEX designs. Just as basic rifle marksmanship has introduced some

combat-like conditions and stress shoots produce more dividends than static shoots, CALFEXs should include characteristics from LSCO conditions as seen in the Russian-Ukrainian War. Units should extend lanes to allow for longer movements before actions on the objective. Unique maneuver methods, such as airborne or rotary-wing insertions, are worthwhile inclusions, if even only during final live iterations or dry or blank iterations. Furthermore, additions such as enemy and friendly multidomain effects, layered defensive measures (including trenches, the purposeful use of drones, and restricted sustainment) dramatically improve CALFEXs, increase training value, and enrich the experience.

From a materiel perspective, the critical role of drones at lower tactical echelons in the Russian-Ukrainian War and demonstrated improvements in EW capabilities give three lessons for the U.S. Army as it changes its approach to equipping maneuver companies and troops. First, the U.S. Army must provide its lower tactical units with small, inexpensive, and multi-functional drones to allow them to impose a variety of tactical dilemmas on the enemy. Given the experiences of Ukrainians on the front, these echelons require more than 100 drones to sustain three days of large-scale combat operations. Therefore, the U.S. Army must treat these drones as expendable property or Class V rather than the non-expendable systems currently on modified tables of organization and equipment (MTOEs).[15] To enable company and troop commanders to employ a high number of drones, they must be provided with dedicated personnel. These Soldiers could take the form of a separate section at the company or troop level or as a wholesale replacement of motor sections with drone sections. While a significant organizational change, Ukraine and Russia have shown lower tactical echelons benefit far more with agilely employed and dedicated drone systems than organic small munition indirect fire weapons systems.

Second, drone use will increase and become more cost-effective, offering substantial returns on investment by providing early warnings and tactical and operational relative advantages. Currently, many U.S. military leaders' experiences and viewpoints force them into a risk-averse mindset that views drones as sensitive equipment that must never be lost and, if lost, must be retrieved at nearly any cost. Stories about companies or troops spending days searching for downed Ravens in Iraq or Afghanistan are not uncommon. However, accepting the loss of a relatively inexpensive drone over risking the lives of Soldiers is both a morally and economically prudent decision. Moreover, if a company or troop employs drones for precision strikes with smaller munitions, battalions and brigades can reserve more powerful and expensive indirect fire assets for higher-priority targets. To normalize this approach, the U.S. Army must adopt a mindset that considers drones expendable assets. This shift can be helped through changes in training and materiel approaches. Training events, such as those outlined in TC 3-20.11, should

Soldiers assigned to C Company, 2nd Battalion, 27th Infantry Regiment, search for opposing forces during a simulated assault as part of the Joint Pacific Multinational Readiness Center-Exportable exercise at Fort Magsaysay, Philippines, on 9 June 2024. (Photo by SSG Thomas Moeger)

Paratroopers assigned to 2nd Battalion, 505th Parachute Infantry Regiment conduct a live-fire exercise as a part of Panther Avalanche at Fort Liberty, NC, on 28 July 2024. (Photo by PFC Matthew Keegan)

integrate drone operations and emphasize their tactical significance. Materially, the Army should classify low-cost drones as expendable, normalizing their expenditure and loss during training and combat.

Third, the U.S. Army must consider how EW equipment fielding would benefit maneuver companies and troops. As littoral airspace becomes congested with drones, lower tactical units must be able to integrate their offensive and defensive capabilities through an efficient interplay of massed drones and EW countermeasures. This ability also means companies and troops must train against mass drone attacks during their training progression. As units can keep these opposing force (OPFOR) drones unarmed, they can introduce this emerging threat at all training gates well before CALFEXs, allowing lower tactical maneuver units to develop their tactics, techniques, and procedures. Further, companies and troops must also be able to control organic counter-drone capabilities with dedicated personnel. A dedicated drone section enables this requirement.

Night operations significantly compound the challenges faced by small units, turning simple tactical actions into complex endeavors. They highlight the importance of John Boyd's four qualities necessary to overcome and impose friction: initiative, harmony, variety, and rapidity. Drawing from Ukrainian and Russian experiences in LSCO, the U.S. Army can enhance its effectiveness and understanding of night operations. To overcome inherent friction, Soldiers, junior leaders, and maneuver companies and troops need thorough and challenging training and relevant emerging capabilities. The U.S. Army can do this by adapting its small

unit training progression and fielding technological solutions such as massed drones to companies and troops. This approach will allow the future force to overcome friction, impose it on the enemy, and "own the night."

Notes

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