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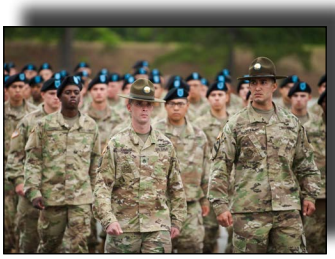

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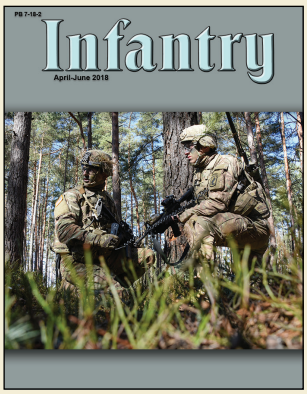
Infantry Magazine is always in need of articles for publication. Topics for articles can include information on organization, weapons, equipment, and experiences while deployed. We can also use relevant historical articles with emphasis on the lessons we can learn from the past. For more information or to submit an article, call (706) 545-2350 or email us at usarmy.benning.tradoc.mbx.infantry-magazine@mail.mil.

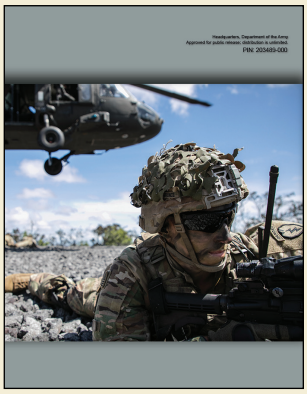


ON THE COVER:

U.S. Army Paratroopers with the 2nd Battalion, 503rd Infantry Regiment, 173rd Airborne Brigade, communicate via radio during a platoon live-fire exercise at the 7th Army Training Command's Grafenwoehr Training Area in Germany on 21 March 2018. (Photo by Markus Rauchenberger)

BACK COVER:

A Soldier with the 2nd Infantry Brigade Combat Team, 25th Infantry Division provides security during an air assault movement s part of a combined arms live-fire exercise (CALFEX) at Pohakuloa Training Area, HI, on 15 May 2018. (Photo by 1LT Ryan DeBooy)



Commandant's Note

Enhanced Lethality: Today's Initiatives, Tomorrow's Success

The last Commandant's Note highlighted marksmanship — one of the Army's top six modernization priorities — as the key to lethality. Soldier fitness, mission-oriented training, mobility, survivability, and the ability to counter constantly changing threats all contribute to achieving dominant and sustained lethality as well. We are a nation at war, and will remain so for the foreseeable future. The enemies we face will range from marginally viable terrorist organizations to near-peer adversaries. This array of enemies can count on technological, logistical, and tactical support from states whose industrial base, power projection potential, and long-term goals compete with our own. These aggressor states will continue to use today's conflicts as the testbed for their own weapons systems, but our technological edge and industrial overmatch will ensure that we remain the decisive military force against all adversaries.

A key element of achieving and maintaining this predominance is the infantry Soldier, and we are doing that by making sure that we select, train, and sustain the right people. We need intelligent Soldiers in top physical condition who can deploy against a near-peer enemy, strike hard, win, and return home, and their training hinges upon mastery of the infantry basics, which can best be taught at Fort Benning. With that in mind, in July we will run a pilot 21-week One Station Unit Training (OSUT) program aimed at producing a graduated Soldier who can report in to his unit ready to go to war, win, and survive. We cannot expect gaining units to absorb partially trained Soldiers and remediate deficiencies when they are trying to assimilate the new arrivals into the battle rhythm of the unit. These Soldiers must also be prepared to fight and win in multi-domain environments such as urban, subterranean, cyber, and even space. The urban fight has long proven to be among the most protracted and costly in terms of casualties and materiel demands, and the Army science and technology (S&T) community is employing geospatial research to generate multidimensional 3-D maps of an urban environment, something that is still in its early stages, but which has potential to enhance situational awareness, navigation, and tactical advantages as it matures. This will demand greater awareness as we commit to further urban-oriented priorities as envisioned by GEN Mark Milley, Army Chief of Staff, who also shares our concern for the civilian casualties commensurate with dislodging a determined enemy in an urban environment.

Given the proliferation of urban areas across the globe and the demonstrated preference of adversaries such as ISIS for the urban fight, it is hardly surprising that our enemies will prefer to draw us into an urban domain where they can fight from prepared positions, draw support — willingly or unwillingly — from a refugee population, subject civilians to friendly and hostile weapons effects, and exploit media to support their assertions. For U.S. forces deployed to Cold-War Germany, where noncombatant evacuation and population movement plans were at least considered — but never executed — as civil affairs contingencies, these considerations were at least possible given the existing German infrastructure and willingness of authorities to discuss and plan for comprehensive host nation support, but the megacities in which we could find ourselves in the Middle and Far East have little or no infrastructure to support such operations.

The future battlefield will likely include some of the most intense, protracted urban combat seen since WWII in Aachen, Germany, in the Philippines, in Mosul, or during the German fight for Stalingrad or even the Soviet attack to capture Berlin. Then, as now, victory could only be earned by well-trained, disciplined, capably led Soldiers who had mastered the basics of their profession and who possessed the marksmanship skills to kill the enemy. They were able to fight outnumbered if necessary against a near-peer adversary in an austere environment in spite of marginal or non-existent communications, and they did it time and time again.

We will remain a leader among the family of nations because of the American Soldier. His ability — and eagerness — to close with and defeat the enemy by close combat, fire, and maneuver will continue to make the decisive difference. I am proud to serve with a brotherhood of professionals, warriors whose sense of duty and unsurpassed expertise have inspired my successors as they do me. We need your input as we strive to send the Infantry message to the force, so please continue to write the articles and the letters that help us to be a better professional bulletin for the combined arms team.

One force, one fight! Follow me!

Army to Extend Infantry OSUT to Bolster Soldier Lethality

DEVON L. SUITS

In 2019, the Army will extend One Station Unit Training (OSUT) for Infantry Soldiers from 14 weeks to 22 weeks. Changes to the program are meant to increase Soldier readiness, making them more lethal and proficient before they depart for their first duty assignment, according to COL Townley R. Hedrick, U.S. Army Infantry School commandant.

The new OSUT program will include expanded weapons training, increased vehicle-platform familiarization, extensive combatives training, and a 40-hour combat lifesaver certification course, said Hedrick.

Further, the change will include increased time in the field during both day and night operations and include an increased emphasis on drill and ceremony maneuvers.

A Needed Change

For the past 44 years, Infantry Soldiers were trained in a 14-week program of instruction. Ten weeks were allocated to basic military training, and an additional four were reserved for training Infantry-specific skills, Hedrick said. The Infantry career field makes up approximately 15 to 17 percent of the total force.

Discussions about changing OSUT began shortly after Secretary of Defense James N. Mattis identified the need to re-establish readiness and build a more lethal Infantry force, Hedrick said. And the Army Vision, recently published by Secretary of the Army Mark T. Esper and Chief of Staff of the Army GEN Mark A. Milley, reinforces the defense secretary's priority.

"Extending OSUT is about increasing our readiness and preparing for the future," SMA Daniel A. Dailey said. "This pilot program is the first step toward achieving our vision of the Army of 2028. With more time to train on critical Infantry tasks, we'll achieve greater lethality."

In response to the increased focus on readiness, specifically within the Infantry force, leadership within the U.S. Army Infantry School approached the 198th Infantry Brigade, which trains all Army Infantry forces, and asked what could be done to make better Infantry Soldiers.

"We asked them if they had a longer training pipeline, what could they do with it," Hedrick said.

In turn, the U.S. Army Maneuver Center of Excellence and the Infantry School started a combined effort with the 198th Infantry Brigade and the U.S. Army Training and Doctrine Command (TRADOC) to develop an improved 21-week OSUT program. After consulting with the Army Chief of Staff, however, the combined OSUT team was directed to extend the new program to 22 weeks and include combat water survival training, he said.

Soldiers in training with Bravo Company, 1st Battalion, 50th Infantry Regiment, road march to a land navigation training site on 13 February 2017 at Fort Benning, GA.

Photos by Markeith Horace

The preliminary 21-week OSUT pilot program began this July with a graduation date scheduled for December, the commandant added. The new 22-week OSUT should begin in 2019, sometime between July and October. With the July pilot program, the Infantry School has already identified what new Soldiers will be part of the improved training, Hedrick said.

"U.S. Army Recruiting Command has already gone back to those identified personnel, regenerated their contract, and let them know that they would be part of the first classes to execute a new and improved training program," Hedrick said.

The New Program

Under the new OSUT program, Soldiers will get more training with their M4 rifle and increased hands-on experience with the M240 machine gun and the M249 squad automatic weapon.

"So across all the Infantry weapons, they will get more bullets," Hedrick said. "And they will also shoot more at night, rather than just doing a day familiarization fire."

In addition to increased weapons training, Soldiers will receive more field training experience, including tactical training repetitions that focus more on squad formations during day and night operations, he said. The goal is to help trainees understand where they fall within a fire team or rifle squad and make them more proficient while operating in the field.

"We looked at land navigation and individual Soldier skills," Hedrick said. "Under the new course, a Soldier will do an individual day and night land navigation course on their own. They will also do a basic combative certification. That improves the mental and physical toughness of Soldiers coming through the Infantry OSUT."

Additionally, the Infantry School has added six days of vehicle platform training to the new program. Under the 14-week program, Soldiers only received one day of training with their assigned vehicle. During the new course, Soldiers assigned to a Stryker or Bradley unit will learn how to drive and perform maintenance on their assigned vehicle. Furthermore, a more significant emphasis on drill and ceremony has been built into the new curriculum.

"It is all about conditioning, following commands, and working as a unit, so you will see an increasing level of discipline through drill and ceremony," the commandant said. "We think this gets us to the objective of a more expert and proficient Soldier."

Changes to the program create an extended and more gradual training process to help decrease injuries caused by lack of nutrition or poor conditioning, Hedrick said.

"We've developed a set of metrics with the U.S. Army Research Institute for Behavioral and Social Science Solutions to try and evaluate how the Soldiers are doing during the 22-week pilot program versus the 14-week program," Hedrick said. "We've got an evaluation plan to try and look at ourselves and see if the product coming out has an improved proficiency — like we think it will."

Soldiers in training with Bravo Company, 1-50th IN, complete a land navigation exercise on 13 February 2017 at Fort Benning.

Manning and Future OSUT Changes

With an increased time of training, the Infantry School must expand from five to eight battalions to ensure the same annual throughput of approximately 17,000 well-trained Soldiers. Fortunately, resources and facilities are available at Fort Benning to support the new program, Hedrick said.

Additionally, the Infantry School has been working with TRADOC to ensure they have enough drill sergeants in place to meet the 2019 launch date for the new 22-week OSUT.

Under the current 14-week program, three drill sergeants are responsible for training a platoon of 60 Soldiers. For the 22-week program, the Infantry School is looking to augment OSUT companies with six additional Infantry instructors.

Overall, the additional instructors provide a better student-to-instructor ratio during certain aspects of the course, the commandant said.

At the conclusion of the pilot, the OSUT team will review the results and determine what parts of the program need to be re-sequenced. The pilot will also be used to determine the list of tasks assigned to each instructor, Hedrick said. In addition to the changes to the Infantry School's curriculum, the Army is looking at extending other OSUT programs. Currently, the U.S. Army Armor School and U.S. Army Engineer School are performing internal analyses of their curricula to determine what resources will be needed to extend their own programs.

"Extending Infantry OSUT will allow us to allocate more time to honing the necessary skills to provide greater capability to our commanders," Dailey said.

With our first major change to Infantry training in 40 years, he said, we are investing in future Army readiness, which will ensure we are prepared to deploy, fight, and win our Nation's wars when called upon to do so.

(Devon L. Suits writes for the Army News Service.)

Army to Field SDM-R in September

DEVON L. SUITS

The new Squad Designated Marksman Rifle (SDM-R) is scheduled to be fielded at the brigade level starting in September 2018, according to the Program Executive Office (PEO) Soldier.

The new SDM-R is based on the Heckler and Koch G28E-110 Compact Semi-Automatic Sniper System (CSASS) and will provide infantry, scout, and engineer squads the capability to engage with accurate rifle fire at longer ranges, said CPT Weston Goodrich, assistant program manager for Soldier Weapons, PEO Soldier.

The SDM-R improves lethality by increasing the effective range a force can engage with an enemy.

"The Army's current rifle technology is most effective below the 300-meter range; however, Soldiers are fully capable of fighting beyond that threshold," Goodrich said. Comparatively, snipers are typically used at 600 meters and beyond.

"The new rifle addresses the 300 to 600 meters range gap outlined in the 2015 U.S. Army Small Arms Capabilities-Based Assessment," Goodrich said.

"The Army is working to equip each squad with a predetermined amount of marksman rifles," he added. The rifle is capable of firing either M80A1 Enhanced Performance Rounds or XM1158 Advanced Armor Piercing Rounds.

The new rifle will be equipped with a different buttstock and barrel twist than the CSASS model and carries a base weight of about 9.9 pounds. The rifle will also be outfitted with the SIG Tango 6 variable 1x6 power scope.

In addition to the new squad rifle, the CSASS is slated to undergo production qualification testing and should be approved for limited user testing sometime in early 2019.

"The CSASS is smaller, lighter, and more ergonomic, as the majority of the changes were requested by the Soldiers themselves," said Victor Yarosh, who works on the program at Soldier Weapons. "The rifle is easier to shoot and has less recoil, all while shooting the same round as the M110. [Additionally,] the CSASS has increased accuracy, which equates to higher hit percentages at longer ranges."

As a replacement for the M110 — which is a longer, heavier, less ergonomic semi-automatic sniper rifle — the CSASS was developed to support snipers as they execute a broad spectrum of missions.

"An Army sniper is a kind of force enhancer because they execute a number of missions," Yarosh said. "They provide a surveillance mission where they use their high-powered scope to observe activity downrange. A sniper can pin down an enemy force through sniper concealment and engagement to provide the right shots at the right time. They can also prevent an enemy force from moving out of cover, which allows our maneuver forces to exploit the enemy by moving into a better position and engage."

The CSASS will feature a new suppressor and muzzle brake that allows for rapid successive follow-on shots with a reduced chance of detection. Furthermore, the new rifle will have higher power daytime optics, which will enhance a sniper's surveillance capability and positive hostile identification at longer ranges.

The Army is also working on a replacement for conventional brass ammunition casings to help reduce the load on personnel and weapon platforms and improve mobility, according to Todd Townsend with PEO Ammunition.

"We're currently working on drop-in replacement ammunition for the existing 7.62 family of weapons optimizing for the M240 family of machine guns," Townsend said. "Ounces are pounds. So if we can take a pound out of a Soldier's weight load, a Soldier could be more effective by carrying other important things."

Currently, the program is evaluating three casing concepts and comparing them to the weight of brass ammunition. The first one is a stainless steel metal injection molded case. The second is a brass case with a polymer body. And the last is stainless steel with a polymer body, Townsend said.

(Devon L. Suits writes for the Army News Service.)

The new Squad Designated Marksman Rifle is scheduled to be fielded at the brigade level starting in September 2018. The new SDM-R is based on the Heckler and Koch G28E-110 Compact Semi-Automatic Sniper System, or CSASS, and will provide infantry, scout, and engineer squads the capability to engage with accurate rifle fire at longer ranges.

Courtesy photo

New SMET Will Take Load Off Infantry Soldiers

C. TODD LOPEZ

Infantry Soldiers often carry an array of supplies and gear that together can weigh anywhere from 60 to 120 pounds, said CPT Erika Hanson, the assistant product manager for the Squad Multipurpose Equipment Transport (SMET).

But the SMET vehicle, which the Army expects to field in just under three years, "is designed to take the load off the Soldier," Hanson said. "Our directed requirement is to carry 1,000 pounds of the Soldier load."

That 1,000 pounds is not just for one Soldier, of course, but for an entire Infantry squad — typically about nine Soldiers.

The contenders for the Army's SMET program are four small vehicles, each designed to follow along behind a squad of Infantry Soldiers and carry most or all their gear for them, so they can move to where they need to be without being exhausted upon arrival.

"I'm not an Infantry Soldier," Hanson said. "But I've carried a rucksack — and I can tell you I can move a lot faster without a rucksack on my back. Not having to carry this load will make the Soldier more mobile and more lethal in a deployed environment."

U.S. Army photos

The RS2-H1 system from Howe and Howe Technologies, top left; the Hunter Wolf system from HDT Global, top right; the MRZR-X system from Polaris Industries Inc., Applied Research Associates Inc., and Neya Systems LLC, bottom left; and the Multi-Utility Tactical Transport, or MUTT, from General Dynamics Land Systems, bottom right, are all vehicles the Army is considering to fill the role of the Squad Multipurpose Equipment Transport.

The four contender vehicles are the MRZR-X system from Polaris Industries Inc., Applied Research Associates Inc. and Neya Systems LLC; the Multi-Utility Tactical Transport from General Dynamics Land Systems; the Hunter Wolf from HDT Global; and the RS2-H1 system from Howe and Howe Technologies. Each was loaded down with gear representative of what they would be expected to carry when one of them is actually fielded to the Army.

"Nine ruck sacks, six boxes of MREs, and four water cans," Hanson said. "This is about the equivalent of what a long-range mission for a light Infantry unit would need to carry."

Hanson said that for actual testing and evaluation purposes, the simulated combat load also includes fuel cans and ammo cans as well.

These small vehicles, Hanson said, are expected to follow a squad of Soldiers as they walk to wherever it is they have been directed to go. The requirement for the vehicles is that they be able to travel up to 60 miles over the course of 72 hours, she said.

Three of the vehicles are "pivot steered," Hanson said, to make it easier for them to maneuver in off-road environments, so that they can follow Soldiers even when there isn't a trail.

One of the contenders for SMET has a steering wheel, with both a driver's seat and a passenger seat. So if a Soldier wanted to drive that vehicle, he could, Hanson said. Still, the Army requirement is that the SMET be able to operate unmanned, and all four vehicles provide that unmanned capability.

Read more at: https://www.army.mil/article/206619/new_smet_will_take_the_load_off_infantry_soldiers.

(C. Todd Lopez writes for the Army News Service.)

ARTB Team Wins 2018 BRC

BRYAN GATCHELL

From a field of 51 teams, Team 23 from the Airborne and Ranger Training Brigade (ARTB) won the 2018 Best Ranger Competition (BRC) on 15 April at Fort Benning, GA.

SFC Anthony Allen and SFC Joshua Rolfes completed three days of events that tested their physical endurance, mental agility, and technical and tactical skills from 13-15 April.

The David E. Grange Jr. Best Ranger Competition, organized annually by ARTB, was founded in 1982 to determine the best Ranger in the Ranger Department; it has since expanded to include all Ranger-qualified Soldiers throughout the entire Army and other willing Ranger-qualified service members from sister services.

Competitors were scored on many events, including a buddy run, a body armor run, obstacle courses, weighted carries, a swim, weapon ranges, and more on the first day. After a night of road marching, the teams were cut to 24, and those remaining teams competed in night stakes, the Spartan Run at Dekkar Strip, and in day stakes at Todd Field for the second day of competition.

After the day stakes, the 24 teams were cut down to 16, and those teams were flown by helicopter to Camp Frank D. Merrill near Dahlonega, GA, where the 5th Ranger Training Battalion runs the mountain phase of the Ranger School. There they performed night orienteering, finishing to return by bus to Camp Darby at Fort Benning, where they competed in the Darby Queen obstacle course.

Their final competitive events were a combat water survival assessment at Victory Pond and a final buddy run back to Camp Rogers where the event began.

The other teams that made the top five are:

— Team 32: CPT Matthew Thwaites, 1LT Kendall Ward, 75th Ranger Regiment

— Team 33: 1LT Jeremy Dettmer, CPL Tyler Taormina, 75th Ranger Regiment

— Team 22: SFC Michael Roggero, SSG Michael Browne, ARTB

— Team 41: 1LT Chris Smith, SGT Aditya Singh Sehrawat, 25th Infantry Division

GEN Mark A. Milley, Chief of Staff of the U.S. Army, was part of the official party during the BRC awards ceremony and spoke during the event.

“Every one of these competitors on these 16 teams, every one of the competitors in all 51 teams, every single one of them is a winner,” Milley said during the ceremony, and then turning to the competitors, “You represent all that is good about the American Soldier, about the American citizen, and about our entire country.

Photo by Markeith Horace

The winners of the 2018 Best Ranger Competition, SFC Joshua Rolfes (left) and SFC Anthony Allen of the Airborne and Ranger Training Brigade, pose at the Ranger Monument on 16 April at Fort Benning, GA.

“It’s an incredible test,” continued Milley. “It’s a test of teamwork, and it’s a test of endurance. It’s a test of resilience, and it’s a test of perseverance. It’s a test of all the things you think of when you think of the word ‘Ranger.’”

“They are the 100th of a percent of the top one percent our greatest nation has to offer,” said COL Douglas G. Vincent, ARTB commander, during the awards ceremony. “What a truly inspiring performance by these Rangers from all across the Army and the nation, who had the intestinal fortitude to accept this challenge and compete to be the best Ranger in the world this weekend!”

More photos from the Best Ranger Competition can be viewed at www.fortbenningphotos.com/Infantry-Brigades/Airborne-Ranger-Training-Briga/Ranger-School/Best-Ranger-Competition/2018-Best-Ranger.

(Bryan Gatchell works for the Fort Benning Public Affairs Office.)

Effective OPSYNCs = Enabled Operations at JRTC

MAJ RICHARD E. EATON
MAJ CURTIS J. UNGER

We know it as the operations synchronization meeting or more commonly called the OPSYNC. It is normally the last staff meeting of the day where each brigade staff member and battalion liaison officer (LNO) representing both brigade and its subordinates acknowledges all requisite analysis and coordination from their respective battle rhythm events and properly aligns and resources subordinate units for mission execution without issue. This meeting is where the brigade combat team (BCT) S3 levels the bubbles and slaps the table to solidify the plan for the next 24-96 hours. Does this sound like your BCT? If not, what is your unit missing or failing to do? What must a unit codify in respective standard operating procedures (SOPs) to improve the OPSYNC? Simply put, executing an effective OPSYNC can equate to enabled operations. This article is designed to be "a way" for brigade S3s and staffs to create their OPSYNC in preparation for any Combat Training Center (CTC) rotation.

Trends

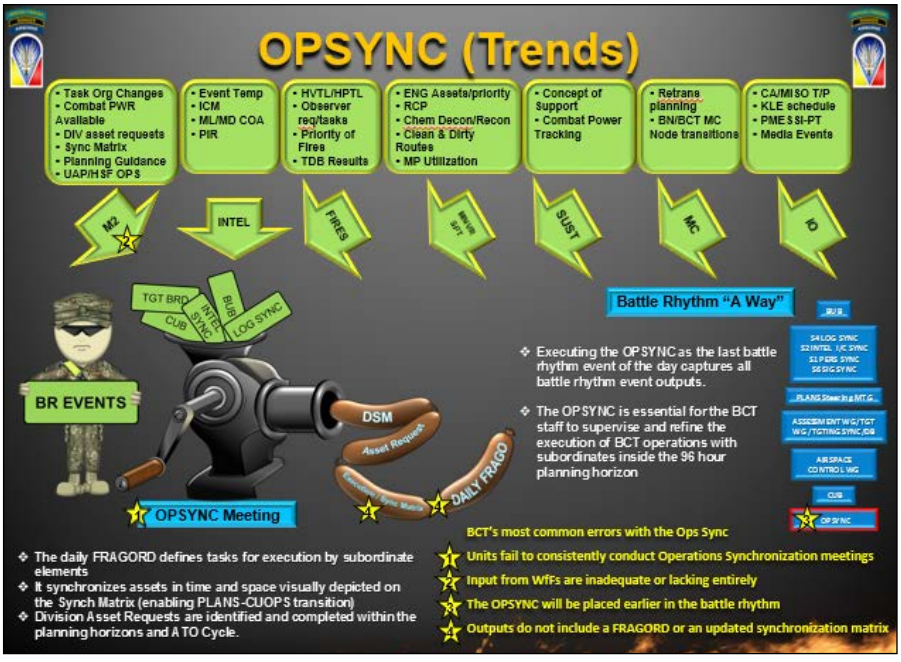
If BCTs treat the OPSYNC as the center of gravity for all battle rhythm outputs, they will increase the percentage of synergy and mission success across their formations. A common trend at the Joint Readiness Training Center (JRTC) at Fort Polk, LA, is that BCTs do not conduct effective OPSYNCs. Effectively led BCT OPSYNCs lead to better enabled battalions and companies/troops/batteries. The first signal or trend is the failure to initiate the battle rhythm event while in the initial staging base (ISB) prior to joint forcible entry (JFE) operations. This sets the stage for building a BCT's momentum and required attention across the formation before commencing force-on-force operations. The second trend is a lack of an agenda and clearly identified participants to conduct the regularly scheduled OPSYNCs. The third and final trend is a failure to clearly define input and outputs of the meeting with respect to both current operations (CUOPs) and future operations (FUOPs). A good way to fix these trends prior to arrival is exercising the meeting at home station during a command post exercise (CPX) and field training exercise (FTX). An additional opportunity is to leverage time spent at the CTC's leader training program (LTP), which is usually conducted four months prior to a rotation, in order to refine SOPs and request feedback from observer-coach-trainer (OCT) counterparts.

Purpose

The OPSYNC process is designed to synchronize subordinate units and attachments and array assets to increase a BCT's ability to close with and destroy the enemy.

The operations synchronization meeting is a key battle rhythm event to ensure that operations remain synchronized in the short-range planning horizons. At the BCT level, the meeting is chaired by the BCT S3 and attended by the separate staff sections and battalion representatives as required; they

Figure 1 — OPSYNC Trends



meet to assess the progress of current operations and review upcoming decision points and critical events. "Members identify changes in the situation requiring adjustments to the current operation order. They then develop directives to synchronize units and warfighting functions in accordance with the commander's intent and guidance. Key outputs from this meeting include changes or recommended changes to the current order resulting in a fragmentary order (FRAGORD)."[1]

Participants and Agenda

The following personnel at a minimum are recommended to be in attendance for each OPSYNC: BCT S3, chief of operations (CHOPS), battle captain, plans officer, battalion LNOs, brigade aviation element (BAE), air liaison officer (ALO), engineer, explosive ordnance disposal (EOD), information collection (IC) manager, brigade fire support officer (FSO), targeting officer, provost marshal office (PMO), S6, public affairs officer (PAO), S7, and S9. The agenda includes but is not limited to:[2]

1. Roll call (BCT S3)
2. Review commander's guidance (BCT S3)
3. Weather update (staff weather officer/S2)
4. Assess last 24 hours, execute next 24 (review), prepare next 48 (validate), plan next 72 (approve), steer the next 96. The below individuals/staff/units brief each category; to stay sequenced, everyone briefs one category in its entirety and upon completion they then transition to the next category (24 hours).
    a. Intelligence (BCT S2)
    b. Movement and maneuver (BCT S3, BAO)
    c. Fires (BCT FSO, targeting officer)
    d. Maneuver support (chief of maneuver support)
    e. Sustainment (BCT S4, S1)
    f. Mission Command (BCT S3, S6)
    g. Information Operations (S9)
    h. Subordinate units
    i. Other staff by exception
5. Recommended changes to the current order
6. Guidance

Inputs and Outputs

Clearly defined inputs and outputs must be known across the warfighting functions to create an effective OPSYNC. The BCT S3 must ensure the format follows an agenda and that outputs from the OPSYNC are distributed to subordinates via a daily FRAGORD which should be published following the meeting to keep both the BCT staff and subordinate units informed with the most current information. If executed properly, units can rely on a system which arrays assets, creates a shared understanding, and ultimately enables subordinate units to a higher degree of mission success.

Warfighting Function Inputs

Intel — Input requirements are an event template, information collection matrix, most likely/most dangerous course of action, and priority information requirements (PIR).

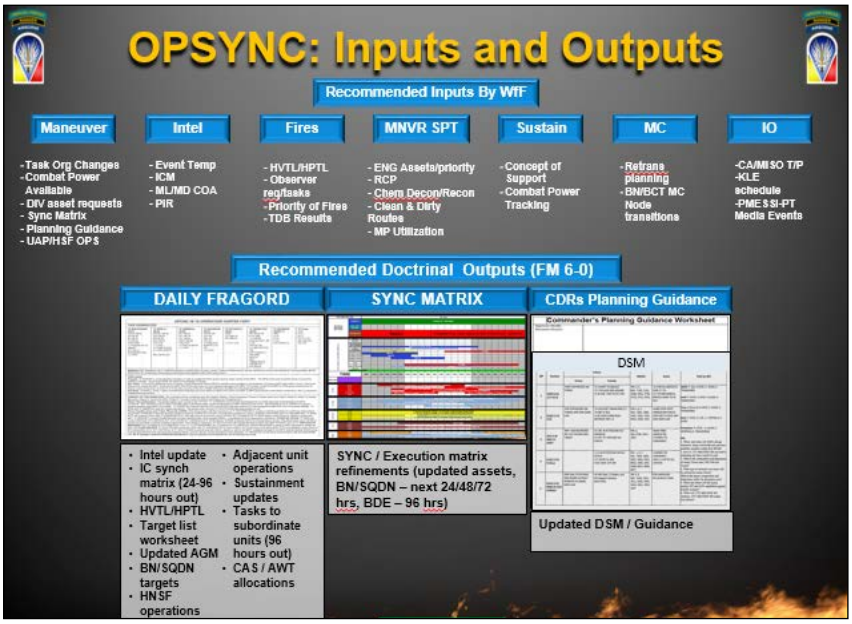


Figure 2 — OPSYNC Inputs and Outputs

Movement and maneuver — Input requirements are task organization changes, combat power, BCT/division asset request available, sync matrix, and planning guidance.

Fires — Input requirements are high-value target list (HVTL) and high-payoff target list (HPTL), observer requirements/tasks, priority of fires, targeting decision board results, and family of scatterable mines (FASCAM) request.

Maneuver support — Input requirements are engineer assets/priority, route clearance package requirements/tasks, chemical decon/recon, clean and dirty routes, route status, and Military Police (MP) utilization.

Sustainment — Input requirements are concept of support, combat power tracking, and transportation capabilities.

Mission command — Input requirements are retrans planning, battalion/BCT mission command post transitions, and lower/upper tactical internet (TI) plans.

Information operations — Input requirements are Civil Affairs (CA)/Military Information Support Operations (MISO) task and purpose, key leader engagement (KLE) schedule, PMESSI-PT (political, military, economic, social, information, infrastructure, physical environment, and time), and media events.

Subordinate units (maneuver battalions, cavalry squadron, field artillery battalion, brigade engineer battalion [BEB], brigade support battalion [BSB], aviation task force) — Input can include mission, intent, and end states; task/purpose for each company and key enabler; refined graphics; demonstrate how operations nest and support the BCT; anticipated friction and subsequent adjustments to the plan for approval; asset confirmation; and any final requests for BCT support.

Warfighting Function Outputs

The daily FRAGORD defines tasks for execution by

subordinate elements; it synchronizes assets in time and space visually depicted on the execution or synchronization matrix (enabling PLANS-CUOPS transition). Battalion and brigade asset requests to division are identified and completed within the planning horizons and air tasking order (ATO) cycle.

*** FRAGORD —** It includes intel update, IC matrix (24-96 hours), sync/execution matrix, close air support (CAS)/air weapons team (AWT) allocations, HVTL/HPTL, target list worksheet (TLWS), updated attack guidance matrix (AGM), battalion/squadron targets, host nation security force operations, adjacent unit operations, sustainment updates, tasks to subordinate units 96 hours out.

*** Execution or synchronization matrix —** Matrix refinements (assets updates, battalion/squadron – next 24/48/72 hours, brigade – 96 hours).

*** Decision support matrix (DSM) —** Updated DSM/commander's guidance.

*** Asset request/allocation —** Confirm CAS apportionment (72-96 hours out), CAS allocations (24-48 hours out), and attack rotary wing allocation (24-96 hours out).

Planning Horizon

OPSYNCs should last less than 60 minutes, and staff members must come prepared. By scheduling this meeting last in the order of battle rhythm events, it allows for all the synchronization meeting outputs throughout the day to create inputs for the meeting. The meeting must be constructed in a manner that affords 10-15 minutes of discussion per 24-hour time period but maintains the flexibility to refine the plan with respect to a reallocation of assets or timing which best supports the operational environment.

*** Assess (Last 24) —** One of the 11 functions of a command post is assessing operations. Assessment involves the determination of progress by comparing forecasted outcomes with actual events that results in a measure of effectiveness for a specific force employment against a desired end state.[3] This sync meeting is for the S2 and the targeting officer to brief the effects of the operations conducted by the brigade and its subordinates.

*** Execute (Review less than 24) —** During this phase of the synchronization process, the battle captain or CHOPs is responsible for briefing this part and covers an in-depth asset allocation utilizing the execution or synchronization matrix and a brief brigade scheme of maneuver. The brigade is in execution mode and covers significant issues that need to be immediately resolved to maintain momentum in the execution of the CUOPs fight. The S2 recaps the enemy situation highlighting any changes to previously briefed situation templates. Maneuver units brief their finalized plans or any changes and what requirements are necessary for their success.

*** Prepare (Validate less than 48 hours) —** This part of the OPSYNC is to validate operations for the next 48 hours and to officially transition the ownership of the fight from FUOPS to CUOPs. Requests for information (RFIs) from the previous OPSYNC are answered; resources are validated; and coordinating instructions are issued with the supporting and supported units. Issues or concerns from subordinate units and staff are also resolved.

*** Plan 72 hours (Approve) —** At this point in the OPSYNC, the brigade staff begins to move from conceptual to detailed planning. During this process, subordinate units acknowledge their tasks and communicate their initial concept of operations; requests for assets are submitted and then allocated by the brigade S3 for the next 72 hours. These requests are submitted that evening to division or higher to be allocated into the air tasking order (ATO) approval process. In this phase of the planning process, battalion commanders can have the most impact into the brigade's plan. Allowing recommendations enables a truly collaborative planning process with the brigade and its subordinates. The lead planner is responsible for ensuring that the plan is synchronized and that an execution or sync matrix is being completed throughout the operations process and then updated during the wargame.

*** Next 96 hours (Steer) —** During this part of the OPSYNC, the focus of the meeting is for the plans officer or the brigade S3 to review the commander's planning guidance and the brigade's proposed/potential missions from higher for the next 96 hours. The plans officer reviews any initial planning concepts or developments with course of action (COA) development or decision. The targeting officer reviews the nominated HPTL/HVTL and targeting priorities for the next 96 hours to include the results of the targeting decision board. The BCT S3 provides direction to the planning staff and informs the battalion S3s or LNOs of their potential unit tasks. Questions are tailored to what is required to continue the planning process for the FUOPs cell.

Conclusion

BCTs must address OPSYNC trends prior to their arrival at a CTC. Learning organizations leverage home-station training opportunities and CTC LTP windows to refine their systems before rotation execution. Brigade S3s own the preparation of the OPSYNC by clearly defining each warfighting function inputs and outputs, but they must also hold each primary staff member and LNO accountable. If BCT staff members are fully engaged in their respective battle rhythm events, then an effective OPSYNC will ensue that enables subordinate battalions with a greater percentage of mission success.

Notes

[1] Army Techniques Publication 6-0.5, *Command Post Organization and Operations* (March 2017), A-9.

[2] Ibid.

[3] Ibid, 1-3.

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(U.S. Army graphic by Peggy Frierson)

Cyberwarfare in the Tactical Battlespace:

An Intelligence Officer's Perspective

CPT STEPHANIE J. SEWARD

The United States recently entered a new era of aggressive competition with an old rival, Russia. Russia previously pioneered the development of ever bigger and better atomic and hydrogen bombs in a race to gain dominance. Both the U.S. and Russia participated in proxy wars worldwide to gain leverage and influence. The emerging competition analogously still involves proxy conflict and incorporates second strike capability. However, the current clash is much colder than the first, lacking many of the kinetic aspects of physical engagements. While the threat of nuclear warfare still persists, the current conflict focuses on the technology that now permeates every aspect of our lives. The U.S. is involved in a new era of cyberwarfare conducted at a national level. During the Cold War, the U.S. used its economic and military prowess to overpower the Soviet Union. Throughout the current clash, military might is as important as ever. As such, the U.S. Army must arm itself to overcome cyber threats from the strategic to the tactical level. In this competition, the Army must synergistically integrate cyber awareness, capability, and capacity to the pinnacle of tactical operations.

Russia's recent actions in Georgia and Ukraine illuminate Russia's cyber capabilities and expose its motives. Both Georgia and Ukraine are satellite nations with strong ties to Russia socially, ethnically, and diplomatically. Before Russia's kinetic engagements, each nation moved toward the protection of the West to align with NATO ideals, policies, and economic benefits. As a result, Russia and associated non-state actors, conducted cyber activities to influence these two nations. Ultimately, Russia conducted kinetic operations against both nations. However, the initial stages of Russia's invasions used a relatively new form of attack: cyberwarfare integrated with information warfare (INFOWAR).

Background: Cyber Component of INFOWAR

U.S. Army doctrine defines INFOWAR as "specifically planned and integrated actions taken to achieve an information advantage at critical points and times. The goal of INFOWAR is to influence an enemy's decision making through his collected and available information, information systems, and information-based processes, while retaining the... ability to employ the same."[1] Russia's conception of INFOWAR is broad

reaching. Russia seeks to "control information in whatever form it takes..." through subversive means.[2]

Russia does not merely engage in INFOWAR in the cyber theater. Rather, Russia seeks to control public opinion and attitudes towards its actions during peaceful operations, both within and outside of the cyber realm. In fact, Russia's INFOWAR philosophy indivisibly harmonizes Russia's cyber and INFOWAR efforts with kinetic operations. MG Stephen Fogarty, former head of the Cyber Center of Excellence at Fort Gordon, GA, emphasizes, "It's not just cyber, it's not just electronic warfare, it's not just intelligence, but it's really effective integration of all these capabilities with kinetic measures to actually create the effect that their commanders [want] to achieve."[3] In a time of conflict, Russia will escalate its INFOWAR operations in all mediums to destabilize the affected populace and target key politicians, critical infrastructure, and even individual soldiers.[4]

Likewise, Russia uses non-attributable hacking as a primary INFOWAR weapon. For instance, Georgian technicians could not conclusively prove that Russia was behind the hacks initiated before its invasion of Georgia in 2008. In response, Georgian National Security Council Chief Eka Tkeshlashvili stated, "There's plenty of evidence that the attacks were directly organized by the government in Russia," when referencing how the attacks coordinated with military action.[5] Regardless of the strong evidence for Russia's involvement in the cyberattacks, even Tkeshlashvili recognized the predicament non-attributional hacking had created. "I'm not saying it's enough for a criminal court, to prove a case beyond a reasonable doubt," she said.[6] When engaging in network attacks, hackers can easily hide their identities in numerous ways. A skilled hacker can perform an attack through specific means that render attribution attempts futile; the hacker can also frame other hackers or nations.[7] However, attribution, or lack thereof, does not directly affect actions at the tactical level. Russia demonstrated in Georgia that, regardless of the source, hackers coordinated attacks with Russian military action.[8] Correlative activity matters to the military at the tactical level while attribution matters to strategic and national players. Thus, analysis here focuses on how Russia's conceptual and doctrinal cyber integration evolved through escalating attacks on Georgia and Ukraine.

Cyberattacks as Indicators of Kinetic Action in an Integrated Attack

Initial cyber operations in Georgia focused on discrediting the government and validating Russia's actions. Before Russia implemented any blockades or dropped any bombs, cyber actors targeted news and government websites that spread information for the area that Russia would later inundate with kinetic action. Hackers specifically exploited websites designed to protect civilians and spread information.[9]

Reflecting the tactics and strategy used in the conflict, Training Circular (TC) 7-100, *Hybrid Threat*, provides commanders and intelligence leaders with a framework for understanding the Russian adversary. TC 7-100 illustrates tactics a hybrid threat (HT), like the Russians, use when influencing the battlespace. The Army's shared understanding of threat operations detailed in the TC illustrates the predictability these early cyberattacks provided for kinetic operations. In Georgia specifically, Russia's tactics reflected the HT's disruption zone operations as outlined in TC 7-100.

Russian hackers implemented cyber efforts in Georgia primarily during the disruption zone effort. Disruption forces can "[d]isrupt enemy preparations or actions. Destroy or deceive enemy reconnaissance. Begin reducing the effectiveness of key components of the enemy's combat system."[10] In Georgia, cyber disruption elements, integrated with INFOWAR operations, demonstrated these capabilities.

Russia initially targeted large-scale media outlets and government websites nationwide at least three weeks before the kinetic attack, disrupting Georgian preparation for the invasion. These initial hacks served as rehearsals for focused cyberattacks later in the conflict.[11] In the days and hours leading up to kinetic strikes, Russia's hackers targeted media and communications in the areas they subsequently invaded. More serious, longer-lasting attacks began just before kinetic engagement. "Official sites in Gori, along with local news sites, were shut down by denial-of-service attacks before the Russian planes got there."[12]

Before hackers exploited national websites, they dismantled Georgian hacking groups, effectively destroying Georgian cyber reconnaissance capabilities. Afterwards, Georgia could not anticipate or defend against Russia's cyberattacks. This occurred at a strategic/operational level; Georgia did not have cyber assets at tactical levels.[13]

However, in a fight against a near-peer nation, hackers may initially neutralize national-level cyber efforts in conjunction with national media targets. Subsequently, hackers could shift focus to local tactical assets and local media assets.

Hackers targeting Georgia did not destroy key components of Georgian combat systems. Georgia simply did not have enough advanced technology to allow Russia to exploit vulnerabilities in key systems. While Russia did target communications in Georgia, it did not reduce key components of Georgia's combat systems. Cyber actions in Georgia were relatively simplistic compared to those undertaken in Ukraine.[14]

As such, Georgia provides an excellent framework to illustrate lessons learned for the U.S. Army before graduating to the more complex battlespace in Ukraine. Tactical commanders operating in theater should understand that they are within weeks of kinetic engagement when widespread attacks targeting civilian media communication nodes and government websites begin occurring against a nation. As in Georgia, hackers will look to shut down key communication lines that facilitate civilian movement to safety. Additionally, once a commander's specific area of operations loses civilian communication capabilities and hackers neutralize local news and government sites, kinetic action is imminent in that area. In other words, if commanders begin receiving reports that their cyber warriors are defending against a sudden

increase in the number of attacks designed to neutralize their counter-strike and detection capabilities, their troops are likely targets for kinetic action. Georgia underwent such attacks at a national level and lost its capability to respond to or anticipate cyberattacks.

Cyberattacks and Irregular Warfare: The Ukraine Conflict

Experts agree that Russia is using Georgia and Ukraine as testing grounds for cyber strategies and to demonstrate cyber capabilities.[15] However, the scale of cyberattacks in Ukraine far exceeds the cyberattacks against Georgia. Between October and December 2016, Ukraine endured more than 6,500 cyberattacks on 36 targets. Every part of Ukraine has felt the effects of the attacks.[16] Additionally, after repeatedly targeting other Western nations, Russia recently admitted to a large-scale cyber and INFOWAR effort. Russian Defense Minister Sergei Shoigu recently stated, "We have information troops who are much more effective and stronger than the former 'counter-propaganda' section" while highlighting the intelligence and effectiveness of new INFOWAR initiatives.[17]

The cyber and INFOWAR attacks in Ukraine correspond with the unconventional warfare model of the HT. Unconventional warfare "encompasses a broad spectrum of military and paramilitary operations which are normally of long duration and usually conducted through, with, or by indigenous or surrogate forces."[18] As such, irregular forces incite kinetic violence and use asymmetric warfare techniques.[19]

In this case, Russia engaged in or encouraged irregular, non-uniformed separatists to take violent and non-violent action in Ukraine. Identifying general trends or alignment of strategy with an overall threat structure in the irregular warfare theater is somewhat more challenging than in the conventional context. As a result, the enclosed analysis of the cyber portion of the Ukrainian crisis will focus on anecdotal examples of cyber capabilities before drawing broad-scale conclusions.

Background on Fancy Bear and the GRU

A hacking organization referenced as Fancy Bear was likely behind most, if not all, of the attacks discussed in the next section. Fancy Bear is not necessarily an arm of Russia's government or military; however, its actions correspond with the Главное Разведывательное Управление (Glavnoy Razvedevatelno Upravlene [GRU]), Russia's primary foreign intelligence agency.[20]

Tactical Danger of Cell Phones: Anecdotal Examples

The first anecdote revolves around a legitimate application named Попр-Д30.apk (Popr-D30) developed for Android devices. The application uses basic algorithms to mimic our Advanced Field Artillery Targeting Direction System (AFATDS) and reduces the targeting time for the Ukrainian D-30 122mm artillery piece from minutes to under 15 seconds. Around 9,000 artillery personnel used the application.[21]

Unconventional warfare "encompasses a broad spectrum of military and paramilitary operations which are normally of long duration and usually conducted through, with, or by indigenous or surrogate forces."[18] As such, irregular forces incite kinetic violence and use asymmetric warfare techniques.[19]

Fancy Bear developed a hack called X-Agent to exploit the Android application. X-Agent allowed intelligence analysts to read messages sent via the application and the phone used to potentially identify chain of command within the unit, unit composition and disposition, as well as future operations. Additionally, X-Agent appears to allow Fancy Bear to roughly identify the location of the D-30 artillery pieces. As a result, Russian strikes destroyed approximately 80 percent of Ukraine's D-30 arsenal.[22]

Using hacks like X-Agent, hacking groups can gather cell phone numbers from exploited phones. In some instances, INFOWAR agents supposedly gathered phone numbers and sent text messages directly to Ukrainian soldiers' phones encouraging them to defect.[23] INFOWAR groups can collect cell phone numbers through nefarious and normal means. However, hacks may give threats, like the GRU, access to unit call rosters stored on phones. The GRU and other agencies then send targeted soldiers messages to defect, propaganda, or even impersonate another soldier or family member to distract the soldier from warfighting.

The devastation caused by the Popr-D30 cell phone hack confirms that tactical leaders should not allow cell phones on the new battlespace. If forced to allow cell phones, commanders must strictly control (as best they can) which applications soldiers download and employ. X-Agent was also used in the hack that targeted the Democratic National Committee before the 2016 election. It is extremely flexible, and Fancy Bear can use it on numerous applications.[24]

Social Media Attacks

Recent reporting reveals that Russia's INFOWAR agency has manipulated individual soldiers' social media profiles. Attackers pose as a trusted source to a soldier (presumably as a fellow soldier or family member). There is limited information available about what the "trusted source" communicates to the affected soldier. However, the potential is extremely damaging and broad sweeping. Unconfirmed reports demonstrate that INFOWAR agents encourage soldiers to defect or allege nonexistent family issues to distract the soldier from warfighting.[25]

Many leaders will note that short message service (SMS) and social media attacks are not necessarily the result of hacking and therefore are not related to cyberwarfare. Russia views such attacks differently. Russia's INFOWAR and cyberwarfare efforts are so closely integrated that, from Russia's perspective,

it is hard to distinguish between the two.[26] Thus, such INFOWAR attacks are part of a single overall objective; hackers can initiate them via cyber means.

Additional Tactical Considerations

• **Commanders should practice full analog days during tactical training exercises.** For Russia, cyberwarfare is intimately associated with targeting and electromagnetic warfare considerations. Though not discussed above, tactical leaders should still consider the effects of GPS and communications jamming throughout tactical operations. Additionally, the enemy's ability to target computer systems may deny commanders use of mission command systems. U.S. Army forces need to train accomplishing all mission-essential tasks in a low to no communications-enabled environment.

During field training exercises, commanders should require their command posts (CPs) to maintain redundant analog systems for all operations. Then, without warning, commanders can require their CPs to rely only on specific communications platforms while eliminating the CP's ability to digitally track. For instance, the commander would say that FM radios are jammed and all communications must occur through other means. Concurrently, the commander might disable all computer systems within the CP. Such an exercise would force leaders and Soldiers to use high frequency communications and vehicle-mounted Blue Force Trackers (BFTs) exclusively. This training would also limit the effectiveness of cyberattacks on command nodes, reducing the enemy's willingness to invest resources in executing such attacks.

• **Commanders should advocate for real-world cyber training and take full advantage of that training when offered.** Intelligence, cyber, and maneuver Soldiers need to train against an enemy who exploits SMS, social media, and cell phone applications. This exercise allows commanders and staffs to train and to suggest offensive and defensive action U.S. forces could take against a new generation enemy.[27] This provides Soldiers experience with potential INFOWAR attacks so that they can discriminate attacks from legitimate information in real time. Additionally, such action familiarizes intelligence Soldiers with patterns to look for in enemy INFOWAR attacks and exposes cyber warriors to potential exploits.

• **Cyberattacks are generally a support element for another effort.** Cyber enables other operations. Generally speaking, cyberattacks do not harm Soldiers directly or destroy infrastructure. Instead, offensive cyber enables other attacks.[28] After a cyberattack occurs, commanders must immediately ask themselves what the enemy's next step is. The cyberattack is merely an indicator of follow-on operations. For example, Russia's cyberattacks in Georgia preceded conventional attacks in the same geographic location.

• **Physical and electronic security is of utmost importance.** Commanders must remember that if an enemy has accessed one part of their network, the enemy has access to all of their network. As the severity of the kinetic attacks on Ukraine increased, Russia also increased the scale of its attack on infrastructure. At one point, hackers shut down a portion of Ukraine's power grid equivalent to the size of the state of Massachusetts, and the hackers could have shut down more.[29] That is the power of networks; once the hackers had access to one component, they could affect the whole system. If an unauthorized person can enter the commander's CP and insert an unauthorized disk, or if a Soldier fails to update his computer when required, the enemy can gain access to the entire network.

Photo by Steve Stover

Cyber operations specialists from the Expeditionary Cyber Support Detachment, 782nd Military Intelligence Battalion (Cyber), Fort Gordon, GA, provide offensive cyber operations during a training rotation at the National Training Center at Fort Irwin, CA, on 18 January 2018.

• **Remember that anything that uses signals or connects to a network is vulnerable.** Recent reports demonstrate that Russian electronic warfare assets can predetonate or dud incoming artillery and mortar rounds' electronic fusing.[30] As commanders identify potential electronic assets to deploy in tactical operations, they need to consider each asset's vulnerability in their risk management.

• **The enemy can monitor a commander's communications at all times.** "Russian electronic warfare can detect all electromagnetic emissions, including those from radios, Blue Force Tracker, Wi-Fi, and cell phones, which can then be pinpointed with unmanned aerial systems and targeted with massed artillery."[31] As demonstrated by the Popr-D30 application, hackers can exploit cell phones and communications. Additionally, Russia can monitor unencrypted communications from mission command systems. Commanders must encrypt their communications while ensuring that Soldiers guard those encryptions and practice net jump procedures to avoid exploitation. Commanders should also note that the enemy may monitor their communications and locations without exploiting them for intelligence value. As such, commanders should change encryptions as required by the operating environment and limit long periods of communications, especially over FM.

• **Commanders must integrate cyber enablers at all levels.** Incoming cyber warriors are working on understanding and communicating with maneuver counterparts. Maneuver commanders need to ensure they understand what cyber enablers bring to the fight. Commanders who understand cyber enablers can drive requirements at all levels. Commanders must also accept that as cyber integrates with the force, they will encounter civilians and Soldiers alike from numerous different agencies and backgrounds. It is incumbent upon commanders to build relationships and integrate these individuals as the Army develops multi-domain capabilities.[32]

"We haven't had the cyber Pearl Harbor the way that we thought, in some way because cyberattacks tend to only take down things made of... silicone... and those things are easy to replace... So I'm not one of those [who] think cyberattacks have been that bad lately... because no one has died yet... I think that we will look back on these days as the halcyon days, when Americans have not yet started dying [from these attacks]."[33] Just as U.S. military prowess overcame Cold War threats, increasing our understanding of the current threat operating environment prepares the tactical Army for potential future conflicts.

Notes

[1] Training Circular (TC) 7-100, *Hybrid Threat*, 2010.

[2] Keir Giles, "The Next Phase of Russian Information Warfare," NATO Strategic Communications Centre of Excellence, 2015, 2.

[3] Sydney J. Feedberg Jr., "Army Fights Culture Gap Between Cyber & Ops: 'Dolphin Speak,'" *Breaking Defense* (10 November 2015). Accessed 8 August 2017 from http://breakingdefense.com/2015/11/army-fights-culture-gap-between-cyber-opsdolphin-speak/.

[4] Ibid.

[5] Noah Shachtman, "Top Georgian Official: Moscow Cyber Attacked Us -- We Just Can't Prove It," *Wired* (11 March 2009). Accessed 17 July 2017 from https://www.wired.com/2009/03/georgia-blames/.

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The New Legionnaire and Modern Phalanx:

Modern Ballistic Armor's Role in Returning Heavy Infantry Doctrine to the Battlefield

CPT MATTHEW ALLGEYER

The invention of modern body armor that allows for effective protection from small arms has been greatly underappreciated as to its effect on modern combat. Modern body armor has brought about a problem the infantryman has not dealt with since before the gunpowder revolution. The problem is how does the military balance protection offered with the weight and mobility issues of heavier armor.

The current infantryman engages in what would have been considered historically light infantry tasks. This specification is due to the inability to provide personnel protection from small arms to the infantryman prior to the invention of modern ballistic armor. This current concept should be understood as a unified infantry concept: one type of infantryman tasked with all infantry tasks. Trying to make a one-size-fits-all approach centered on the current unified infantry concept has led to problems within the military at large. Load carriage issues, injuries, and difficulties managing equipment and combat effectiveness can all be traced to trying to find a balance between mobility and protection.

Historically, pre-gunpowder armies divided infantry between heavy and light, generally, to balance this mobility protection issue. Examining the historical uses of heavy infantry provides us broad insight into methods and techniques employed previously by heavy infantry. These historical examples can suggest how to solve our current infantry problems using a split infantry methodology. Embracing a methodology split between heavy and light infantry can solve many of the current problems while at the same time expanding the infantry's capabilities.

Armor and Load Carriage: More Than Just an Endurance Problem

Load carriage is a perennial problem for Soldiers and has been an area of scientific inquiry for multiple nations' armies since the turn of the 19th century.[1] Though all sources acknowledge that it is a problem, most historical and modern studies agree that commanders are more likely to overload Soldiers then risk going without. The general understanding of load carriage in the U.S. Army today is informed by S.L.A. Marshall's *The Soldiers Load and The Mobility of a Nation,* which was published in 1950.[2] Marshall focused on the problems of Korea and World War II, and his work is often sighted as front material even though problems have been identified with his analysis.[3] Marshall identified some of the issues suffered from load carriage we are dealing with today, but he determined that the primary problem was that the psychological effect of exhaustion caused Soldiers to manifest anxiety. No other

research has independently confirmed this analysis, which was gained from limited case studies. The operational Army's reliance on Marshall's book also demonstrates common misunderstandings of load carriage today. The current military understanding of load carriage is stuck in a 1950's mindset. It does not factor in new findings or take into account the intense effects modern personnel armor has on the Soldier.

Researchers in the Army and Navy's medical community and the National Institutes of Health are all actively working on the problem of load carriage today. One key takeaway from current research is that body armor, while adding to overall load carriage, also has an exponentially deleterious effect on the Soldier's physical performance. Standard carriage of a load has a linear negative effect on the Soldier — more weight will tire a Soldier even more quickly, further distance will tire a Soldier, and higher temperatures will tire a Soldier more quickly.[4] Body armor on the other hand does not only follow this linear effect. As walking velocity increases, energy expenditure and perceived intensity increase exponentially.[5] Additionally, it has been found that body armor on the trunk increases heat strain independent of the load carried.[6] Understanding body armor's more harmful effects beyond just load begins to explain the huge increase in acute and chronic injuries seen across the Army in the past decade. The U.S. Army and its research partners are taking the thermal strain problem seriously enough that they are experimenting with cooling vests worn underneath body armor.[7]

This potential cooling solution highlights problems created as the Army continues with its unified infantry concept. Equipping Soldiers with heavier body armor deceases their combat ability. Instead of finding a weight reduction solution, the Army attempts to equip them with more sensors and equipment to compensate, further decreasing their combat ability through reduced mobility. Modern technology has wide-sweeping potential to greatly enhance military effectiveness, but it will always have an increased load cost associated with it. All the U.S. Army's warfighting functions, save movement and maneuver, can be enhanced by equipment carried by the Soldier.[8] All of these enhancements will unavoidably carry a cost in a decrease to movement and maneuver. The legacy Land Warrior system for example offered a huge increase in intelligence available to the Soldier on the ground. The old program was eventually not adopted by the Army at large because Soldiers disliked it. It was too heavy and too costly without enough benefit.[9] For every one of these new solutions, a trade-off must be made with mobility and overall load carriage. The current situation has led to a bevy of other problems.

The U.S. Soldier over the last 20 years has carried anywhere between 40-50 percent of his body weight while conducting long-term operations.[10] Doctrinally, the U.S. Army knows that this is unsustainable, as the load carried regularly by Soldiers is the same body weight percentage recommended for an approach march or emergency march load.[11] The loads and distances are surpassing the doctrinally defined "exhaustion line," which is the point at which Soldiers will become degraded in combat and should have a recommended 24-hour rest period to avoid injury.[12] These excessive loads have led to endemic injuries in the fighting force. In 2012, there were approximately 2.2 million medical encounters across the Army for musculoskeletal injuries. Retired Soldiers with at least one musculoskeletal condition increased by close to 10 times from 2003-2009.[13]

With the advent of the ceramic strike plate, Soldiers have effective protection from small arms for the first time since the gunpowder revolution. This in turn has created heavier and more constricting body armor, which in turn has greater effect on all combat tasks.

Researchers reported in *Military Medicine* that through regressive analysis of the Total Army Injury and Health Outcomes Database (TAIHOD) they found that deployment increased soft tissue knee injury likelihood by 39 percent.[14] Injuries due to load carriage have secondary effects that last a lifetime. Young Soldiers are being diagnosed with early onset arthritis due to load carriage during deployments.[15] A 2014 study of an infantry brigade returning from Afghanistan found that 44 percent reported chronic pain lasting longer than three months and 15 percent reported being prescribed opioids as a result. Both of these rates of arthritis and opioid prescription are approximately double the rates of the civilian population.[16] Taking these issues into consideration, it is obvious the current one-size-fits-all approach to load carriage is not sufficient.

With the advent of the ceramic strike plate, Soldiers have effective protection from small arms for the first time since the gunpowder revolution. This in turn has created heavier and more constricting body armor, which in turn has greater effect on all combat tasks. A Naval Medical Center study found that body armor carriage had a detrimental effect on a service member's cardiovascular, strength, balance, and functional ability. Additionally, aerobic capacity was degraded to a greater degree than expected from just the additional load carriage.[17] This means that the simple act of wearing body armor during physical activity reduces a Soldier's physical capacity. A study conducted on extremity armor found that extremity armor carriage negatively affected gait and mobility.[18] Finally, a study designed to determine combat effectiveness of Soldiers in armor determined that the armor decreases Soldiers' overall combat effectiveness. Notable in this study is that this degradation is not linear. After a Soldier is wearing armor, adding additional armor (e.g. side plates, neck protector, etc.) does not have a scalable negative effect.[19] Body armor has many problematic effects on Soldiers beyond just load carriage; it is also undeniable that ballistic armor saves lives and preserves combat power. This life-saving ability is why the current approach is to simply add heavier armor onto light infantry Soldiers.[20]

Balancing the weight of modern ballistic armor is the primary issue in resolving load carriage injuries and lowered

combat effectiveness. Secondary considerations like more or heavier sensors cannot be ignored, but body armor plays an outsized role. With the recent advances in armor technology, we should look to some historical solutions to help us solve this mobility protection issue. Pre-gunpowder era units used armor and carried comparable equipment loads but had several solutions to mitigate individual equipment load. These units carried equipment on carts or pack animals. Many would not arm nor armor themselves completely until contact had been made. These units also accepted less mobility for greater protection and weight. Before gunpowder made personal armor protection impracticable, militaries around the world determined that one approach to infantry materiel and doctrine would not work. To make use of the full range of capabilities and to mitigate problems associated with too much weight or too little protection, militaries divided their infantry between heavy and light.

Heavy Infantry as a Solution

The invention of modern ballistic body armor is a watershed moment in the history of warfare; to fully exploit it will require new models of thinking. Once understood, this clarifies the problems associated with this warfare-changing technology. New technology has more than once forced militaries to relearn heavy protective shock tactics such as with the advent of the tank.[21] Further back in history, infantrymen adapted the tactics of the Roman legion to deal with the changes of the gunpowder revolution.[22]

Ancient militaries had the same issues balancing load and protection with mobility and risk. Across the world, ancient and medieval armies came up with the same solution: heavy and light infantry forces.[23] Heavy infantry accepted limited mobility and a greater load burden to gain increased protection and close quarter lethality. Light infantry focused on mobility coupled with standoff from missile weapons to gain a decisive advantage utilizing favorable terrain. If we accept this basic premise, then some of the current issues that are facing the modern Army can be more immediately resolved. A splitting of standard equipment and materiel development allows for focus on two separate methodologies, avoiding the one-size-fits-all approach that is currently harming the military. Adopting a heavy infantry framework will also help the light infantry. Taking the arduous burden of heavy armor and excessive equipment load away from light fighters will allow the military to focus on the type of equipment they need to accomplish their tasks: lightweight, unencumbering equipment that needs little to no short-term logistical support.

It is important to understand that the term "heavy infantry" here is not what is currently embodied in the mechanized infantry. An armored fighting platform conveys mechanized infantrymen of today's Army to the point where they dismount and are, for all intents and purposes, light infantrymen. Heavy infantrymen would be something new on the battlefield; they would look and operate differently from any other gunpowder-era soldier. A modern heavy infantry soldier would be fundamentally different than any previous infantryman armed with a gun.

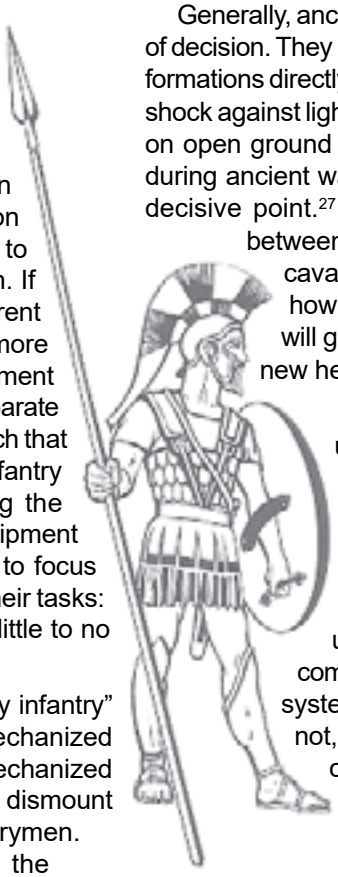

Illustration from A Short History of War: The Evolution of Warfare and Weapons by Richard A. Gabriel and Karen S. Metz

Historical Heavy Infantry: Different Materiel Means a Different Set of Tasks

Understanding how ancient and medieval forces used their heavy infantry in concert with their light infantry and cavalry forces can give us the broad shape of how the heavy infantry may return to the battlefield.

A common mistake today is to associate current infantrymen with ancient heavy forces. It is in the zeitgeist to name and associate current units in the American military with ancient heavy forces: Greek hoplites, Roman legions, European knights, and Japanese samurai. All of these units were heavy and operated significantly differently than current infantrymen. Current infantrymen are the pinnacle of the gunpowder infantrymen that came to be in the late medieval to early modern era.[24] Their primary weapons are missile weapons. They face enemy contact (until very recently) with little to no armor. They rely on rapid movement and advantageous terrain for protection. They are vulnerable to shock effects from heavily armed forces maneuvering on them. In this way they operate and are employed much more similarly to ancient light forces.[25] This lack of historical understanding can at least in part be attributed to ancient sources' disdain for light infantry.[26] That these heavy unit types remain fixed in the mind of current military members is a testament to their historical importance.

Generally, ancient heavy infantry units were used at the point of decision. They used their increased protection to meet enemy formations directly, usually in a frontal assault. They could utilize shock against lighter armed and armored forces, and when met on open ground would scatter lighter formations. In general, during ancient warfare the heavy infantry force anchored the decisive point.[27] The ancient heavy infantry fulfilled a role between the current infantry and the current heavy cavalry — the armor. Understanding that role and how it figured into ancient and medieval warfare will guide our understanding of the potential of the new heavy infantry.

Perhaps the most famous example of the use of heavy infantry to the modern reader is the Greek hoplite during the Greek and Persian wars. A common misunderstanding is that in both of these conflicts, the Persians were militarily inferior in their thinking. Contrary to common understanding, they used a fairly advanced version of ancient combined arms, which employed multiple weapon systems that complemented each other. They did not, however, have the protection and offensive capability of the hoplite in their heavy infantry. The Greeks, in contrast, employed few other types of troops than their heavy infantry and sought decisive engagements against Persian forces. The primary reason why the Greeks defeated the

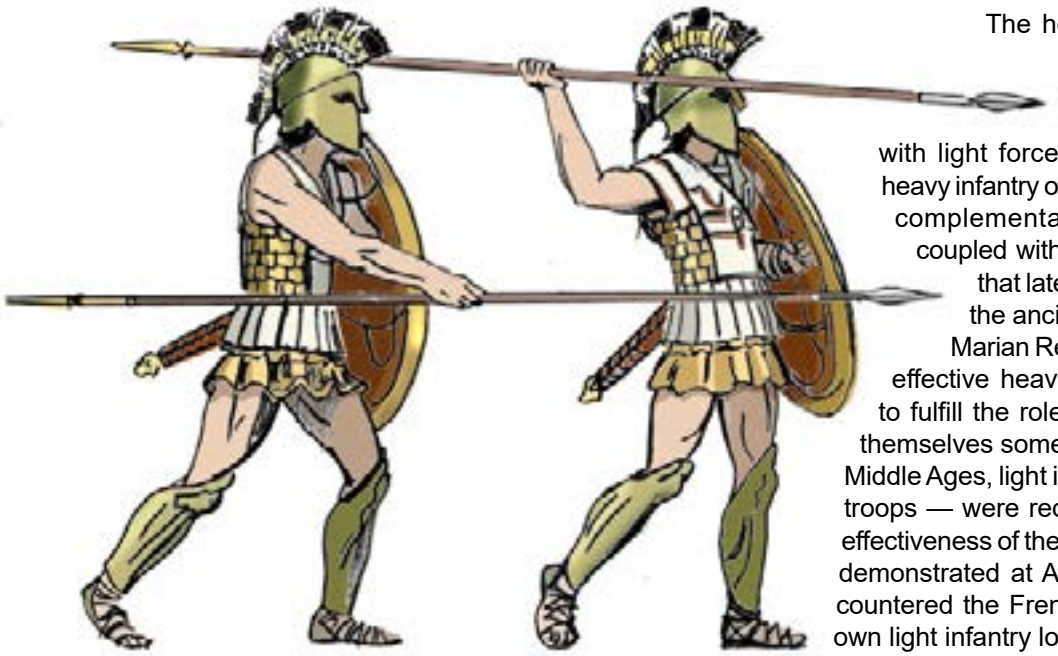

Illustration courtesy of the National Endowment for the Humanities

Persians was the Persians' inability to counter the hoplites' heavy protection. This was in spite of the fact the Persians had a larger, better funded, and more sophisticated military.[28] Heavy infantry deployed in advantageous terrain against an enemy unable to counter the heavy infantry's protection can be the decisive force in a battle.

Another historical example that is useful to us today is how ancient forces overcame the same limitations that confront today's infantry as they try to adapt to heavier armor. Heavy infantry units knew they could not march with the totality of their equipment that they needed to take into battle. Ancient heavy infantry like the hoplites and the legions were known to use carts, mules, and other types of baggage trains to move parts of their equipment.[29] Once scouts had made contact with the enemy, units would drop sustainment equipment and prepare protective equipment (unsling shields, unburden spears, etc.). It is unfeasible for any heavy infantry unit to march its soldiers through restrictive terrain in their equipment. Approach marches can be done through difficult terrain, and the heavy infantry can be decisive in this terrain. But this is where the light infantry is necessary as a supporting and shaping element. In general, heavy infantry utilized some means of conveyance to reach the battlefield. This was one of the primary reasons the Romans built their road network — to allow quick movement of the legion.[30] The transportation needs of heavy infantry lead many modern readers to overemphasize the importance of heavy cavalry in the Middle Ages. In many instances, knights would dismount and fight on foot, effectively becoming heavy infantry. This happened when missile threats made cavalry employment very difficult or when it was of greater advantage to mix skilled heavy fighting men in with light infantry. There were also famous heavy infantrymen who rode to battle and dismounted such as the Danish Huscarls.[31] Generally, heavy infantrymen are decisive to a battle, but they must be conveyed there to preserve their combat power.

The heavy infantry is properly employed with support from the light infantry. Though popular history seldom focuses on them, most major heavy forces were arrayed with light forces. The Athenians defeated the famous heavy infantry of Sparta by utilizing heavy and light infantry complementarily.[32] It was this Greek development, coupled with effective use of heavy and light cavalry, that later led to Alexander the Great's conquest of the ancient world.[33] The Roman legions, after the Marian Reforms, focused on developing their highly effective heavy infantry but actively sought auxiliaries to fulfill the role of light infantry. These auxiliaries were themselves sometimes key to Roman victory.[34] During the Middle Ages, light infantry — especially in the form of missile troops — were required to counter the heavy cavalry. The effectiveness of these two forces together was most famously demonstrated at Agincourt, when the English successfully countered the French heavy cavalry and infantry with their own light infantry longbow men intermixed with their heavier infantry and supporting cavalry.[35] This example should not come as a surprise to the modern military member as the successor of the heavy cavalry, the tank, still relies on the infantry in modern conflicts. Light infantry forces have been used by all militaries across history. Any heavy infantry force has to account for how they will incorporate light infantry support.

Finally, mobility is still an important asset among the heavy infantry. When two of the preeminent ancient world heavy infantry forces came to battle with one another, it was mobility that proved decisive. At the battle of Cynoscephalae, the more flexible and mobile Roman legion came up against the Greek phalanx. The phalanx was nearly unstoppable during the frontal assault with its heavy weapons and armor, but it was unable to properly maneuver to meet the Roman legion's greater mobility. Both of these forces used light infantry and cavalry to shape the battle beforehand, but the Romans overcame the Greeks with a superior mix of heavy protection and mobility.[36] Even though accepting decreased mobility is key in the heavy infantry concept, planners should still give consideration to combat effectiveness when determining the proper amount of armor and load carried by the heavy infantry.

The presented examples were chosen because they were likely to be familiar to the reader. There are other worthwhile examples that are applicable (for example, Japanese samurai's employment of their historical light infantry — the ashigaru).[37] I note this because it should be understood that heavy infantry is not limited to western military tradition but a near-universal solution to the problem presented by armor that can effectively scale upon protection with greater weight. A modern heavy infantry concept will follow many of these trends, but as military strategists found with the tank: simply copying the tactical strategy of medieval knights was not a feasible solution. Old ways provided a guide, but they had to be adapted — some had to be discarded and new strategies adopted. The heavy infantry of today must be different than their progenitors.

The Legionnaire on the New Battlefield: The Heavy Infantry Adapted to Today

Armies that wish to adopt a heavy infantry concept must examine the equipment carried by the heavy infantry in detail. The heavy infantry as a modern concept has not been used during materiel development and acquisitions in the United States. All materiel currently has been focused on the unified infantry concept and therefore is inappropriate for both light and heavy in a dual infantry concept. A minimal requirement to make the heavy infantry a reality is purpose-built armor designed to be more protective than the current standard body armor. The heavy infantry will accept greater time exposed to enemy contact. This is a primary function for them — the ability to maneuver while under small arms fire. Therefore, further protecting them from small arms is essential. A priority focus for materiel testing is examining the effects of greater protection of the trunk of the body extending below the rib cage and protection to the thighs and pelvic area. Armoring the feet, shins, and arms should be examined as to its effects on soldier performance. Each piece of materiel's adoption or rejection must be based on testing. Heavier, more protective helmets to protect against small arms and resist concussive shock must also be considered.

Beyond protection, it will also be worthwhile to examine the arms carried by the heavy infantry. Ideally, a rifle purpose built to offer greater firepower with some increase in weight balanced with the added body armor would be used. New weapon acquisitions have proved difficult in the last few decades, and it may be that in the short term the heavy infantry will have a higher concentration of machine guns, anti-tank weapons, and other heavier, more casualty-producing weapons.[38] Additional equipment added to load carriage should be evaluated based on a cost-benefit analysis of its increase to combat effectiveness versus its adverse effects on Soldiers' mobility and performance. For items that directly affect the balance between load and capability, this balance can be easily measured. If a forced water-cooling vest or a spacer garment is added between the armor to help alleviate heat strain, it is easy to test the cost and benefit. Simply test Soldiers with and without configurations to see if the net gain in performance is greater than the added weight and encumbrance. When it comes to sensors, communications equipment, and other items that can't be put into a straightforward physical performance test, greater consideration must be given on whether to adopt them. As we saw with the Romans and the Greeks at Cynoscephalae, maximizing load and encumbrance for firepower and protection is not the best solution.

When determining the materiel makeup of the heavy infantry, the balance between firepower and protection with mobility and flexibility is still important. Heavy infantry forces must be able to accept and survive under small arms fire longer than what is currently feasible in the unified infantry concept. They must, however, still be able to move effectively in their equipment to maximize their potential. The balancing act still exists, but the calculations must change.

Considering load further, the load carriage solutions of antiquity are not completely adaptable to today's military. History demonstrates that heavy infantry must be conveyed onto the battlefield and will not conduct a long overland march armed and armored for combat. In the more modern high-speed and kinetic fights, due to mechanization, it's inappropriate to try and bring a cart and mule analog back to the battlefield. The heavy infantry must be equipped for battle when initial contact is made. This means that they will leave an assembly area ready to dismount. The short-term solution already exists in the form of the Bradley Fighting Vehicle. The Bradley can provide a 70-percent solution for the heavy infantryman. It can maneuver with the mounted force, provide protection to troops transported, and provide some firepower on the move. These will be required for the heavy infantry to be transported to the point of decision in battle. The Bradley, however, is not optimized for heavy infantry transport and that will lead to problems. The amount of equipment heavy infantrymen will bring with them in the form of personal armor, weapons, sensors, and other equipment will make them physically

Soldiers with Bravo Company, 1st Battalion, 8th Infantry Regiment, 3rd Armored Brigade Combat Team, 4th Infantry Division, dismount a Bradley Fighting Vehicle during the battalion's combined arms live-fire exercise in Germany on 18 August 2017.
Photo by Gertrud Zach

larger than Soldiers transported today. It will be impossible to fit the same number of heavy infantrymen into the troop compartment of the current Bradley as current infantrymen.[39] Ideally, the transport for heavy infantrymen would be optimized for them. During transport, heavy infantrymen will be armored, providing protection from spall and small arms. Taking this into consideration, platform protection will focus on larger weapon systems and anti-tank systems. Power system connection for personal-equipped systems should be available with a vehicle power system to compensate. The vehicle itself would need to be made on a larger internal scale to accommodate heavy Soldiers. Troop hatches, handholds, seats, and other personal equipment all need to be made larger and more robust to handle the increased weight and size of heavy Soldiers. The vehicle of the heavy infantry will have to be purpose built to move heavy Soldiers quickly, while in contact with the enemy, to the point of decision.

Consideration to unit manning must be made when adopting the heavy infantry concept. It will not be as simple as changing all the infantry Soldiers in an armored brigade combat team (ABCT) into heavy infantrymen. Heavy infantrymen cannot do all the tasks that the current unified infantry can do. It may be logical to take the resulting specialized light infantrymen and have them be the only type of infantry Soldier in current infantry brigade combat teams (IBCTs); the future of light infantrymen is beyond the scope of this article. History teaches us that heavy infantry will need light infantry support in restrictive terrain. The heavy infantry will give us the ability to bring shock and heavier direct firepower to restrictive terrain that the military is lacking today. When the approach march exceeds a few kilometers, the heavy infantry will need lighter, more mobile Soldiers to shape the battle and provide flank security for them. This will mean additional logistical and materiel considerations when task organizing a heavy unit. Experimentation will need to be done to determine what the optimal level of task-organized light infantry is and what the proper troop ratio will be. Different armies fighting with similar technology historically found different optimal rates, and some armies of the same nation found that different units in geographical regions need a different mix of heavy and light troops. The U.S. Army's ratio of heavy to light infantry will be distinct, and the adopted heavy concept will change over time just as our current unit manning continues to do so today. At a minimum, light infantrymen in a heavy unit must be capable of the following things:

- They must effectively travel with the heavy infantry and survive to their dismount point.
- In a highly mobile kinetic environment, light infantrymen must be able to maneuver mounted with similar capabilities to heavy infantry mounted.
- They must also be able to move significantly faster dismounted than the heavy infantry.

It would be ineffective to have a stripped down heavy infantry concept or a light infantryman loaded with all manner of different sensors and equipment. Light infantrymen must still sacrifice protection for mobility and utilize terrain to make up the difference. The light infantry leader must be cross-trained with the heavy infantry. Ensuring that heavy and light infantrymen understand each other's tasks is paramount.

Much of this discussion has been about limitations and proper implementation, but the additional capabilities heavy infantrymen can bring are a persuasive reason to consider this methodology. Armoring Soldiers with significant protection over their whole body changes the way opposing formations can cause injury to Soldiers. Altering the effectiveness of current injury mechanics allows for a significant increase in a Soldier's capabilities. Obviously, armored strike plates covering the largest areas of the body will lend significant protection to Soldiers from small arms. Indirect fire generally uses three primary injury mechanisms: blast in the form of overpressure, shrapnel, and heat.[40] The effects of blast and heat reduce sharply based on distance from the explosion. Shrapnel is the most significant casualty-producing injury mechanism at range. In this manner, heavy Soldiers enjoy the same protective effects that they do from small arms. This would mean that the effective blast radius of opposing forces' indirect fire is significantly reduced when confronting a heavy infantry formation.

Considering what this would mean from an opposing force prospective can most readily let us understand the new capabilities. A heavy formation maneuvering on a light formation would be able to move more readily through open areas, advancing faster than a defending force would normally see with light infantry. An opposing force would see much less effects from its smaller caliber machine guns and indirect fires. In the defense, opposing forces would not halt or disrupt maneuver guns and indirect fires. In the defense, opposing forces would also not halt or disrupt maneuver as effectively, and in the offense they would not be able to suppress as effectively. To engage heavy infantry effectively, opposing forces would need to bring heavier weapons, which in turn would slow movement down, increase support requirements, and generally negatively affect opposing force maneuver. The opposing light infantry force would find itself in a situation similar to when it confronts medium armored vehicle formations; it would have a handful of effective weapons, but most of its personnel weapons would be ineffective.

Heavy Infantry: A Developing Solution to Developing Problems

The Army has been continuing to develop materiel solutions to overcome the mobility versus protection problem using the unified infantry framework. One current proposal, the Personal Protective Equipment Posture (PPEP) program, is designed to bring greater flexibility to load and armor carriage.[41] The proposed program advocates for a new type of modular body armor that is scalable — able to go from no armor acting as a load carrier to a plate carrier and then to a heavier configuration utilizing X Small Arms Protective Inserts (XSAPI) front and side plates. This is a logical progression of the current unified infantry concept and is internally sound.

The heavy infantry concept is a counterpoint to the current armor proposal. While helping to elevate some of the current problems, the PPEP program will leave the same issues as laid

Photo courtesy of the U.S. Army Acquisition Support Center

The Soldier Protection System (SPS) is the Army's next generation Personal Protective Equipment system. SPS is a modular, scalable, tailorable system designed to defeat current threats at a reduced weight.

out above — mobility versus protection. Unit commanders have more freedom to decide what level of protection they think they need, but at its heart, it is no more than scaling armor up and down on light infantrymen. In a situation where a higher level of protection is deemed necessary, it's worth considering going past what can be scaled up on a light infantry armor frame. In close quarters combat or a mission where rifle fire is very likely, the current unified infantry concept has problems meeting the protection requirement. A unit able to close with the enemy and maneuver through terrain that would otherwise be very difficult — such as linear danger areas (LDAs) or open areas — would be more effective than what can be achieved with the unified infantry concept. Focusing on splitting the infantry between heavy and light would allow development and acquisition organizations to focus on better-designed and refined armor. Light armor that is designed to meet the mobility tasks of the light infantry will be better suited for these tasks than armor that has to make compromises between both.

Another developing problem that the heavy infantry concept can offer a solution to is the Army's ongoing attempts to develop a robotically assisted Soldier. The Army has been developing an infantry exoskeleton suit since the mid-2000s with the Future Force Warrior program.[42] The Army continues to have various proposed programs based on the remnants of the Future Force program that are still actively trying to bring powered exoskeleton assistance to the force at large. The most current program in robotically assisted combat is the Tactical Assault Light Operator Suit (TALOS) program being fielded by the Special Operations Command (SOCOM).[43] TALOS has a stated goal of initial fielding by 2018. The initial projected power capability of the system is approximately one hour of powered exoskeleton assistance.[44] This power limitation may meet the special operations community's needs, but it is obviously untenable for the current light infantry Soldier.

The wearable powered suit concept could be easily adapted for use by heavy infantry Soldiers. As previously discussed, heavy infantry Soldiers will need to be conveyed to the point of decision. Vehicle power available on platform would allow them to use battery power only when dismounted. A heavy, complicated set of wearable equipment supporting greater personnel protection and firepower is the classic model of the heavy infantryman. When discussing future technology, it's important to avoid the fanciful or to rely on history without analysis. This will not be the mechanized armor suit of science fiction, nor will we see the return of pure phalanx or legion tactics to the battlefield. In examining this technology, we must understand current capabilities and limitations and rationally analyze them. The TALOS program reports to be able to increase personal armor protection from the current 19 percent to approximately 70 percent.[45] It also plans to integrate multiple communications and sensors. To enable this, they have created a powered exoskeleton that relies on current battery technology. Current battery technology severely limits operational time, and there are currently no solutions in development to change this.[46] In its current state, this system cannot be used by light infantrymen and therefore would not be adopted by the Army at large under its current unified light infantryman concept. The heavy infantry concept would allow for adoption by the larger Army for the specified tasks group encompassed by the heavy infantry. If the TALOS platform works as projected, it could be a significant force modifier to the heavy infantry and, by extension, the Army at large.

The heavy infantry concept can help create solutions for the developing problem set of increased urbanization and mega cities. Urban terrain is severely restricting to mounted capabilities. Mounted armor units have difficulty effectively engaging in urban canyons.[47] They are also very vulnerable to dismounted AT ambushes.[48] Enemy dismounted forces can operate relatively undetected within close proximity to mounted distance by utilizing abundant buildings and other urban obstacles. The current solution to these issues is to dismount, but the only operational dismounted framework is the unified light infantry concept.

Problems with urban, mounted maneuvers are generally well understood by the military at large. The problems and solutions to dismounted infantry operations have been the work of the last decade of conflict and have created a generation of Soldiers more comfortable with counterinsurgency operations than conventional fighting. Soldiers have adapted to urban operations, but problems with light dismounted infantry fighting in dense urban terrain remain. They stem from the intersection of the terrain's effect and operational capabilities of the light infantry. Wherever the next conflict takes place, it will, with a high degree of certainty, take place in an urban environment. It is worth considering some of the inherent shortcomings of the current concept and to consider a new concept's solutions when preparing for the future urban fight. Urban combat has the potential to be extremely costly in the terms of lives and time compared to other types of less complex terrain.[49] The realities of dismounted urban operations suggest that Soldiers will receive substantial amounts of effective enemy small arms fire.

Compounding this issue is the marked advantage urban terrain gives a defender. Historically, Army doctrine determined that the proper force ratio is three to one to effectively overcome a conventional defense.[50] The force ratio in an urban environment doctrinally can require three to five times greater force density than a similar operation in other less complex terrain.[51] This defender's advantage is one of the prime factors that allowed loose groups of comparatively poorly trained insurgents to survive for as long as they did during Operation Enduring Freedom and Operation Iraqi Freedom.

The Army is currently developing doctrine to confront the problem of urbanization and mega cities. Increased terrain complexity, additional levels to the battlefield (specifically subterranean), massive civilian populations, and potential refugee crises all make a future urban conflict potentially more difficult by an order of magnitude. If we cannot bring our heavily armed and armored mounted platforms into the conflict and if the current infantryman does not possess the appropriate amount of protection, then the heavy infantry concept provides us with a new solution to fill the gap between the two. The heavy infantry would allow us to bring shock and firepower to individual point targets in the urban environment. Heavy infantrymen would be able to overcome some of the advantage to the defender in the urban environment as well. Much of the advantage to the defender is achieved by the artificial constraints to maneuver put on movement through in urban terrain: successive choke points in the form of doors, windows, and entry ways; constrained rapid avenues of advance overwatched by hundreds of covered and concealed firing positions in the form of streets lined with buildings; and multiple successive LDAs overwatched by advantageous positions. All of these serve to the defender's advantage, but heavy infantry Soldiers can mitigate these advantages. While heavy infantrymen are not immune to small arms fire, they can be made resistant to it. This, in turn, would allow them to take greater risk while confronting an enemy.

Heavy infantrymen may receive small arms fire in any one of the many disadvantageous terrain areas in a city, but they are not affected in the same way as light infantrymen. If engaged with small arms, they could reasonably face the heavier armored front toward the enemy and attack them directly. Minimizing the defender's ability to use small arms to set hasty ambushes or use canalizing terrain to his benefit reduces light infantrymen's defensive advantages in urban terrain. While it does not nullify them, it does force the defender to set more deliberate defenses and consolidate his heavier weapons. This reduces his freedom of maneuver and constrains him to more readily identifiable points of advantage. If he elects to use his light anti-tank systems, he cannot engage from an enclosed area. If he opts to use his heavier caliber machine guns or automatic grenade launchers, he will not be able to maneuver away rapidly. Areas of likely enemy occupation become easier to identify before an operation begins. Enemy actors are forced to become more concentrated and easier to maneuver on during the operation.

Conclusion

As an armor officer, you may be wondering why I, or any other non-infantry Soldier, should care about how the infantry operates and its capabilities. A truth for the military at large is that the infantry has been and still is the center of the military endeavor. A tank may be able to advance rapidly across open terrain to close with and destroy the enemy and a fighter jet may be able to effectively deliver its payload onto point targets, but if the infantryman is not able to stand on the adversary's ground and hold it, all of the rest is for naught. The advantages to the mounted force that the heavy infantry can bring are primarily what caused me to be interested in this topic. Tanks and mounted mechanized infantry advance rapidly and engage in highly kinetic warfare. Infantrymen are asked to leave the protection of the armored platform to dismount into this environment with nothing more than a SAPI plate and an M4 rifle. To prevent this from being an automatic death sentence, the mounted force is highly constrained in how it goes about dismounting infantry or bringing infantry into an engagement at all. The heavy infantry will not be able to fight dismounted with enemy armored platforms, but its survivability in such an environment will allow for greater freedom in employment.

Photo by SFC Charles Highland

Soldiers from A Company, 1st Battalion, 6th Infantry Regiment, clear a courtyard during training at Camp Buehring, Kuwait, on 20 March 2018.

I will be the first to admit that there are a lot of unknowns when it comes to the

potential future heavy infantry concept. There is currently a real and imminent problem in armor carriage and load carriage that must be addressed. We have a new and potentially linchpin technology on par with the stirrup in effective ballistic armor. Innovation and new modes of thinking will be required as we move forward confronting these issues and developing novel solutions. Predicting the future of warfare is a difficult proposition, but there is a reason that organized militaries across history adopted a heavy infantry concept. If modern body armor continues to provide an effective protection to firearms, it is reasonable to expect modern armies to come to similar conclusions.

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Engagement Area Development in a Compressed Timeline

CPT KYLE E. FRAZER

In 2015, the Joint Readiness Training Center (JRTC) at Fort Polk, LA, transitioned the focus of its crucible training event from a mission readiness exercise (MRE) to a direct action training environment (DATE). This transition moved the focus of brigade combat teams (BCTs) away from stability and counterinsurgency (COIN) operations within a nodal defense construct out of combat outposts to an intelligence-driven, intensive permissive training environment focused on hybrid and near-peer threats. One of the most difficult transitions has been the necessity for doctrinal defensive operations, specifically a rifle company's execution of the seven steps of engagement area development (EA DEV).

Light infantry formations typically struggle to conduct EA DEV suited for an armored/mechanized near-peer threat in a compressed timeline. The compressed timeline presents unique challenges and requires a change to the methodology by which we conduct our planning processes and how we execute the defense.

From my observations as an observer-controller-trainer (OCT) at JRTC, the challenges primarily lie in three areas:

1) Our military decision-making process (MDMP) is not conducive to supporting subordinate organizations' execution of EA DEV due to the extensive time requirements.

2) Organizations do not effectively utilize collaborative and parallel planning to maximize the unit's lines of effort in the defense.

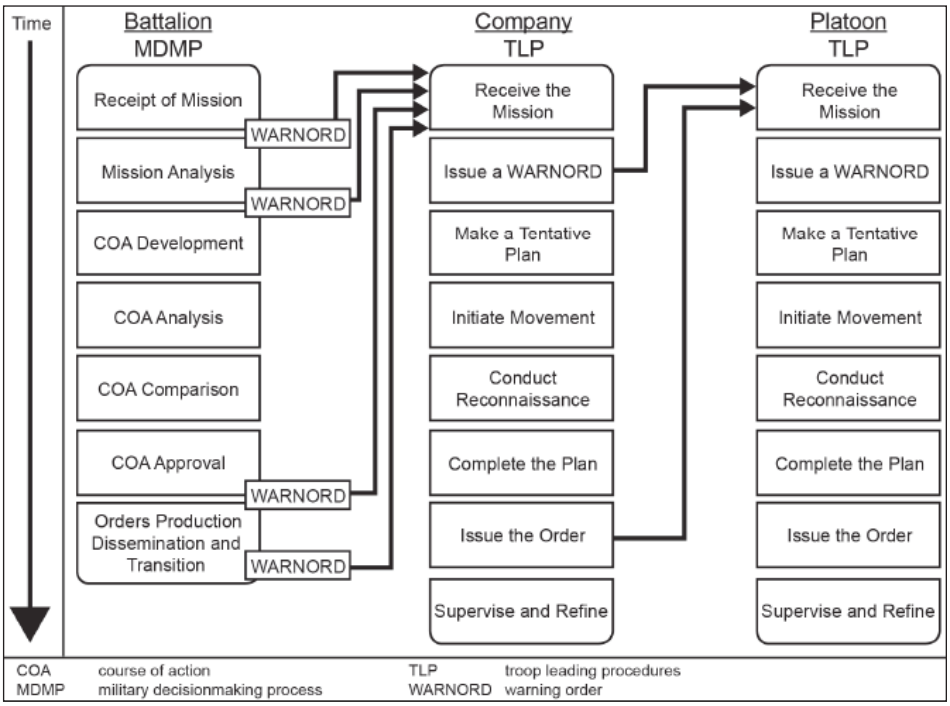
3) Company troop leading procedures (TLPs) do not have the requisite systems to effectively conduct EA DEV; junior leaders are not experienced in the field craft-intensive requirements of the defense; and company TLPs are truncated so much it is nearly impossible for companies to effectively conduct planning.

The focus of this article is to propose adjustments to assist in streamlining our planning processes to efficiently conduct EA DEV and establish an effective defense within a condensed timeline. This problem set is complex and difficult to synchronize, and we as an Army are still improving our organizational knowledge base for defensive operations in this environment. I will not be addressing tactics of the defense for company and enabler employment or defensive techniques against specific enemy capabilities but rather focus merely on our systems processes to facilitate subordinate commanders.

MDMP

One of the largest issues is the requirement of our MDMP for the development of operation orders (OPORDs). If we merely look at the one-third/two-thirds rule that we espouse into our orders process, it is nearly impossible for companies to be successful in the defense. Although this will not always be the case, an organization must prepare for the most probable

Figure 1 — Parallel Sequences of MDMP and TLPs



Field Manual (FM) 6-0, *Commander and Staff Organization and Operations*

and dangerous course of action (COA), and more frequently than not, this includes a transition from the offense to a finite period to establish the defense. Let us examine the current four-day model at JRTC (for the sake of ease, I will round out my estimates). There will be just over one day for the brigade's MDMP for the issuance of an order; we are now down to three days. A battalion takes just over a day to conduct its MDMP; we are now down to two days. The company takes up to 12 hours to conduct company TLPs. As a result, we are now less than 36 hours out from the execution of the defense. Nearly all parties involved would agree this is not enough time to deliberately establish a defense within a DATE and at the very least is substantially less than optimal.

A few caveats to this analogy, this is assuming that higher-level staffs strictly adhere to the one-third/two-thirds rule. Additionally, this does not account for enemy action within the assigned area of responsibility and the potential reallocation or adjustment to the unit's task organization. This also allows no time to account for friction as described by Carl van Clausewitz. So, in a perfect system with no friction, company teams have less than 36 hours to conduct a deliberate defense against a superior enemy armored force. If you look at this issue by itself, it makes an already daunting task nearly impossible.

We routinely observe companies at JRTC receiving their OPORD or executing their battalion's combined arms rehearsal (CAR) requiring substantial refinement due to a lack of detailed planning from the warning orders (WARNOs) or OPORD the day of execution. This leaves companies with less than a day to reposition forces, conduct EA DEV, physically emplace obstacles, establish direct fire control measures (DFMCs) within their companies and with adjacent units, and somewhere during this frenetic time conduct an EA rehearsal.

So what is the fix? Fundamentally, it is collaborative and parallel planning. However, within the MDMP, staffs can make numerous adjustments. The primary improvement is information sharing. Staffs need to publish information in an orderly and timely manner. There are three WARNOs programmed into a complete MDMP cycle before the final WARNO or OPORD.

Throughout my tenure as a company commander and recently as a senior company OCT at JRTC, I find there are certain information requirements company commanders need to execute their EA DEV. The following is not an all-inclusive list of information, but it addresses the primary information requirements companies need in order to nest within their battalion's overall defensive scheme of maneuver (SoM).

Information Requirements (Proposed):
- Commander's intent
- No later than (NLT) defend time
- Location of company defensive position
- Battalion's battle array (adjacent unit locations)
- Enemy situation (at a minimum the following)
    - o Situation template (SITEMP)
    - o Most likely course of action (MLCOA)
    - o Most dangerous course of action (MDCOA)
- Engineer assets available
- Reconnaissance assets available
- Counter-reconnaissance plan
- Class IV available
- Indirect fire (IDF) assets available
- Resupply method
- Battle position guidance

Staffs will not develop all this information immediately, which is why we have a structured MDMP. The following are some improvements, which I believe are both feasible and necessary for the effective execution of the defense at the company level and below.

During my tenure at JRTC, a primary issue is the tendency of staffs to waste time developing perfect solutions rather than a 70-percent solution that satisfies the checklist above. The 70-percent solution allows for initiation of movement earlier and protects subordinate leader's timelines. We as an organization have to adhere to the constraints within our doctrine, which are there to protect planning timelines for subordinate leaders.

Regarding the structure of our MDMP, if we can prioritize the dissemination of the aforementioned information requirements, we can drastically improve the efficacy of our planning process and facilitate our junior leaders. I believe we can achieve this by tethering these requirements to the already codified WARNOs. After receipt of mission, staffs are supposed to publish the first WARNO. The key outputs are minimal, but if the staff can provide any information regarding the following it will drastically increase the time available.

MDMP Outputs (Current):
- o Initial commander's guidance
- o Initial allocation of time

Additional Information Output (Proposed):
- NLT defend time (if available)
- Location of defensive position(s) (if available)
- Enemy situation (anything available)
- Engineer assets available
- Reconnaissance assets available

For engineer and reconnaissance assets available, this does not mean describing the task organization, task and purpose, or any specified guidance but rather the total assets available to the higher headquarters. This will help companies determine the scope of their defense. For example, if the battalion only has one Improved High Mobility Engineer Excavator (IHMME) team, the company commander better understands the availability of this asset to his formation and the amount of protective obstacles he can feasibly request. It would be wasteful and unsupportable to request fighting positions for his entire company and its vehicles (requires D7 or Armored Combat Earthmover [ACE]). This will prevent superfluous planning and provide expectation management for their organic capabilities.

The location and battle array are also very important as they allow the companies to orient their battle positions and start necessary movement for establishing battle positions and individual protection positions. Notice that we have yet to

establish the company's task and purpose. If available, this is key information for the company, but it is not essential at this point since the commander's task and purpose will generally be tied to the obstacle plan.

After mission analysis, this is where the higher headquarters staff can greatly facilitate its subordinate command teams. The key outputs are still conceptual, but at this point there should be a basic understanding of the operation. If there is a command-directed COA, this becomes even more feasible.

MDMP Outputs (Current):

o Mission statement
o Initial commander's intent
o Initial planning guidance
o Initial commander's critical information requirements (CCIRs) and essential elements of friendly information (EEFIs)
o Updated information preparation of the battlefield (IPB) and running estimates
o Assumptions

Additional Information Output (Proposed):

• NLT defend time

Figure 2 — MDMP Steps

Key inputs	Steps	Key outputs
• Higher headquarters' plan or order or a new mission anticipated by the commander	Step 1: **Receipt of Mission**	• Commander's initial guidance • Initial allocation of time
	Warning order	
• Higher headquarters' plan or order • Higher headquarters' knowledge and intelligence products • Knowledge products from other organizations • Design concept (if developed)	Step 2: **Mission Analysis**	• Mission statement • Initial commander's intent • Initial planning guidance • Initial CCIRs and EEFIs • Updated IPB and running estimates • Assumptions
	Warning order	
• Mission statement • Initial commander's intent, planning guidance, CCIRs, and EEFIs • Updated IPB and running estimates • Assumptions	Step 3: **Course of Action (COA) Development**	• COA statements and sketches - Tentative task organization - Broad concept of operations • Revised planning guidance • Updated assumptions
• Updated running estimates • Revised planning guidance • COA statements and sketches • Updated assumptions	Step 4: **COA Analysis (War Game)**	• Refined COAs • Potential decision points • War-game results • Initial assessment measures • Updated assumptions
• Updated running estimates • Refined COAs • Evaluation criteria • War-game results • Updated assumptions	Step 5: **COA Comparison**	• Evaluated COAs • Recommended COAs • Updated running estimates • Updated assumptions
• Updated running estimates • Evaluated COAs • Recommended COA • Updated assumptions	Step 6: **COA Approval**	• Commander-selected COA and any modifications • Refined commander's intent, CCIRs, and EEFIs • Updated assumptions
	Warning order	
• Commander-selected COA with any modifications • Refined commander's intent, CCIRs, and EEFIs • Updated assumptions	Step 7: **Orders Production**	• Approved operation plan or order

CCIR commander's critical information requirement
COA course of action
EEFI essential element of friendly information
IPB intelligence preparation of the battlefield

Army Doctrine Reference Publication (ADRP) 5-0, *The Operations Process*

• Location of defensive position(s)
• Reserve organization and type (armor, heavy weapons, light infantry, etc.)
• Refined enemy situation
• IDF assets available
• Resupply method (tailgate vs. service station)

To reiterate, most of this information shapes and frames the defense for the company commander and confirms what will and will not be available to them for the fight. At this point, a general understanding of the overall task and purpose of the company's defensive position and the battalion's overall defensive SoM is paramount to success.

The next WARNO is after COA approval. This is where a significant gap occurs in the information requirements to the company during a compressed timeline. The recommendations I provide become more ambiguous because the situation will heavily dictate the mode and timeline for dissemination. At this point, companies routinely "wait on the word" as most of these outputs during the MDMP will be fluid estimates until the completion of COA approval. However, as demonstrated in the one-thirds/two-thirds rule analogy, this does not provide sufficient time to transition to and execute the defense. If a brigade had more than a week, our systems would be conducive to this planning timeline, but rarely do we train to, or expect to, have that amount of time afforded to our organizations in combat.

At some point before the COA approval WARNO (the sooner the better), the companies need the following information to finalize their planning priorities and achieve some semblance of parallel planning with their higher headquarters.

Additional Information Output (Proposed):

• Enemy MLCOA and MDCOA
• Battalion battle array (locations of forward, left, right, rear, and reserve forces)
• Battle position guidance (task and purpose nested against battalion decisive operation and any constraints or requirements mandated from the battalion commander)
• Counter-reconnaissance plan (which should be developed during IPB with the scout platoon leader and S2 to address battalion priority information requirements [PIR] with reconnaissance assets initiating movement sometime between COA development and approval)
• Engineer support plan (assets available and prioritization of support)
• Class IV allocation by company (even a conservative estimate will allow the company to execute some level of initiative in establishing its obstacles)

Our current doctrine is effective in establishing a deliberate defense against a near-peer threat when there is abundant time available. Intrinsically, the issue with our MDMP is that in a condensed timeline staffs do not have the experience to effectively disseminate information to maximize time for subordinate commanders. Unlike offensive operations, the defense is a more labor-intensive operation requiring the completion of a myriad of pre-executed tasks (fighting position development, key weapon emplacement, counter-

reconnaissance, etc.) before executing the actual defense against an enemy force. This process takes time, which we need to maximize for subordinate commanders. The primary way to execute a defense in a condensed timeline is to execute a level of collaborative and parallel planning with subordinate commanders.

Collaborative and Parallel Planning

The MDMP facilitates collaborative and parallel planning as the higher headquarters solicits input and continually shares information concerning future operations with subordinate and adjacent units, supporting and supported units, and unified action partners through planning meetings, warning orders, and other means. Commanders encourage active collaboration among all organizations affected by the pending operations to build shared understanding, participate in course of action development and decision-making, and resolve conflicts before publication of the plan or order.

– Army Doctrine Publication (ADP) 5-0, ***The Operations Process***

Collaborative and parallel planning is an integral aspect of our planning processes. It allows for shared understanding at multiple echelons and allows commanders to inject requirements and changes to the proposed plan before the publication of the OPORD, decreasing wasted planning time. Company commanders are generally the best planners behind the operations officer, executive officer, and battalion commander because they have experience (having served as a planner or operations officer before command) and have the best situational awareness regarding the capabilities of their organizations. The planning process would be faster and more efficient leveraging the subordinate commanders. There are numerous shortcomings regarding our utilization of these aspects:

- Staff and commanders executing collaborative planning
- "Bottom-up" refinement
- Enabler management

First, from my observations during DATE rotations, many staffs tend to default to insulated and isolated execution of planning. There are numerous reasons for this, which include:

1) The dislocated nature of our formations in a DATE environment is a major contributing factor; and

2) Our staffs do not realize the importance and benefits of including subordinate units in the planning process (e.g., increasing shared understanding, utilizing commanders to assist in COA development). Staffs also tend to insulate their planning until they have a "briefable" product to push the companies rather than tying them into the planning process early and often ultimately wasting time.

Insulating themselves in their planning efforts is not isolated to staffs; frequently, company commanders do the exact same thing. There are a myriad of reasons for this, but if a commander can incorporate his junior leaders into the planning process, it allows for multitasking, decentralized execution, and most importantly, allows the commander to focus on direct fire control measures (DFCMs), graphic control measures (GCMs), arrayal of key enablers, and refinement of EA DEV. One key to fixing this issue is utilizing true bottom-up practices.

Bottom-up refinement is when a subordinate unit identifies friction points and requests changes to mandated constraints to support its maneuver. This refinement provides additional GCMs and DFCMs developed by the lower command to maintain the higher commander's common operating picture (COP) and further facilitates battle tracking through routine and priority reporting. We commonly misuse the term bottom-up refinement. Often, staffs push a substandard plan that lacks requisite detail and GCMs to control the maneuver of subordinate organizations. Routinely, we have altered the term as a cover for our inadequacies in detailed maneuver planning, as opposed to seeking subordinate input on an executable and developed plan. This issue is not isolated to the battalion level. This is a problem from brigade to battalion, battalion to company, and company to platoon. However, at the company level, far too frequently, commanders are "waiting on the word" from their higher headquarters.

More disruptively, company commanders fail to identify company versus platoon "fights" and responsibilities. This manifests in micromanagement of defensive efforts and a lack of situational understanding of the battalion's overall defensive SoM. The top recommendation I provide to commanders is to inject themselves into their battalion's MDMP — not to take it over but to gain an understanding of the defensive techniques their company and battalion will utilize, assist the S3 with any planning shortcomings or requirements the company may need that the staff did not foresee, and to gain situational awareness on the enemy and friendly situations. All of these would allow commanders to execute disciplined initiative and start necessary movement with their formations.

Enabler integration is a routine friction point in the planning efforts of units generally because units are not properly integrating enablers into their organizations immediately upon arrival. There needs to be an inculcated process for when an enabler arrives; units need to have a routine or standard operating procedure (SOP) for reception, integration, and involvement within the planning process and subsequent maneuver. Our enablers are the subject matter experts on their particular skillset. For the defense, units frequently mismanage engineers at multiple echelons. It is common practice for sapper platoon leaders to act as battalion protection officers; however, they are generally young lieutenants who may not sufficiently understand the requisite needs to resource, plan, and control a battalion obstacle plan. The Maneuver Captains Career Course (MCCC) teaches our commanders how to manage engineer assets, and the key is through a detailed sync matrix. This is hit or miss if battalions create this synchronization measure, but more frequently, a poor sync matrix is due to a lack of planning or the inability to enforce this planning tool. This generally is a function of the executive officer (for example, ensuring proper hand over and reception of the enabler and maximization of the blade hours available based on the battalion's priority of engineer support). Simply put, we need to plan for the initial

integration of enablers and who is responsible for this integration, which could be the protection officer or possibly the headquarters and headquarters company (HHC) commander. There are numerous examples of enablers we struggle to integrate: short range air defense (SHORAD), heavy weapons company attachments to rifle companies, attached armor assets, reconnaissance assets conducting forward and rearward passage of lines (FPOL) for counter-reconnaissance, attached sustainers for resupply operations, and the list goes on. The integration of enablers is no different from collaboratively planning with your subordinate commands. One should involve them in the planning process, ensure they have a shared understanding of the COP, and conduct hand over from unit to unit for effective integration. Most importantly, companies need these systems since they are most likely to receive and utilize these enablers. This leads to the next aspect of EA DEV inhibiting units within a compressed timeline.

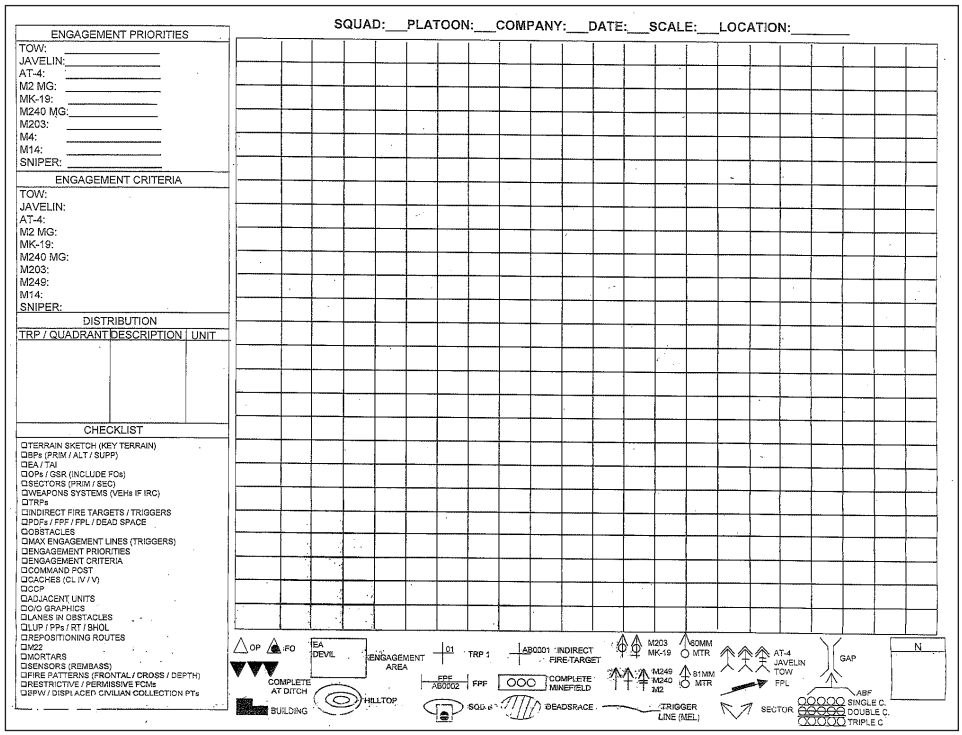


Figure 3

Company TLPs

A collaborative session at the company level can be simple and still retain control over the operation. For example, commanders can analyze the first three steps (determine likely enemy angle of attack, determine enemy COA in the EA, and determine where to kill the enemy) and describe this information to their platoon leaders in a group setting; they will achieve a basic shared understanding on the situation. Following the description, commanders can array their formation and allow platoon leaders to reconnoiter the location and report back by a certain time to provide true bottom-up refinement based on the commander's guidance. After refinement, the platoons occupy their positions and report when set, and the command team (1SG, XO, and commander) can survey each site and key weapon system emplacement. At this point, commanders have set conditions for their platoons to establish their defense and start executing individual tasks. This frees the company up to focus on the obstacle plan and overlaying direct and indirect weapon systems.

This is not a complex concept, but in a compressed timeline I generally find staffs and commanders prefer to "nug" out the plan in one sitting by themselves thinking this will save time. In all actuality, it undermines a shared understanding, prevents disciplined initiative, wastes more time in the end, and prevents commanders from focusing on the key aspects of the plan and leveraging their subordinate leaders to finalize some of the minutia within the plan.

Far too frequently, companies come to JRTC with minimal systems in place, especially for an operation as technically complex as a defense. Platoons and companies would greatly

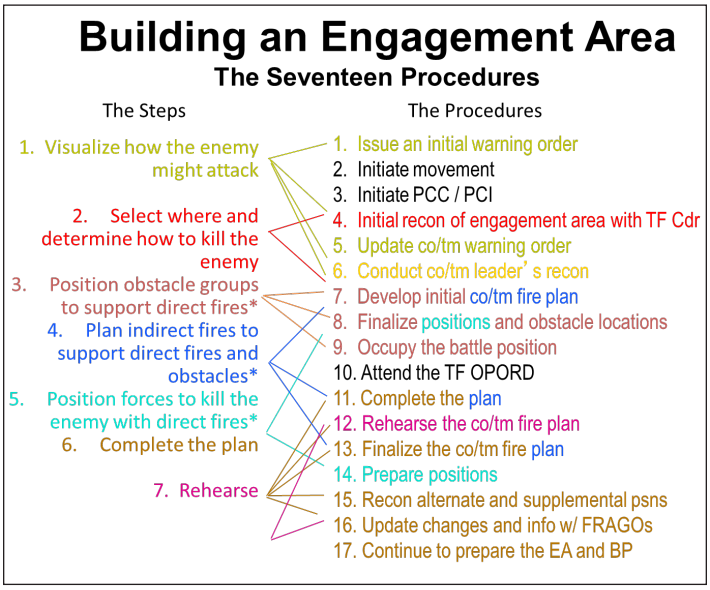


Figure 4 — Building an Engagement Area

improve their ability to execute the defense with nested products or quick reference cards (see figures). These do not need to be overly complex fundamentally, but they simply need to provide the company the ability to synchronize its efforts, establish a standard for execution, and allow subordinates the ability to execute disciplined initiative based off this standard. Decision making tends to get centralized to the platoon leader and commander levels; this causes a substantial "stove pipe," wastes time that could be used to further conduct planning and refine the EA, and generally prevents the unit from multitasking.

Expounding on this concept of systems establishment, we can boil the defense down to a battle drill. This requires

Priorities of Work

Security (Continuous)
- Passive and active security measures
- Readjust after R&S teams complete
- Employ all organic elements and weapons
- Assign sectors of fire, develop sketches, and fires plan
- Confirm location of fighting positions for cover, concealment/ observation and fields of fires
  - Assign fighting positions
    - Primary
    - Alternate
    - Supplementary
    - Subsequent
- Assign entry/exit point
- Hasty fighting positions (minimum 18” deep with slight upward slope)

Withdrawal Plan
- Platoon leader (PL) designates the signal for withdrawal, order, and rendezvous point/procedures
- PL designates when withdrawal plan transitions from hasty to deliberate (subsequent fighting positions)

Communications Plan
- Must be maintained with higher headquarters, observation posts, and all subordinate elements at all times

Mission Planning and Preparations
- Use patrol base to plan, issue orders, rehearse pre-combat checks and inspections (PCC/PCI), and prepare deliberate positions

Water Resupply
- Platoon sergeant (PSG) organizes watering parties as necessary. Platoon has equipment and resources as additional equipment. PL/PSG ensure communications are maintained at all times and contingencies are planned for.

Mess and Rest Plan
- Mess/rest must be conducted off the line at least 1-3m. Rest, mess, maintenance, and hygiene are all done off the line.

Figure 5 — Priorities of Work

commanders to analyze reoccurring tasks, identify who is responsible for execution, and decide the standard to which one must execute. Battle drills are a fundamental way we fight and one we are familiar with, but the key to battle drills is that they are clearly defined and rehearsed. If you can break down the process of the defense, you can provide a framework and establish a sequential battle drill for the defense.

Another key fundamental I observed in the effective execution within a compressed timeline is a platoon’s ability to initiate movement and priorities of work (PoWs) immediately. This, much like a battle drill, has a structure and only needs amending through basic commander’s guidance. Again, it does not need to be complex; PoWs are similar to those we execute for patrol base activities, and the primary difference is the emplacement of key weapon systems against an obstacle plan and focused principle direction of fire. If platoons can get into their PoW quickly, the structural (labor intensive) tasks of the defense can begin while the company’s leadership conducts detailed planning. These all create more time for commanders within the defense through simple systems and products within their SOP.

Command Post (CP) Operations

CPs are facilities that include personnel, equipment, information systems, and networks, guided by processes and procedures that assist commanders in the exercise of mission command. Commanders employ CPs to help control operations through continuity, planning, coordination, and synchronizing of the warfighting functions... CP functions directly relate to assisting commanders in understanding, visualizing, describing, directing, leading, and assessing operations.

— Army Techniques Publication (ATP) 6-0.5
Command Post Organization and Operations

Squad Leader Priorities of Work

- Establish local security:
  - Position squad, weapons, and soldiers; assign sectors of fire
- Ensure wire is laid to squad (if available)
- Ensure Soldiers manning observation posts (OPs) have a position to return to:
  - Issue Soldiers a contingency plan with azimuths and tentative grids to current location and black/gold plans
- Draw a sector sketch and submit a copy to platoon leader
- Walk the position. Check sectors of fire, range cards, aiming stakes, and dead space by getting into each position and sighting weapons
- Coordinate with left and right squad and adjacent units
  - Ensure overlapping sectors of fire from last man on each side
- Have Soldiers begin digging after platoon leader checks position
- Issue rations, water, ammunition, pioneer tools, and barrier material
- Pass additional information and changes to plans
- Supervise wire and mine teams
- Give warning order for planned patrol missions
- Set up squad alert and security plan
- Reconnoiter alternate and supplementary positions, routes, and counterattack plan with the platoon leader, then brief team leaders
- Designate squad urine areas
- Post and brief OPs
- Rest and conduct personal hygiene
- Supervise and refine

Figure 6 — Example Squad Priorities of Work

Commanders too frequently fight out of their pocket and off the top of their head. Commanders still need to function like a staff. The top deficiency I observed during my last year at JRTC consistently has been the inability of companies to conduct CP operations and maintain a COP. I realize this is an extremely difficult thing to do for a company. Companies do not have a staff. Additionally, the new ATP 6-0.5 does not address CP operations at the company level; it only addresses battalion and above. However, it is not difficult to work this out. If platoons are sensors for a company and a company is a sensor for the battalion, all should be nested. As such, company and platoon CPs and systems should be small-scale versions of their higher headquarters, and this is one of the first shortcomings — companies do not nest their CPs against their battalion’s mission command (MC) SOP. Platoons are even worse than companies at nesting against their higher headquarters; their MC systems are often nonexistent. CPs do not have to be complex. They need to be tailorable to the environment, but this does not mean minimizing CPs so much they become nonexistent or “pocket litter.”

Commanders need to maximize their headquarters

personnel with additional duties. To be frank, the default for most company headquarters (outside of the command team and fires personnel) is to hang out near the company trains watching the vehicles. Companies need to have administration and logistics operation center (ALOC) functions (S1 and S4) — normally your XO and 1SG — but they cannot be the only ones tracking this. Company CPs need to continually update themselves when the commander is busy running missions or trooping the line. A company cannot have its CP press "pause" every time the commander does something.

Photo by SSG Daniel Love

Platoon leaders in C Company, 3rd Battalion, 509th Parachute Infantry Regiment, 4th Brigade Combat Team (Airborne), 25th Infantry Division, plan the defense of an urban center during the unit's Joint Readiness Training Center rotation on 20 February 2016.

You can build redundancy at the headquarters (orderly room clerk and supply sergeant as the primary persons doing S1 and S4 functions), but this implies that you take the time to build the system and trackers. You need current operations (CUOPs) and future operations (FUOPs), which could be the fire support officer (FSO) and radio-telephone operator (RTO) running CUOPs. This would free the commander to focus on FUOPs. You can run down every staff function of a battalion or higher staff, but companies do not force the function. Companies do not rehearse CP operations, ensure routine updating, codify them into SOP, and violently enforce them.

A CP is a central location where a commander can quickly ascertain the current situation and COP to make sound tactical decisions. If a company does not use or enforce CP operations, it cannot effectively maintain a COP. If a company cannot maintain an updated COP, it CANNOT make sound tactical decisions. The confusing part of this identified shortcoming is the simplicity of a COP. Although vague in its description, fundamentally a COP is paragraph one of an OPORD (weather, light, terrain, enemy, and friendly forces) that is continuously updated — that is it.

The best aspect of a CP is that the commander is not the only one who can quickly understand the COP from a functioning CP. Subordinate leaders will benefit from an effective CP in numerous ways: it helps them maintain their own COP and CP, provides updates (especially when you are not there, preventing the pause of operations), and receives updated tasks and priorities (multitasking).

More importantly, the CP allows for a central location for the commander to get subordinate updates and conduct routine battle rhythm events (commanders should only have to publish information once rather than three times at three locations). This does not mean it has to be elaborate with large tents and massive display boards, but it needs form. Commanders need to develop them against a standard, and leaders must actively support and enforce that standard.

In summary, the primary way to execute a defense in a condensed timeline is to execute a level of collaborative and parallel planning with subordinate commanders. I typically do not see companies with proper MC systems or TLP SOPs in place. They do not effectively execute CP operations, struggle at maintaining a COP (companies are even worse at disseminating the COP to platoons), do not have SOPs established for PoW, and struggle with organizational experience and knowledge regarding requisite field-craft required for the defense. Echelons above the company need to find ways to provide essential information down to companies as early as possible to allow them to start necessary movement. Companies need to do the exact same thing within their organizations and find ways of creating time through involvement in their higher headquarters' MDMP.

• Tailoring the WARNOs within the MDMP will allow companies to get key information for the defense to start time-consuming PoW. Key to this is effectively conducting parallel planning with quick intent and clearly defined fights between a higher headquarters and their subordinates.

• Inclusive planning at all echelons will only improve efficiency, create shared understanding, facilitate disciplined initiative, and allow commanders more avenues to accept prudent risk.

• Company and platoon systems are paramount to their success. Companies need to establish detailed MC SOPs for the defense focused on their CP, creating minimum defense checklists/SOPs and execution products for the defense to allow platoons to start necessary movement and display the same initiative company commanders so aggressively seek for themselves.

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No Second Chances, No Exercise Pauses...

Lessons from CASEVACs During Exercise Rubicon

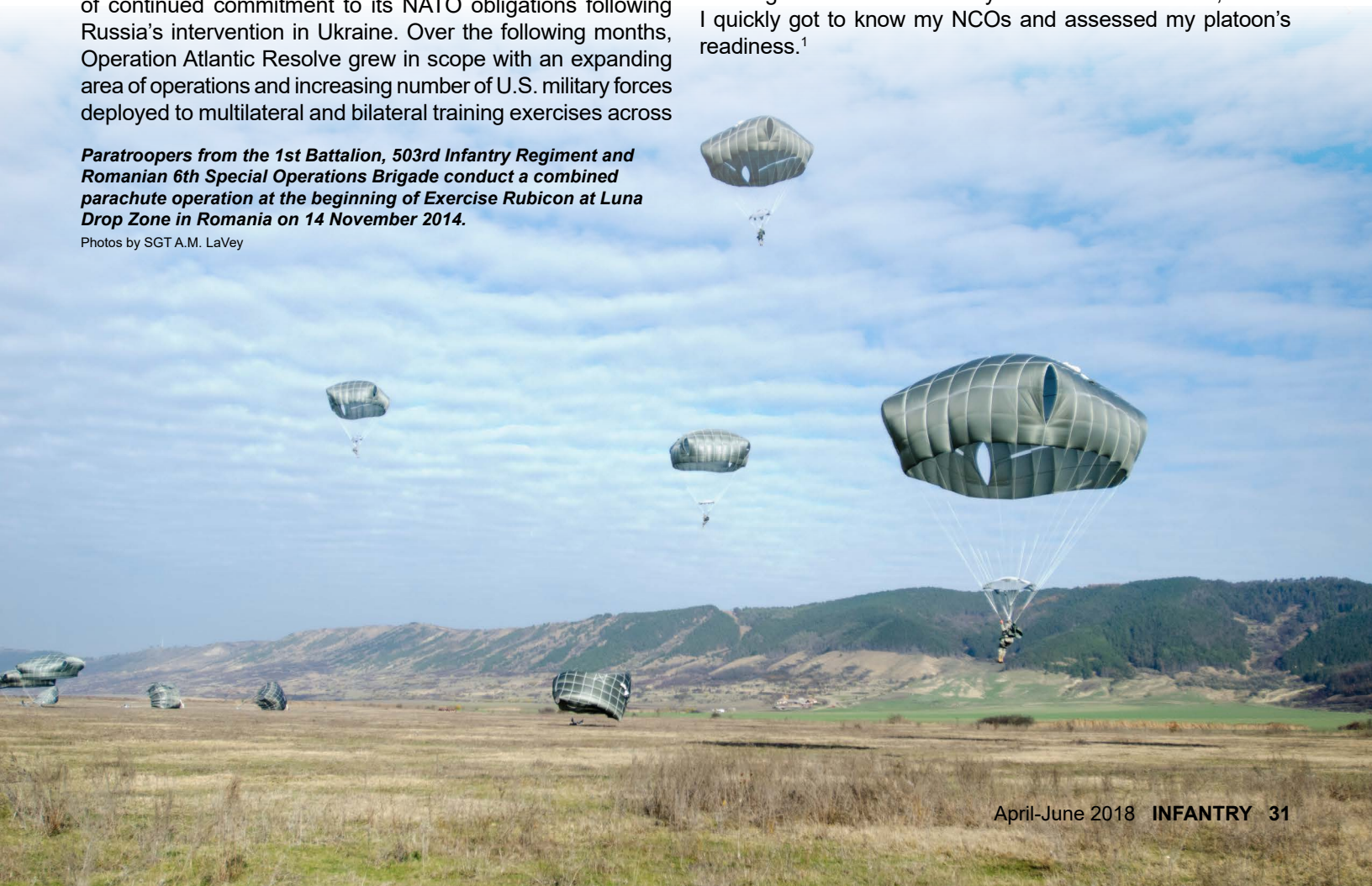
CPT THOMAS G. ANKENBAUER

From 12 to 25 November 2014, C Company, 1st Battalion, 503rd Infantry Battalion, 173rd Airborne Brigade, conducted a bilateral training exercise as part of Operation Atlantic Resolve with the Romanian Mihai Viteazul 6th Special Operations Brigade in Câmpia Turzii and Cincu, Romania. Exercise Rubicon was notable for being the first U.S. Army training exercise of Operation Atlantic Resolve conducted in Romania and for the crash of a military helicopter which killed eight Romanian soldiers. During this time, I served as the platoon leader for C Company's 3rd Platoon and conducted the casualty evacuation of four of my Soldiers during the exercise.

Background

Operation Atlantic Resolve began in late April 2014 when the U.S. Army ordered the unscheduled deployment of 1-503rd IN to Poland and the Baltic States in a demonstration of continued commitment to its NATO obligations following Russia's intervention in Ukraine. Over the following months, Operation Atlantic Resolve grew in scope with an expanding area of operations and increasing number of U.S. military forces deployed to multilateral and bilateral training exercises across the alliance's eastern flank. In mid-summer 2014 after returning to its home base, Caserma Ederle, in the small town of Vicenza in northeastern Italy, the 1-503rd IN refitted and prepared to deploy again in support of Operation Atlantic Resolve, this time to NATO's southeastern flank.

I arrived in Italy as a second lieutenant and reported to the 1-503rd IN on 8 October 2014 after graduating from the Infantry Basic Officer Leaders Course (IBOLC) and Ranger School at Fort Benning, GA. Following in-processing, my battalion commander, LTC Patrick Wilkins, assigned me as a platoon leader in C Company, which continued to bear its Vietnam War moniker "March or Die." On 27 October, within my first five minutes serving as a platoon leader, 1-503rd IN leadership activated my platoon on an emergency deployment readiness exercise and deployed my platoon to San Giorgio di Brunico Training Area in northern Italy's Dolomite Mountains, where I quickly got to know my NCOs and assessed my platoon's readiness.[1]



Paratroopers from the 1st Battalion, 503rd Infantry Regiment and Romanian 6th Special Operations Brigade conduct a combined parachute operation at the beginning of Exercise Rubicon at Luna Drop Zone in Romania on 14 November 2014.

Photos by SGT A.M. LaVey

The last time my company had conducted a continuous, multiple-day, tactical field training exercise was three years prior in Hohenfels, Germany, during pre-deployment training for its upcoming deployment to Afghanistan. By the time I arrived in October 2014, most of the platoon's Soldiers and NCOs with combat experience from the previous deployment had left the unit. My Soldiers' lack of field experience, particularly among the junior NCOs and privates, was exacerbated by the absence of the platoon sergeant, who was attending Ranger School at the time.

A Romanian 6th Special Forces Brigade soldier gives guidance to a paratrooper from C Company, 1st Battalion, 503rd Infantry Regiment, on the operation of a rocket-propelled grenade launcher prior to a combined arms range on 18 November 2014 in Cincu, Romania, as part of Exercise Rubicon.

Deployment

During late October and early November 2014, C Company conducted exercise planning and preparation for a two-week deployment in mid-November to central Romania to conduct Exercise Rubicon in support of Operation Atlantic Resolve. The exercise would consist of one week of airborne operations and troop leading procedures at the Romanian Air Force's 71st Air Base in Câmpia Turzii, followed by a week of marksmanship ranges and a 72-hour field training exercise at the Romanian Joint National Training Center in Cincu. C Company would conduct the exercise with an ad hoc company assembled from airborne and mountain platoons of the Romanian Mihai Viteazul 6th Special Operations Brigade. By 7 November, the company was ready to deploy, its weapons and equipment packed in shipping containers.

On 12 November, C Company — along with the battalion's sniper section, mortar section, and S6 communications section — deployed to the Romanian air base in Câmpia Turzii. Upon arriving in country, company and platoon leadership immediately met their Romanian counterparts and began pre-execution planning and coordination for scheduled training.

Airborne Operations and Planning

C Company and the Romanian Special Forces Company conducted pre-jump training on 13 November and then conducted a high-profile parachute jump onto Luna Drop Zone on 14 November. Immediately after the parachute jump, Romanian Prime Minister Victor Ponta held a press conference on the air base runway, backed by Romanian aircraft and U.S. and Romanian forces in formation. On 16 November, both companies moved all personnel and equipment to the Cincu Training Area. From 17-19 November, U.S. and Romanian forces conducted small arms firing and began the planning process and rehearsals for the 72-hour field exercise. By midday on 19 November after weather forecasts projected rain and high winds, U.S. and Romanian leadership cancelled the original plan to conduct an airborne insertion into the exercise via a combat equipment parachute jump.

Our combined U.S.-Romanian task force was task organized into two combined company teams for the field exercise. The commander of the Romanian Special Forces Company led Team Griffin, which comprised two Romania Special Forces platoons and C Company's 2nd Platoon. My company commander, CPT Teddy Borawski, led Team March or Die, which comprised C Company's 1st and 3rd Platoons and a Romanian airborne platoon.

Field Exercise

At 1130 on 20 November, U.S. and Romanian forces initiated the field exercise by conducting a mounted insertion into the Cincu Training Area on Romanian trucks. Upon dismounting, Team Griffin marched towards Objective (OBJ) Saber in the south. Team March or Die proceeded to march northeast towards its assigned objective, OBJ Sword, which consisted of three separate platoon objectives, each approximately one kilometer apart. My platoon reached the company release point, separated from the company's main body at about 1800, established my platoon's objective rally point (ORP) one kilometer from my assigned objective, and waited for the order to attack. By 1900, both 1st Platoon and the Romanian platoon had successfully completed their attacks on their respective objectives, and at 1930, CPT Borawski ordered 3rd Platoon to attack the remaining objective.

My platoon successfully conducted a raid on OBJ Sword at 2000 and then retrograded one kilometer to the platoon ORP. My platoon's movement was slowed due to the dense underbrush and steep terrain, conditions which worsened under steadily increasing rain, 30-degree Fahrenheit temperatures, and five-percent illumination which severely limited the effectiveness of our night vision devices (NVDs). We conducted link up with my security team at the ORP at 2030, collected ruck sacks, reorganized, and prepared to conduct the final movement of the night to rejoin Team March or Die at the company patrol base, which was located in a bunker complex a half kilometer northeast of the ORP through a hilly and dense forest.

Just prior to 2100, my platoon — cold, wet, and fatigued from the raid and the retrograde to the ORP — departed the ORP and began its final movement. Less than 10 minutes into the movement, one of my Soldiers in the rear of the formation passed a halt signal forward. Looking back, I saw white lights, an immediate indicator of a real-world emergency. Upon arriving at the scene with my radio-telephone operator (RTO), I found my acting platoon sergeant and my platoon medic removing the uniform off one of my machine gunners, who had collapsed, unconscious from heat stroke. He had failed to remove his waterproof jacket during our 30-minute rest in the ORP and had overheated, despite the rain and freezing temperature.

The medic explained to me that the Soldier required immediate evacuation or would possibly suffer permanent brain damage. As the platoon sergeant and medic prepared the Soldier for movement, I immediately assessed possible evacuation options from my current location. The weather and dense forest precluded the possibility of using the Romanian medical evacuation (MEDEVAC) helicopter, and the closest road to our position to conduct a non-standard casualty evacuation (CASEVAC) using a Romanian truck was 400 meters northwest through difficult terrain. Using my RTO's hand microphone, I sent a 9-line MEDEVAC request on his radio over the company net for a truck CASEVAC.

After I received confirmation of my request, I immediately organized the evacuation detail, which consisted of my platoon sergeant, platoon medic, RTO, and six Soldiers to rotate carrying the Soldier on a folding litter, along with my best team leader to navigate us to the road. I ordered the team leader of 2nd Squad's Alpha Team to my position, and we hastily created a simple route using dead reckoning. There was insufficient light for either NVDs or headlamps to quickly and reliably terrain associate, and our global positioning system devices lacked signal in the poor weather. I needed a certain path out of the woods, even if we had to push through harder terrain. I placed the squad leader of 2nd Squad in charge of the rest of the platoon during our evacuation and gave him my five-point contingency plan.

The evacuation detail immediately began movement, and I suppressed my urge to take point when movement slowed as we passed through the dense brush. I maintained contact between the team leader and the litter team, double checked our azimuth and distance, and through my RTO, reconfirmed that the CASEVAC truck was en route and that the aid station was prepared to receive the injured Soldier. As movement further slowed heading uphill and forcing a path through the brambles, I decided to replace the team leader and take point to maintain speed. I ordered him to keep me from moving too far in

Romanian 6th Special Forces Brigade soldiers and paratroopers from the 173rd Airborne Brigade conduct a patrol together on 20 November 2014 in Cincu, Romania, as part of Exercise Rubicon.

front of the littered casualty, told my RTO to stay at my heels to maintain radio contact with the CASEVAC, and continued to dead reckon. I broke through the tree line and into the clearing of the road at the pick-up site, just as 1st Platoon's platoon leader crested the road leading the MEDEVAC team in search of my evacuation detail. We loaded the Soldier onto the CASEVAC truck, which evacuated him to the Romanian aid station.

The evacuation detail and I then moved back through the woods to link up with the rest of my platoon, and together we finished our movement to the company patrol base. The next morning at approximately 0400, I evacuated my platoon medic, who discovered upon waking that his cornea had been severely scratched by a branch the night prior while evacuating the injured Soldier. Later that morning at approximately 0730, another Soldier in my platoon experienced a severe anaphylactic reaction while eating a field ration and was only saved from suffocation by an epinephrine shot and then again by a nasopharyngeal airway, initially inserted as a precaution, when the epinephrine wore off on the hour-long MEDEVAC drive from the training area to the Romanian aid station. After stabilizing the Soldier at the aid station, the Romanian medics evacuated him to the closest hospital in Sibiu via the Romanians' IAR-330 PUMA MEDEVAC helicopter. At 0830, I also evacuated a fourth Soldier in my platoon as a low priority due to immersion foot.

After the Romanian MEDEVAC helicopter dropped the one Soldier off at the hospital in Sibiu, it suffered engine failure on its return flight to the Cincu Training Area and crashed at approximately 1040. Members of my company closer to the suspected crash site and their Romanian counterparts immediately formed a search party, which eventually found the wreckage near the Romanian town of Malancrav and evacuated the two surviving passengers. The crash killed eight Romanian soldiers on board and prompted the decision by the Romanian military to cancel the remaining portion of the field exercise. My company and the Romanian Special Forces Company conducted a farewell ceremony and a memorial service for the eight Romanian soldiers on 24 November. C Company and its attachments redeployed as scheduled to our home station in Italy the following day, 25 November.

Conclusion

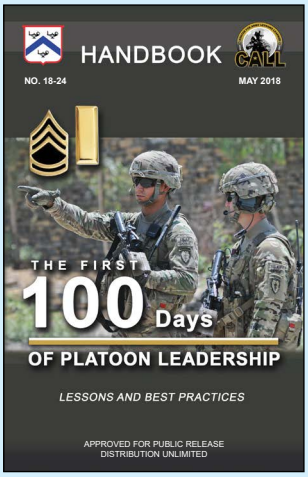
My experiences during Exercise Rubicon facing real-world emergencies and casualties reinforced several lessons with searing clarity — lessons which made me a better officer and leader. The first lesson is that leaders must quickly grasp the situation they are facing, rapidly form a plan, and then aggressively execute, often under adverse conditions. The second lesson is that there are no second chances, no exercise pauses, no one, or nothing that will save Soldiers or the mission in combat or training except for the actions and decisions of leaders.

The final lesson is that training for war must be difficult and dangerous because war itself is difficult and dangerous. Soldiers cannot learn leadership in warfare from a textbook alone. Leadership must be practiced in the manner in which it will be executed — in the mud and cold and darkness, weary with exhaustion and weight, and confused by the sounds, smells, and flash of gunfire. My training at the U.S. Military Academy, IBOLC, and Ranger School epitomized this lesson, and it truly prepared me for the trying situations my platoon faced in the cold and rainy conditions in Romania in November 2014.

Notes

[1] Emergency deployment readiness exercises are no-notice training exercises designed to test the ability of a unit, usually airborne infantry, to deploy without warning into a combat zone and be prepared to fight.

CPT Thomas G. Ankenbauer is currently serving as executive officer for 2 Troop, C Squadron, Asymmetric Warfare Group at Fort Meade, MD. His previous assignments include serving as a platoon leader in C Company and executive officer for D Company, both in 1st Battalion, 503rd Infantry Battalion, 173rd Airborne Brigade, Vicenza, Italy. CPT Ankenbauer is a graduate of the U.S. Army Airborne School, Ranger School, Infantry Basic Officer Leaders Course, and Maneuver Captains Career Course, all located at Fort Benning, GA. He holds a Bachelor of Science in International Relations from the U.S. Military Academy at West Point, NY.



CALL Releases Platoon Leadership Handbook

NCO Professional Development System (NCOPDS)/Officer Education System (OES) schools have neither the time nor ability to cover every scenario a new platoon leader (PL) or platoon sergeant (PSG) may face after assuming duties. The Center for Army Lessons Learned, in conjunction with serving and former PLs and PSGs, has compiled lessons learned and best practices for PLs and PSGs and those who aspire to these positions to improve themselves and their units. The purpose of this handbook is to provide these lessons learned and best practices to PLs and PSGs to help enable their success in their first 100 days in position and beyond.

Download the handbook at:
https://usacac.army.mil/sites/default/files/publications/18-24_.pdf

The Army's Rio Grande Campaign of 1859: A Total Force Case Study

MAJ NATHAN JENNINGS

Total Force cooperation between the U.S. Army's active, Guard, and Reserve components has long been a hallmark of its warfighting capability. From participation by patriot volunteers in the American Revolution to the societal mobilization for World War II, America's primary landpower institution has habitually integrated a wide range of Soldiers that has included professionals, reservists, militia, draftees, and both state and federal volunteers to conduct expeditionary campaigns of mass and scale. These types of multi-component efforts, often transitioning to costly stabilization efforts in distant theaters, have allowed the nation's oldest military service to, as required by U.S. joint doctrine, "be synergistic... with the sum greater than its parts."[1]

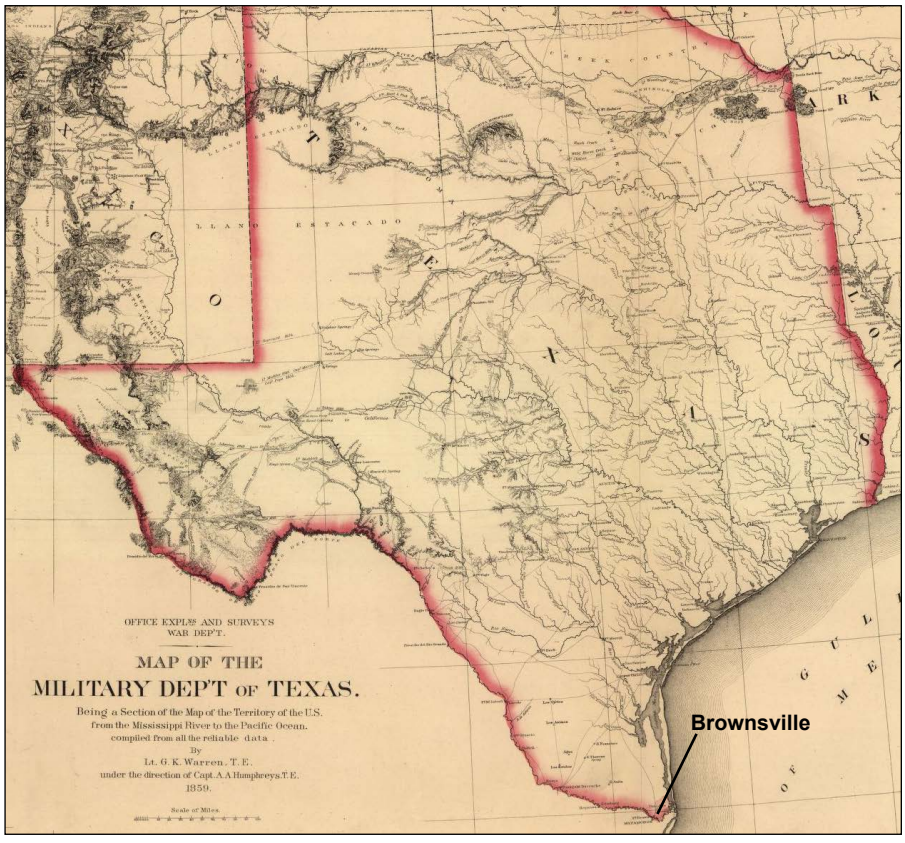
American military history is replete with instances of the Army fulfilling its mandate to, as defined in its 2014 Operating Concept, integrate the "unique civil-military expertise" of citizen Soldiers "across military, government, economic, and social spheres" into a Total Force approach that complements and enhances the active component's capabilities.[2] While tectonic wars like the Civil War and World Wars garner the most attention, the little-known Rio Grande Campaign of 1859 along Texas's southern border offers a modest case study where an infantry task force of Army regulars joined with state mounted forces, in the form of para-military Texas Rangers, to defeat a hybrid Tejano adversary. This minor campaign, where professionals and volunteers complemented strengths, resulted in restoration of relative, though ethnically biased and temporary, stability along a troubled section of the U.S.-Mexico border.

The Rio Grande Frontier

The First Cortina War exploded along the Rio Grande in South Texas in the summer of 1859 as an ethnically driven political confrontation between the emerging Anglo-Germanic majority and the long-standing Hispanic residents. Rising tensions between aggressive white settlers and resisting Tejano trans-nationals, which exacerbated centuries of discontentment amongst isolated and disenfranchised Rio Grande border communities, had inflamed as Texan merchants, ranchers, and settlers seized lucrative properties and resources from vulnerable owners. The rapid transfer of local political power across South Texas began in earnest following the United States' crushing victory over Mexico in 1848, and the territorial annexation that followed catalyzed social discontentment and ultimately an armed uprising.

Tejano militancy exploded on 13 July 1859 when Juan Nepomuceno Cortina, a prominent Hispanic-Texan rancher and Mexican army veteran of the battles of Palo Alto and Resaca de la Palma, killed a Brownsville constable who was subjecting a

Map of Texas, 1859



Hispanic ranching hand to harsh treatment. Cortina then escaped across the international border to Matamoros while angry Tejanos and Mexicans along both sides of the Rio Grande hailed him as a hero. Texas Ranger John Salmon Ford — a former soldier, newspaper editor, and physician who would lead the state military response — later complemented the firebrand as "fearless, self-possessed, and cunning" while noting that he "acted decisively and promptly."[3] As a strong leader who intuitively understood hybrid warfare, Cortina would soon demonstrate a remarkable ability for combining guerrilla and conventional tactics with acts of terrorism.

Major John "Rip" Ford," a Mexican-American War veteran, led the Texas Ranger volunteers during the First Cortina War.

On 28 September, the revolutionary militant exacted his revenge. Cortina led approximately 75 horsemen to attack Brownsville directly. In order to maximize political impact, he aimed to execute the offending town marshal as well as a former ranching partner, Adolphus Clavaecke, in addition to rescuing several Tejano prisoners. With surprise and shock the raiders, popularly called Cortinistas, descended upon the unsuspecting town and, according to Ford's admittedly biased account, "killed whomever they wished, robbed whomever they pleased." Cortina then set up camp seven miles away and on 24 October easily repulsed a hasty counterattack by an ad hoc militia called the "Brownsville Tigers." The brazen rebel's legend was expanding across the Rio Grande Valley and threatened to engulf the region in violent chaos.[4]

The events at Brownsville, though relatively minor in scale, sent political shockwaves across the region. George Woods, the governor of Texas and a veteran officer of the Creek and Mexican-American Wars, distrusted the dispersed U.S. Army garrisons to respond quickly and immediately authorized an improvised expedition of state-funded Texas Rangers to counter the militants. He appointed William Tobin, a former Marshal of San Antonio, as commander and dispatched the company south to break the ongoing "siege" at Brownsville. Despite the Texans' aggressive intentions, on 20 November Cortina's force defeated a detachment of the rangers while killing three in the fight. When Tobin found the bodies of his men, they had been mutilated and left to rot in the sun. For many Texans who yet retained ethnic enmity over atrocities at places like the Alamo and Goliad just 23 years earlier, the fight had gained a larger significance.[5]

Library of Congress Prints and Photographs Division

Samuel P. Heintzelman, pictured here as a major general during the Civil War, commanded the combined federal-state effort against the Cortina rebels.

Combined Arms Integration

Skirmishing continued over the next two weeks as both sides mustered additional forces to the Rio Grande. By mid-December, the U.S. Army finally consolidated its dispersed garrisons to suppress the uprising. Major Samuel Heintzelman, an infantry officer who had won distinction in Winfield Scott's capture of Mexico City in 1847 and had previously served with the 1st, 2nd, and 3rd Infantry Regiments in various frontier assignments, assumed command of both federal and state military efforts. Seeking to leverage combined arms superiority, he created a task force comprising two infantry companies, one artillery company, one cavalry troop, and several companies of fast-moving, though indisciplined, mounted rangers. The improvised battalion then marched against the rebels on 14 December while bringing two 24-pound howitzers to provide mobile fire support.[6]

The combined force of 165 regulars and 125 state volunteers marched down the Laredo road with, according to Heintzelman, "Rangers in advance and on the flanks" to conduct route reconnaissance. This order of battle reflected the commander's appreciation of the Texans' strengths in speed, agility, and environmental familiarity on the Southwestern frontier. The advance scouts soon discovered that the Cortinistas had evacuated camp and established a fortified position with support from captured cannon in a "dense chaparral" farther down the road. Upon making contact, the major, sought to immediately overwhelm the rebels by neutralizing their cannon with his own and then charging their position with his infantry. However, when the soldiers arrived they discovered that the wily Cortina had displaced again.[7]

Rangers and federal cavalry pursued the Tejano rebels along parallel roads with the Texans making first contact. They discovered that Cortina had left a rear guard in a dense brush, allowing their inspirational leader to escape. Tobin dismounted his men and cleared the position with intense close-quarters fighting where they relied upon both rifles and revolvers. Heintzelman — who held undisciplined volunteers in low regard like most regular army officers — offered rare praise when he admitted that "the Rangers, supported by the foot, soon routed them again." Despite the commendation, later reports by Tobin and the major conflicted on who owned fault for allowing the rebels to withdraw. In actuality, a combination of indecision and challenging terrain conspired to slow the task force's advance. Cortina, ever the elusive guerrilla, escaped to fight another day.[8]

Simultaneous to the escalation at Brownsville, the Texas governor in Austin had dispatched Ford with another company of 53 volunteer horsemen as reinforcements. The rangers, who rode horses acclimatized to the arid Texan environment, rode 350 miles at maximum speed to reach the scene of battle. Ford later wrote that his men "reached Major Heintzelman's regulars shortly after they had driven Cortina from the field" and that "the two commands went into camp." Much to Tobin's disappointment, Runnells had also appointed Ford as the senior commander of all state troops at the rank of major.[9]

On 20 December, after several days of reconnaissance patrols and collaborative planning between Ford and Heintzelman, the improvised battalion once again marched against the Cortinistas. Far to the east, the *New York Times* sensationally reported that Cortina was "burning the ranchos as he went" and had "declared his intention to plunder and burn Edinburgh, Rio Grande City, and Roma."[10] Seeking to make a stand in complex terrain, the revolutionary leader had established a new defensive position in Rio Grande City with approximately 600 fighters. As a veteran of earlier wars, he hoped that larger numbers, massed firepower, and defensive fortifications would allow him to repel the impending attack.[11] Ford described the events that led to the culminating battle of the campaign from his perspective:

> "About the twentieth of December a forward movement was made. The main body consisted of regular infantry, cavalry, and artillery. Tobin's and Tomlinson's companies followed the road leading from Brownsville to Rio Grande City... the third day's march brought to light many acts of vandalism. Houses had been robbed and fired, fences burned, property destroyed or carried into Mexico... Cortina had committed these outrages upon citizens of the United States regardless of race and upon Mexicans suspected of being friendly to the Americans."[12]

The federal-state task force halted on 26 December, 18 miles from the town, to plan its final approach.

Federal-State Cooperation

Under mounting political pressure to rapidly defeat the rebels and stabilize the region, Heintzelman elected to attack with an envelopment maneuver designed to definitively end the uprising by killing or capturing its ringleader. Ford, after conducting night reconnaissance of the disposition of the defenses, discovered that Cortina's position was sound: his right was protected by the river, the main road in the center by two light infantry companies and cannon, and his left by infantry and cannon hastily entrenched in a cemetery. The rebel commander finally held limited cavalry in reserve, perhaps revealing previous training with the Mexican army.[13]

Despite the Tejanos' readiness, Heintzelman launched a broad assault with simultaneous attacks against the rebel perimeter at daybreak. While the rangers commenced a dismounted assault against Cortina's center and left positions, the infantry regulars moved to fix his right and the cavalry regulars provided security. After taking "terrific fire," Ford's men outflanked the central cannon and routed the enemy. The Texan commander recalled how they rode to position for an infantry-style assault: "Our mounted men advanced at a brisk gallop, and left the road by an inclination to the right at less than a hundred yards from the enemy artillery. Cavalry halted, dismounted about 40 yards from the cannon, and opened fire. I now instructed them to advance under cover of chaparral and take the pieces in flank."[14]

Cortina launched infantry and then his mounted reserve to reinforce his crumbling front. The rangers in the center immediately assumed a hasty defensive line and shattered the charge with precision rifle fire and then blazing revolvers. Tobin, in command of the task force right, then turned back the remainder of the Tejano counterattack. Ford wrote of their fire on the Tejano cavalry: "Many a charger galloped off, carrying an empty saddle; Cortina's bold riders were left on the ground." As the combat in the center intensified, Heintzelman's regular infantry conducted an echeloned advance on the enemy's right flank to complete the route. Relying on discipline, massed volleys, and ultimately bayonets, the foot soldiers then defeated and scattered the remaining rebels.[15]

Despite the decisiveness of Heintzelman's victory, Cortina and the core of his fighting force managed to escape the envelopment and retreat up the road towards a small town called Roma. After moving several miles and realizing that they could not outpace the pursuing task force, they set blocking positions with light cannon support. The rangers, relying on their cavalry mobility, again led the task force advance and, upon making contact, charged through scattershot to reach the Cortinista position. Ford recalled that "the matter of nationality was decided right there. A furious charge scattered Cortina's bodyguard and left one of his pieces in our possession." The ranger recalled how the "enemy attempted no further resistance" and "seemed panic-stricken, and abandoning the other cannon, fled."[16]

Heintzelman, moving up with the task force infantry and artillery, feared that Cortina would move to the nearby town of Roma to "rob it" for supplies. The major accordingly launched another rapid pursuit up the river valley with his mounted contingent of cavalry and rangers. The fear turned out unfounded; Cortina had appreciated the scale of his tactical setbacks and left the road to find refuge in the wilderness. The horsemen then continued to Roma where Ford, as the

senior officer present, "gave the inhabitants assurance of protection." They then rode east to rejoin the slower elements under Heintzelman as the task force began to consolidate their wounded and dead.[17]

The U.S. Army's victory over the Cortinistas was complete, if regrettably temporary. Ford later assessed adversary casualties: "the loss of the enemy was officially reported at 60 killed. We afterwards ascertained it was much greater."[18] As the task force commander, Heintzelman likewise boasted of distances marched against the rebels: "We marched yesterday about 20 miles & this morning 20 more & then 9 in pursuit. Near 50 miles & a fight is pretty good business. I hope the matter is ended."[19] Despite the severity of Cortina's defeat and the major's sincere hopes for peace, the Tejano rebellion would survive.

Federal and state forces scoured the Rio Grande on both sides of the international border for the next three months as Cortina shifted to guerrilla methods in the form of vicious strikes and raids against civilian communities. Texan volunteers under Ford continued to support Heintzelman with dispersed and long-ranged patrolling to clear the area. The combined team, known as the Rio Grande Squadron, again defeated Cortina at the Battle of La Bolsa on 4 February and at the Battle of Ranch La Mesa on 17 March. Though the revolutionary icon survived the engagements and suspended his activism, the onset of peace would be illusory due to continued ethnic inequities between Anglo and Tejano residents.[20] In the summer of 1861, even as Texas mobilized against the might of the Union Army, Ford would lead the 2nd Texas Cavalry Regiment, CSA, in the Second Cortina War to defeat the ever-defiant rebel for the last time.

Total Force Unity

The First Cortina War, though virtually unknown in American military history, caused the deaths of an estimated 151 combatants, 80 Hispanic civilians, and 15 Anglo residents.[21] Throughout the campaign, federal and state forces united, with varying degrees of friction, to balance each of their particular strengths and mitigate weaknesses to create a more effective combined arms team. While the U.S. Army contingent provided command and control, legitimacy, infantry mass, and responsive cannon fire, the Texas Rangers brought increased tactical mobility, frontier experience, and local political legitimacy. This integration — in large part achieved by cooperative planning and execution between Heintzelman and Ford — eventually allowed government forces to defeat, pursue, and again defeat Cortina and his rebels.

These lessons, centering on the imperative for task force commanders to appreciate and integrate both traditional and innovative contributions, have withstood the test of time. Now, just as in 1859, the U.S. Army's active, Guard, and Reserve components contribute optimized capabilities that make the Total Force successful. As emphasized by the institution's 39th Chief of Staff, GEN Mark Milley, "it is impossible for the United States of America to go to war today without bringing Main Street – without bringing Tennessee and Massachusetts and Colorado and California."[22] This fact will not change and will likely become more acute as the nation's primary landpower force conducts expeditionary operations with more modestly sized components. Just as regulars and rangers united efforts along the Rio Grande, their heirs will do so again across equally challenging frontiers in the 21st century.

While the U.S. Army contingent provided command and control, legitimacy, infantry mass, and responsive cannon fire, the Texas Rangers brought increased tactical mobility, frontier experience, and local political legitimacy. This integration... eventually allowed government forces to defeat, pursue, and again defeat Cortina and his rebels.

Notes

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[5] Frederick Wilkins, *Defending the Borders: The Texas Rangers, 1848-1861* (Austin: State House Press, 2001), 106-107.

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[11] Thompson, Cortina, 77.

[12] Ford, Rip Ford's Texas, 270.

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[15] Ibid, 273; Heintzelman, Fifty Miles, 155; Thompson, Cortina, 78-80.

[16] Ford, Rip Ford's Texas, 273; Thompson, Cortina, 81-82.

[17] Ford, Rip Ford's Texas, 274.

[18] Ibid, 274-275.

[19] Heintzelman, Fifty Miles, 155.

[20] Thompson, Cortina, 83-85; these engagements were closer to skirmishes than actual battles.

[21] Darren Ivey, *The Texas Rangers: A Registry and History* (Jefferson: McFarland & Company, Inc., 1970), 84.

[22] GEN Mark Milley, "There is Only One Army," Army National Guard News, 22 September 2015.

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Cold Regions:

Environmental Influences on Military Operations, Part II

BG PETER W. CLEGG
COL ROBERT H. CLEGG

Editor's Note: *This article was first published in the September-October 1992 issue of* Infantry Magazine*. It is the second in a two-part series on the environment in cold regions and the way that environment affects military operations. The first part (in the January-March issue) detailed the climatic conditions and the terrain found in these regions and discussed the resulting effects on observations and fields of fire, cover and concealment, and movement. This second article discusses the influences of these conditions on Soldiers, equipment and facilities, support, and combat operations.*

In cold climates, survival rapidly becomes the major concern. Even with the soldiers' survival assured, cold still affects their performance by inflicting physical injury upon them and impairing their psychological stability as well. Precipitation, wind, and terrain intensify the effects of temperature and influence safety. Although soldiers cannot acclimate to cold as they can to heat, training in the effects of cold conditions allows them to take certain precautions.

The cold kills. During Napoleon's withdrawal between Berezina and Vilna, 40,000 soldiers perished from the cold in four days. A fresh division numbering 15,000 dispatched to assist lost 12,000 to the cold in three days. At the same time, Russian losses to the cold numbered 83,000.

During their winter war with the Soviet Union in 1939-1940, the Finns destroyed the first two divisions invading their country using harassing operations on skis, isolating groups of forces from supplies, and hitting the easily detected Russian field kitchens. The Soviets suffered 48,000 men killed and 158,000 wounded or injured in the early fighting, mostly from the cold. From 1 January to 31 March 1942, the Germans sustained 14,236 casualties from frostbite. During Operation Barbarossa, the Germans lost some 100,000 soldiers to frostbite, including 14,000 who required amputations.

In November and December 1950, U.S. units in Korea suffered 7,000 non-battle casualties, primarily from frostbite (35 cases per 1,000 soldiers in the combat zone). Cold injuries peaked when the intensity of enemy activity increased; soldiers had to leave sheltered positions, lie on the frozen ground, and stand guard at night. On the Koto-ri Plateau in early November, temperatures dropped to -8 degrees Fahrenheit. Winds were 30-35 miles per hour, and U.S. soldiers experienced their first shock of cold. Even though the temperatures would be colder (-25 degrees Fahrenheit) as the winter progressed, the effects of this first shock wave were severe. Within two days, more than 200 men in a single regiment collapsed from the cold. Stimulants had to be used to counter depressed breathing. The 7th Division treated 142 men for frostbite as early as 23 November. (Americans in Korea learned that the hot temperatures, characteristic of cold regions in the short summer, also caused major problems. On 7 August 1950, for example, temperatures reached 120 degrees Fahrenheit, and the heat prostration cases were six times the number of enemy-inflicted casualties.)

It is the cold of the long winter, however, that presents the major challenge. In the plains of Russia, the temperature regularly drops to -60 degrees Fahrenheit in winter, and in Korea -30 degrees is not unusual. Those temperatures are also routine in Canada and Alaska.

Frostbite, the major threat, can occur at temperatures below 32 degrees. Keeping the blood circulating is a preventive measure, as is proper clothing. Layers of clothing must be worn loosely, and head gear is imperative since much body heat is lost through an uncovered head.

With warmer temperatures of up to 50 degrees and wet conditions, trench foot becomes a problem because feet perspire more readily than other parts of the body. Changing

socks regularly to keep feet dry is the preventive measure, and leaders must ensure that this is done. Other concerns, such as dehydration, hypothermia, fatigue, poor hygiene, and lack of nutrition, all lead to reduced performance and susceptibility to heat or cold injuries.

In below-freezing temperatures, contact with liquids is hazardous. Fuel spilled on a bare hand leads to immediate frostbite. Falling through ice on a lake or stream can result in hypothermia, another killer. Water does not have to be freezing to cause injury; however, at 60 to 70 degrees Fahrenheit, it can cause loss of consciousness in two hours. In water up to 40 degrees, a soldier may lose consciousness in only 15 minutes. During the Korean War, for example, men of Company L, 3rd Battalion, 17th Infantry, began to wade into a shallow stream in air temperature of -7 degrees. When it became apparent that they would be frozen almost immediately, they were called back. Their clothes had to be cut from them, and the abortive crossing resulted in 18 frostbites cases.

Cold injury results from unpreparedness. Both the likelihood and the extent of injury can be reduced if soldiers are active and properly clothed. (It is better to be slightly cold than overdressed since perspiration can become excessive and speed up heat loss.) Dryness causes perspiration to go unnoticed, so water intake becomes as important as in desert climates. (See "Environmental Influences on Desert Operations," by COL Robert H. Clegg, *Infantry Magazine*, May-June 1992, pages 28-34.) Lack of activity, which may be unavoidable in combat situations, can be a prime cause of cold injury. Sitting in foxholes or even lying on the ground, whether to fire weapons or repair vehicles, increases susceptibility. Soldiers must be kept moving.

Shelter is vital but hard to find. In 1941, the 6th Panzer Division in Russia occupied open terrain in temperatures of -50 degrees. The division sustained 800 frostbite cases daily. When the soldiers found hand tools useless for digging foxholes, they blasted craters into the ground and built improvised shelters, thus reducing frostbite cases to four a day.

Personal hygiene is another preventive measure. Sanitation can be difficult (especially waste disposal), but attention to it is critical. Nutrition is also critical. Troops burn up a lot of energy working in cold temperatures. In the Korean War, soldiers ate candy for energy at alarming rates (six or seven Tootsie Rolls in 10-15 minutes).

Logistics requirements in cold regions (for food, water, fuel, and clothing) are more than twice the requirements in warmer climates. This places an increased workload on soldiers, who can easily be burdened with more than 90 pounds of clothing and equipment. The depth of snow or mud also makes foot movement exhausting, and fatigue makes soldiers more susceptible to injury. Rotation and rest periods are required. Sleeping in vehicles, however, is just as unsafe in cold regions as anywhere else because of the danger of carbon monoxide from heaters. And unheated vehicles are colder than tents.

Many other aspects of cold-region operations cause problems for soldiers. Vast flat areas covered with snow reflect solar energy and produce snow blindness as well as sunburn.

Cold injury results from unpreparedness. Both the likelihood and the extent of injury can be reduced if soldiers are active and properly clothed. (It is better to be slightly cold than overdressed, since perspiration can become excessive and speed up heat loss.) Dryness causes perspiration to go unnoticed, so water intake becomes as important as in desert climates.

In Arctic summers, when the ice and snow melt, the abundant moisture brings with it mosquitos and flies. These insects distract the soldiers' attention and cause discomfort, which can lead to mistakes and injuries.

A psychological hazard called "arctic hysteria" results from short days, long nights, persistent cloud cover, and cold temperatures. This ailment is characterized by passivity, low morale, depression, insomnia, claustrophobia, and suicidal tendencies. In below-zero temperatures, these states of mind are killers because they lead to personal neglect, inactivity, and carelessness. Fear of isolation and freezing to death can get out of control. German accounts during World War II reported soldiers who became apathetic and indifferent, which destroyed their will to survive.

Arctic winds intensify the effects of cold by creating wind chill. As air moves across the flesh, the body loses heat. At -20 degrees Fahrenheit with a wind of 25 miles per hour, the wind chill is -75 degrees Fahrenheit. Or if a soldier is riding in an open vehicle moving at 20 miles per hour into a wind of 10 miles per hour with a temperature of 15 degrees Fahrenheit, the wind chill is -25 degrees, and that soldier's exposed flesh will freeze in one minute. The blast from propellers and rotors creates the same situation. Strong winds such as the williwaws of mountainous coastal regions kick up debris that can cause injury to soldiers. Trees and structures blown down by strong winds also cause injuries. Winds are responsible for blizzard conditions that can disorient soldiers, isolate positions, and lead to life-threatening situations.

The terrain in cold regions can also be a source of injury. The rocky surfaces of volcanic mountains lead to foot and ankle injuries. On steep slopes of Alpine-like mountains, rock falls and avalanches occur regularly. During the Korean War, the bare 60-degree slopes of the Naktong Mountains, coupled with 100-degree temperatures, caused more U.S. casualties than enemy action. Glaciers are dangerous because they move, and huge blocks of ice fall off. Soldiers have disappeared into crevasses and have been crushed.

Effect on Equipment and Facilities

During World War II, the Soviet commander of the Southwestern Front encouraged his comrades by saying: "The great danger for the German command is that the first big change in the weather will knock out all their motorized

equipment. We must hold out as long as and in any way possible but immediately go over to the attack when the first few days of cold have broken the back of the German forces. This backbone consists of the tanks and motorized artillery that will become useless when the temperature hits 20 degrees below zero."

As the Germans approached within nine miles of Moscow, winter struck with -40 degree temperatures. The soldiers were so numb they could no longer aim their rifles. Firing pins shattered, recoil liquids froze in machine guns, and artillery rounds detonated with little effect in the deep snow. The Red counteroffensive then began. German General Heinz Guderian later complained that his tanks were breaking down in the cold while the Soviet tanks kept running.

The cold obviously affects the performance and durability of military equipment and facilities. Temperature, precipitation, and wind cause equipment failure and damage. Lubricants become stiff; plastics and rubber become brittle; gauges, dials, and linkages stick; brakes freeze to drums; fuel tanks, filters, and fuel lines become blocked; protective paints chip and lead to corrosion; battery efficiency is reduced; drain plugs freeze tight; power train breathers and vents clog from slush; and windshields crack easily, especially when hit by warm air.

During the Korean War, troops complained that their vehicles froze up on the move, brakes grabbed, and transmissions stiffened. Keeping vehicles moving is a challenge when the cold is intense enough to halt them; add a few feet of snow, and engines and transmissions are taxed. In mud, engines and transmissions can burn up if a vehicle is improperly driven. It is important to operate in low gear to preclude stalling. Deep snow tends to pack under the hull, which can lift the vehicle and reduce traction. Soviet drivers are taught to shift immediately to reverse when tracks lose their bite and spin. They are also taught to accelerate gradually and smoothly on ice and snow. It is best for a driver to avoid the tracks of the tanks in front of him and plow his own course over fresh snow.

Library of Congress Prints and Photographs Division

On Attu, Soldiers fire mortars into a Japanese position on 4 June 1943.

Artillery has unique problems in frozen environments. Aside from the cold, which affects the accuracy of a gun and also makes it dangerous to touch with bare hands, it cannot be stabilized because the ground is frozen and the blades cannot dig in.

The gun tubes expand and contract with temperature changes when firing and then remaining silent for extended periods. The effectiveness of ammunition can vary considerably. Projectiles may not penetrate the ground. If snow is deep in winter (mud or muskeg in the summer), shrapnel is confined and absorbed. The frozen ground reduces the penetration of all munitions. During the Korean War, aircraft munitions actually bounced off the frozen ground.

Fuzes are affected by cold. They run slower, and some types of variable time-fuzes malfunction at 0 degrees and below. Proximity fuzes can "see" through dry snow and sense the ground, but wet snow may cause premature detonation. Point detonating fuzes can get buried in the snow and not detonate at all.

Illumination rounds tend to malfunction because of the many moving parts and the parachute. Cold, dry conditions inhibit the development of smoke plumes. White phosphorus is most affected because its heat can bury it in the snow.

A positive result for artillery is that exploding rounds send out frozen clods, stones, and chunks of ice, which are as deadly as shell fragments. Small arms have problems as well. The metal can get so brittle that rifles break, and automatic weapons jam as the lubricants freeze. Cold also changes the zero and slows firing rates as gas escapes more slowly. For rockets and missiles, propellant burn is slower, which reduces range. The back-blast danger area is tripled. Heavy firing of weapons causes ice fog, which obscures visibility and reveals firing positions.

Communications equipment — especially antennas, ground wires, and radios — can be affected by frozen conditions. Icing on antennas can reduce range and increases noise. Antennas get out of tune, especially at higher frequencies. Setting up antennas is a problem because the stakes cannot be driven into the frozen ground; mountain pitons might be used to correct this. Wires and poles break from the pressure of ice and wind.

Since water expands by 10 percent when it freezes, containers will crack if filled beforehand. Gortex clothes are warm, but they can be noisy when temperatures drop and can alert the enemy. Protective clothing, particularly masks and gloves, becomes brittle in extreme cold, and placing them on skin can induce injury. Decontamination presents particular problems because it requires water.

Temperature, snow, and strong wind affect facilities. Alternate freezing and thawing buckles asphalt and cracks pavement, damaging roads, airfields, and building foundations. The change from frozen ground in winter to moist ground in summer also damages and jars fixed facilities such as rails, roads, and buildings. Bridges and port facilities sustain damage from ice when a spring thaw occurs, and huge chunks flow downstream hitting abutments and docks.

The weight of compacted snow and ice can collapse buildings, tents, and hangars. Heavy winds associated with extreme variations in air pressure create hurricane-like conditions, damaging structures, downing utility poles, and disrupting transportation centers. Steep slopes can be a source of danger for facilities because unstable rock in mountains can cause landslides, rock falls, and avalanches. Structures should be sited only after these have been considered. Finally, the mountainous areas are subject to earthquakes and volcanic activity.

Effect on Support

An army does not go far in any environment without a well-coordinated and complete logistics system, but such a system is even more critical in cold regions. A logistical system depends upon a base and its ability to move personnel, equipment, and supplies to and from the base.

In the far north, there are few sites suitable for a logistical base. In the moderate, urbanized cold regions, many locations are available. In severe cold areas, however, there are limited transportation and communication networks, and such networks are not well developed. Few structures are available for storage. Because of these limitations, the base, once established, becomes a likely enemy target and may even be the ultimate objective. Combat forces must therefore be dedicated to defending the base.

Logistics planners determine what supplies and equipment are required and in what quantities. For cold regions, special equipment is required — plows, clothes, drills, cross-snow vehicles, skis. The Germans, outfitted with summer uniforms, faced subfreezing temperatures in Russia, and thousands died as a result. The 7th Infantry Division's biggest mistake when its soldiers attacked Attu was their inadequate clothing and gear. The soldiers had little protection from the rain and wind. Their high-topped leather boots were not waterproof, and they had been trained in California for deployment to North Africa and were not prepared for the rigors of cold and wet weather. (The division later deployed to Leyte in the tropics.) They had not been issued their equipment until they were on board the ship. Their cold, wet feet were rubbed raw, leading to hundreds of cases of frostbite, trench foot, and gangrene.

Because summers can be warm in cold regions, both summer and winter clothing and camouflage are necessary. This increases the variety and quantity of material required, and thus the complexity of logistical task. The extreme cold, deep snow, and mud reduce the durability of equipment, and larger stocks must be on hand than in more temperate areas. Food, water, and fuel consumption is higher in cold regions.

All classes of supply must be moved first to the logistics base and then issued to units, and this can be hampered by trafficability and air delivery limitations. Engineers are part of the solution, but road and rail construction is difficult, expensive, and time-consuming. Aircraft are subject to all the restrictions previously discussed, and their number and load capacities are limited. Getting material to the soldier may be the biggest challenge.

Once supplies reach the base, storage is the problem. Warehouses must be warmed; highly perishable supplies such as medicines require special handling. Water-soluble medicines will freeze. In Korea, for example, medics had to keep morphine inside their clothing so it would be usable when needed. Plasma had to be warmed for two hours before it could be used.

Water and fuel require special storage. In temperatures below 14 degrees Fahrenheit, high charges of static electricity can make fuel-handling dangerous. Food, including MREs (meals, ready to eat), freezes and is difficult to eat without heating.

Because facilities for issue are likely to be limited, warm shelters must be established for waiting areas and break areas. Facilities for maintenance must be warmed; little maintenance can be done in the open. Maintenance demands are greater because the stress on the equipment is greater and repairs take longer. During winter, in the arctic regions, the hours of daylight are shorter, and electrical lighting is required. Not getting what is needed at the right place and time can mean terrible suffering and potential disaster.

Effect on Combat Operations

Maneuver depends on trafficability, and "go" trafficability in cold regions requires frozen, dry conditions. Cold temperatures freeze marshes, lakes, rivers, and soil, and dry conditions reduce snowfall. With warm and wet conditions, trafficability quickly becomes a "no go." Wet conditions in winter allow for the accumulation of deep snow, but as temperatures rise, the melting snow and ice create fast-flowing streams, lakes, and marshes. As temperatures hover around the freezing point, alternate freezing and thawing make trafficability difficult to predict. The freezing usually occurs at night, which means movement must also be at night or early in the morning.

In October 1941, for example, the German Operation Barbarossa came to a halt because of impassable Russian roads. Three panzer groups were spread out over 30 miles, giving the Russians their first opportunity to fight on equal terms. The Russian T-34 tank, with its wide tracks and higher hull-to-ground distance, came into its own. In January 1942, near Kursk, heavy snowfall stopped the German tanks while

the T-34s, having greater ground clearance and lower ground pressure, swept across the flat terrain and destroyed the German tanks.

Also in January 1942, Company G of the German 464th Infantry Regiment, recognizing the effect of deep snow on movement, escaped encirclement by the Russians when they withdrew from a village in three feet of snow over a path they had trampled beforehand.

As another example, on 16 April 1952 in Korea, a hard rain turned the ground into a sea of mud. In July, six days of rain flooded streams and swept away bridges. Landslides from moisture-laden soil blocked some roads and washed others away. Swollen rivers and treacherous roads restricted support and delayed movement into the Punch Bowl area until August. Earlier (in July 1950), such conditions created landslides that closed off coastal roads and slowed the North Korean advance.

To facilitate movement in deep snow, soldiers must travel on skis or snowshoes, or use aircraft. The Finns, experts on skis, achieved great success against the Russians in their 1939-1940 war. During World War II in the far north, each side employed "skiborne" troops.

Mountains slopes in northern areas are usually too steep for vehicles — in Korea, Scandinavia, Alaska, Canada, and much of Siberia. The thick taiga forest limits movement because the trees are too close together for vehicles to pass and too thick for them to run over.

Drainage also impedes cross-country movement. When crossing frozen lakes, ice thickness and vehicle spacing are critical. To support wheeled vehicles weighing four to 10 tons, ice should be from 24 to 39 centimeters (9½ to 15½ inches) thick, and allowable distances between vehicles should increase from 15 to 35 meters. For tracked vehicles weighing 40 to 60 tons, ice thickness should be 63 to 77 centimeters (25 to 31 inches), and vehicle spacing should be 40 to 45 meters. Speed should be three to five miles per hour, and driving should be steady without gear changes. For foot soldiers, five centimeters (2 inches) of ice thickness is required with intervals of five meters between soldiers; for a squad column, 10 centimeters (4 inches) is advised, with intervals of 20 meters.

In northern areas, land navigation is difficult, which complicates combat operations. Compasses provide less accurate readings because the farther north, the greater the declination. The northern reaches are not well-mapped, and photos may have to substitute. The monotony of the vast flat plains and the deep boreal forest add to the difficulty. The global positioning system, however, can alleviate these concerns.

Reconnaissance is particularly critical. Delays due to unforeseen circumstances can spell disaster during ground reconnaissance. Air reconnaissance is easier, but weather can also limit flying. Aerial photos are often the only way to survey current conditions along a route. For example, fog limited the ability of the U.S. Soldiers to reconnoiter the island of Attu in the Aleutians during World War II; they thought only 500 Japanese soldiers held the island when, in fact, 2,300 were there. Similarly, on Kiska, another Aleutian island occupied by the Japanese, a U.S. force of 34,000 with three battleships attacked only to find that the Japanese had evacuated the island.

U.S. Army photo

Soldiers assigned to the 1st Stryker Brigade Combat Team, 25th Infantry Division pull a sled up Birch Hill on Fort Wainwright, AK, during a unit assessment on 5 December 2014.

In cold regions, reliance on aircraft alone is risky. Aircraft obviously provide the high-speed movement required for offensive operations, but in winter, as well as transitional seasons, thick fog can engulf vast areas within minutes. Helicopters need at least one-half mile of visibility during daylight and one mile at night, and fixed-wing aircraft need twice these distances. Fog makes airborne operations hazardous because it conceals drop

zones. Such operations require 900-foot ceilings (1,250-foot for training) while air assault operations can go on with as little as 300 feet in flat terrain or 500 in hills. Fog was a continuous hindrance to operations in the Aleutians where in the fall of 1942, the U.S. lost 69 planes, 63 of them to fog and only six to the enemy.

The enemy can also use fog to conceal a ground attack. On the morning of 10 July 1950, ground fog over the Korean rice paddies concealed the North Korean advance. U.S. soldiers shot blindly into the fog. Men on the ridge could hear tanks but could not see them. The next morning four enemy tanks crossed the minefields and were soon in the area of the 3rd Battalion, 21st Infantry. The U.S. command post was destroyed. One thousand Koreans enveloped the battalion and reduced it to 40 percent strength by using fog to conceal their attack.

Photo by SGT Kent Redmond

U.S. Army 10th Special Forces Group (Airborne) Soldiers jump with Finnish, Polish, and Estonian Special Operations Forces from a C-130 Hercules during a training exercise in Rovaniemi, Finland, on 14 March 2018.

Other problems for air operations are ice and wind. High winds can preclude airborne operations. Cold temperatures inside aircraft limit the time crews and soldiers can be flown around. A positive note is that the denser air associated with cold temperatures allows for better lift and therefore bigger payloads. Runways can also be shorter than in hot areas.

In spite of the difficulties, aircraft are vital to successful large-scale successful operations in cold climates because ground movement is just too slow and too vulnerable. Modern enemy weapons, specifically surface-to-air missiles and air defense guns, threaten air operations and must be suppressed.

Amphibious operations are restricted by wind because wind increases the height of waves, which is the primary limiting factor. Water temperatures also limit amphibious operations; the water in arctic regions is too cold, even in the summer.

In cold regions, the environment favors the defense because a unit that moves is vulnerable. The battle cannot be won without offensive action at some juncture, but that action must be lightning quick with limited objectives.

A recommended strategy might be to build a solid defense, attempt to draw the enemy in, and then counterattack. If the enemy can be induced to attack, he is likely to exhaust his resources. On 15 November 1941, the Germans used such a plan when the Russians exploited a snowstorm to conduct a surprise attack on a hill in the glaciated East European Plain. The Russians had not been issued winter uniforms, and the temperature fell to 16 degrees Fahrenheit. Promises of vodka and the use of stimulants resulted in initial success. However, cold exhaustion made the Russians vulnerable, and the Germans counterattacked, killing 70 and capturing 60.

Another strategy might be to cut lines of communication, since forces will quickly succumb without fuel and food. Wide sweeping envelopments are too grandiose for this environment. The Petsamo-Kirkenes operation in October 1944, the largest arctic combat operation ever, demonstrated that for an offensive to succeed, the mobility problem had to be solved. The Russians created and maintained a road network. This network, along with properly clothed and equipped troops, brought victory.

Environmental influences determine, in large measure, the outcome of combat in cold regions. The side that best adapts to and uses these influences will be victorious. Wars fought in cold regions have been among the most brutal in history and with incomprehensible suffering and death. Preparation, knowledge, and training are the requisites for success. Commanders who plan operations in cold regions but live elsewhere must understand the environment into which they are sending and leading their soldiers.

The U.S. Army will continue to train in these cold areas because we do not know where and when the next war will be. But if it is in the north, our Army must be ready.

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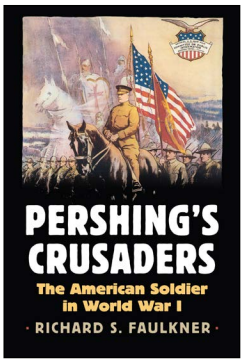
Book Reviews

Pershing's Crusaders: The American Soldier in World War I

By Richard S. Faulkner
Lawrence, KS: University Press of Kansas, 2017, 758 pages

Reviewed by LTC (Retired) Rick Baillergeon



As you might expect, the recent 100th anniversary of the start of World War I has spurred the release of many books tied to the war. Some of these are commemorative in nature while others strive to add to the body of knowledge. However, I believe none will be more important to our understanding of the U.S. Soldier during WWI than Richard Faulkner's *Pershing's Crusaders*. It is unquestionably a book which will be of huge benefit and appeal for years to come.

Within *Pershing's Crusaders'* pages, Faulkner focuses solely on the doughboy. The author addresses this focus in his initial chapter with readers. He states, "This book attempts to be a 'travel guide' to the Soldiers' experience as well as an 'anthropological' study of their world and their world views." They combine to produce a volume which clearly highlights what it meant to serve as a doughboy in the Great War. Let me address each of these below.

As a "travel guide," Faulkner takes readers through a doughboy's entire World War I experience. He systematically and seamlessly moves through a doughboy's induction into the Army through the end of the war and the demobilization process. In between, he discusses Soldiers' training in the United States and abroad, their deployment overseas, and obviously, their combat experience. There are very few aspects of a doughboy's day-to-day life that Faulkner does not explore.

As outstanding as the travel-guide treatment is, I found the author's anthropological study superior. Faulkner delves into the human dimension of the doughboy as well as any historian I have read. Within this discussion, he superbly analyzes many facets of this human dimension. These facets include a doughboy's motivations, his feelings toward the Army, his allies, the enemy he is fighting, and most importantly, his fellow doughboys. He also addresses a doughboy's thoughts and emotions on combat. Faulkner's ability to articulate this in written words is impressive since this is a significant challenge for any author.

I believe there are three key factors which make *Pershing's Crusaders* such a superb book. First is the exhaustive research Faulkner has conducted in the development of the volume. You just don't put together a book of this magnitude and subject matter without extensive research. For the author, that meant "…squirreling away soldier accounts, documents, and records" for more than 20 years. It is supplemented with unit histories and unpublished manuscripts. This research is clearly on full display within the pages of *Pershing's Crusaders*.

The second factor in the volume's success is the outstanding readability. At first glance, you could be deterred from reading this because of its sheer size (well over 700 pages); however, these pages turn very quickly. Faulkner writes in a very conversant style, and his words also exhibit the passion he has for his subject matter. This conversational writing style and passion combine to engage a reader from the book's beginning until its end.

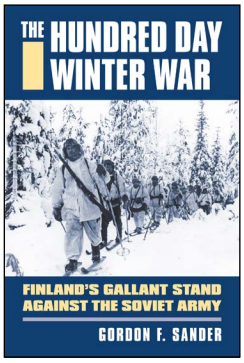
Finally, Faulkner has inserted numerous photos throughout the volume. These pictures are from his own collection, which as mentioned earlier, he has collected over the course of two decades. What makes them even more beneficial is his decision to craft a detailed caption underneath each. Faulkner's photographs are very valuable in telling the story of the doughboy.

In summary, other wars each possess that seminal work which provides readers with a true understanding of the Soldier who fought in that particular conflict. However, WWI did not have that volume until now. Faulkner has filled that critical void with *Pershing's Crusaders*. It provides readers with an appreciation and knowledge of the doughboy unlike any other book published in the past. It is a special book which is a valuable addition to the scholarship of the Great War.

The Hundred Day Winter War: Finland's Gallant Stand Against the Soviet Army

By Gordon F. Sander
Lawrence, KS: University Press of Kansas, 2013, 402 pages

Reviewed by Maj Timothy Heck, U.S. Marine Corps Reserve



The Finnish-Soviet Winter War of 1939-40 holds a special place in modern military history. The war, lasting a little more than three months, has been the subject of a disproportionate number of books given its length. Furthermore, an aura of myth surrounds it. The war has the drama of David versus Goliath, complete with diplomatic machinations, foreign volunteers, and an adoring press corps looking for excitement as combat between Germany and the Allies was at a standstill. Finland, it seemed to contemporary journalists and commentators, was not just another Poland

which would be quickly swallowed by its larger neighbor. Finland's defensive war against the Soviet invaders thus took on a significant role in popular memory and in the following months as both Axis and Allies reacted to the conflict. Gordon Sander's comprehensive history of the war expands beyond traditional narratives of hopeless and inept Russians being cut to ribbons by a handful of Finnish troops in arctic forests. Against this mythical backdrop, Sander weaves social, military, diplomatic, and cultural history into *The Hundred Day Winter War*, giving life to the complex interplay of national and international politics that drove the war.

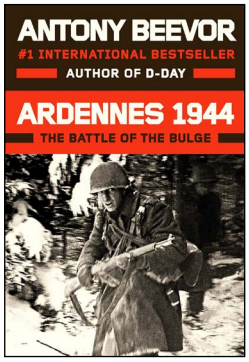
For the military reader, Sander's analysis of Finnish defensive operational maneuver against a numerically superior foe is insightful. The treatments of the battles around Suomussalmi are Sander's best combat writing. These battles, which saw an undermanned and underequipped Finnish force trap and nearly annihilate two Soviet divisions, are presented as "a classic military double victory with few if any precedents in the history of modern warfare." While the sections on Finnish attacks against Russian troops do read like the traditional narrative of "ghosts on skis," Sander does cover small unit tactics, logistics, and the impact of combat on the Finnish soldiers in the protracted battles. Sander's inclusion of the human element strengthens the narrative and helps demystify both the Finns and the Soviets. Readers looking for a more analytical approach to the battle should see Allen F. Chew's *Fighting the Russians in Winter: Three Case Studies*, issued by the U.S. Army Command and General Staff College's Combat Studies Institute in 1981.

Sander briefly covers the Red Army's evolution during the course of the war. Initial Soviet failures were rectified and incompetent commanders, mostly junior officers before the purges of the late 1930s who suddenly found themselves regimental and division commanders, were relieved and some executed. The battles around Suomussalmi led Stalin to continue the war "after the requisite period of retraining and reorganization," including the appointment of Semyon Timoshenko as the commander. Under Timoshenko's command, the Red Army adapted and changed its tactics to become an army that was indeed capable of learning from past mistakes. As a result, the Soviets were able to break the Finnish defensive positions and destroyed the nation's ability to fight.

Sander is unabashedly pro-Finnish in his writing and use of sources. This said, he does attempt to explain Soviet intentions and political vision for the conflict in balanced terms. He was able to locate several Soviet veterans whose stories are included. Overall, the lack of Soviet equivalence or parity in writing does detract from the balance of the book though, as the subtitle implies, Finland is the hero of Sander's narrative.

Overall, Sander presents a history of the war using a plethora of primary and secondary sources in a clear manner. The book is largely a social history of the war heavily influenced by his journalist sources, but military readers will benefit from its expansive scope and well-written sections on military operations.

Ardennes 1944: The Battle of the Bulge
By Antony Beevor
NY: Penguin Books, 2006, 451 pages



Reviewed by 1stLt Walker D. Mills, U.S. Marine Corps

The Battle of the Bulge, known to the Wehrmacht as Operation Autumn Mist, was the Germans' final major offensive of the Second World War. Hitler himself planned an operation intended to seize the port of Antwerp and cleave the Allied Western Front in two. The German divisions were able to achieve complete surprise and penetrate more than 40 miles into the Allied front before they were halted just short of the River Meuse in what became their "last gasp." In his new book *Ardennes 1944: The Battle of the Bulge*, Antony Beevor narrates the story of the battle from all perspectives — general, private, German, and American. The book is a masterwork and a must read for anyone who has interest in the battle itself or World War II. Beevor again proves himself a master of the operational-level saga, a treat for the reader from start to finish.

Ardennes 1944 is Beevor's ninth book and a worthy inheritor of his legacy of prize-winning World War II writing. Beevor has won major awards for almost all of his previous works. He shows us again that he can take a well-known story, Hitler's desperate gamble over the Christmas of 1944, and make well-researched history page turning. The book lacks a little of the cataclysmic nature inherent to some of his previous work like *Stalingrad: The Fateful Siege: 1942-1943* and *The Fall of Berlin 1945*, but Beevor keeps the reader from noticing.

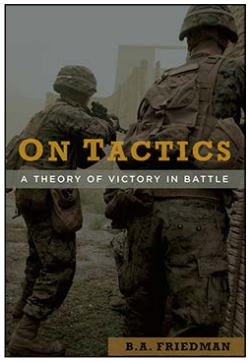
Emboldened by success on the Western Front, the Allies moved quickly across northern France to the German border after breaking out of Normandy. Allied intelligence predicted little to no possibility of a German offensive; in late August of 1944, the Supreme Headquarters Allied Expeditionary Force G-2 published an analysis that said, "The August battles have done it, and the enemy in the West has had it." Hitler had other plans, however. In September, he summoned his top generals to brief them on an upcoming offensive. The plan was to smash the Allied lines in the Ardennes sector in order to break through to Antwerp. He predicted the ensuing disaster would create "another Dunkirk" and strain the Anglo-American alliance to the breaking point. Preparations were made in almost total secret and went undetected by the Allies. Most German officers were not briefed on the plan or even the objectives until hours before the offensive was to begin.

The offensive achieved nearly complete surprise at the tactical, operational, and strategic levels. The initial thrust threw some Army units into headlong retreat south toward the River Meuse. But slowed by weather, poor roads, and lack of fuel, the German divisions were unable to exploit their initial success. The Americans were able to use their immense logistics capacity and herculean motor-lift capacity

to shift forces on the battlefield and blunt the offensive.

Beevor is the guide as he takes the reader on a journey through the battle, expertly wielding the experiences of combatants on both sides and noncombatants to sculpt his narrative, and even here he is able to keep the text wonderfully free of footnotes. When the occasional voice of hindsight speaks, it is during moments of consequence where it is most valuable. He shows the reader the humor of war when General Bradley is nearly arrested by nervous MPs on the suspicion that he is a German spy and in narrating the romantic and adventurous exploits of a young Ernst Hemingway. But he also shows the darkness of the massacres of civilians and soldiers alike behind the lines. Like the Piper Cub reconnaissance planes that the Allies employ as artillery spotters, the narrative dives in and out, crisscrossing the battlefield. Still, he never loses sight of the overall picture, giving the reader daily and incessant casualty tallies in men and equipment and placing the battle in the context of the war as a whole. The Battle of the Bulge critically depleted the Wehrmacht, particularly the Panzer divisions that were needed to stop the Soviet advance on the Eastern Front, which probably shortened the overall length of the war by many months if not a year.

On Tactics: A Theory of Victory in Battle
By B.A. Friedman
Annapolis, MD: Naval Institute Press, 2017, 42 pages



Reviewed by LTC (Retired)
Rick Baillergeon

In my experience, the books that have engaged and challenged me the most are the ones with which I did not completely agree. These books have made me think and look at things in a different perspective. One recent volume which clearly falls into this elite category for me is B.A. Friedman's *On Tactics*. It is a book which I believe will clearly engage, challenge, and make readers think.

Within the pages of *On Tactics*, Friedman focuses on a subject clearly challenging in itself — tactical theory. In his preface, he defines the book's specific objective and why the topic is such a test to address. He states, "The student of strategy, once he realizes the importance of the concept, has a well-organized field in which to plant the seeds of his intellectual development. The furrows are straight and parallel, the plow is sharp and ready, and even the fallow fields are clearly defined. The study of tactics offers no such easy introduction." He continues, "Unlike strategy itself, there is no organizing structure such as that provided by Carl von Clausewitz's *On War (*1976/1832). This work is an attempt to provide that structure or at least the beginning of one."

In providing a structure or the initial groundwork for one, Friedman organizes his volume into two major parts which build upon each other. In his first section, the author has crafted a group of tactical tenets which he believes provides the foundation for the structure of tactical theory. To set the conditions for his discussion, he emphasizes that the principles of war lack the standardization and discipline to be utilized in tactical theory. In particular, he opines that the principles do not adhere to the three planes which he feels tactics live in — physical, mental, and moral. It is these planes which provide the organization for his tenets.

Within the physical plane, he has placed four tenets which he believes enable a tactician to arrange forces on the battlefield — maneuver, mass, firepower, and tempo. These physical tenets in turn will impose mental effects on an enemy. These mental tenets are deception, surprise, confusion, and shock. Finally, these mental effects (tenets), if achieved, will force the enemy to lose his moral cohesion which is the one tenet under the moral tenet category.

For the reader, there is much to think about here. Do the principles of war only have relevance to the strategic level of war? Do tactics "live" in the physical, mental, and moral planes? Has Friedman selected the right tenets? Does Friedman's path of tenets from physical to mental to moral have validity? Certainly, excellent questions which make for great debate.

In Friedman's second section, he builds on the above tenets and addresses a group of tactical concepts that he considers the most important in dealing with the realities of the tactical context. These concepts include the culminating point of victory; the offense, the defense, and the initiative; command and control; environment and geography; and linking tactics with strategy. Once again, there is significant food for thought in Friedman's discussion on each of these. However, for me personally, I would have liked a bit more discussion early on as to why he considered these the most important concepts and more detail on the relationship between the tenets and concepts. This was addressed in more substance in his excellent conclusion but would have been far more beneficial if discussed in earlier chapters.

Friedman concludes his volume with an interesting collection of essays, which in a common theme with the book, make you think. The subjects he touches on include the center of gravity, principles of planning, the organization of tactically successful militaries, and training and education. Each of these is a stand-alone essay in itself. However, the author strives to tie them in with his past discussion on tactical theory (tenets and concepts).

In summary, does B.A. Friedman achieve his primary objective of providing a structure or at least the beginning of one in the area of tactical theory within *On Tactics*? In my opinion, he has not delivered on providing this structure, but I also contend that may have been too ambitious a goal. However, I feel he has certainly made some valuable contributions in this area. He has accomplished this by crafting a volume that is sure to spark dialogue and debate and challenge and engage all readers.

Headquarters, Department of the Army
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