ARMOR

May-June 2008

WHAT IS A CAVALRYMAN?

By Major Frederick J. Filbert, Executive Officer, 1st Squadron, 1st Cavalry

(From the May-June 1969 issue of ARMOR)

Somewhere between the apple-cheeked innocence of the combat center and the urbane worldliness of the Sydney R&R veteran, we find a delightful creature known as a Cavalryman. Cavalrymen come in assorted shapes and conditions, mostly "out of." You find them everywhere, but mostly riding through "Indian country" on tanks, armored cavalry assault vehicles (ACAVs), light observation helicopters (LOHs), and Cobras. Local merchants love them; "Charlie" hates them; the Americal Division staff tolerates them; new platoon leaders frustrate them; infantrymen ignore them; and the combat medics protect them.

A Cavalryman is confusion with profanity on his tongue; experience with three Purple Hearts on his chest; imagination with a slice of C4 in his mouth; and faith with a flak jacket on his back.

A Cavalryman has the appetite of an IBM computer, the energy of a nuclear reactor, the curiosity of an old maid, the enthusiasm of a kid in an ice cream shop, the lungs of an umpire, and the shyness of a bull elephant in mating season.

He likes women, beer, ice cream, *Playboy,* letters from "the world," Australia, steaks, "DEROS," hot showers, Hong Kong, and hot chow. He isn't much for the Monsoons, RPGs, AK-47s, spit and polish, broken torsion bars, C-rations, roast beef, Kool Aid, powdered eggs, "Charlie," walking, or waiting in line.

No one else is so early in the chow line or so often at the beer cooler. When you want him, he's somewhere in the AO. When you don't want him, he's hovering over your desk with 117 reasons why he should be promoted or go on a third R&R. No one else can cram into one fighting vehicle a double basic load of ammunition, 10 cases of C-rations, two rolls of barbed wire, 14 shaped charges, a portable TV, one chaise lounge, three beer coolers, five cartons of cigarettes, an empty tool bag, two transistor radios, three machine guns, a rice-polishing machine, and a pet monkey.

A Cavalryman is a fabulous creature. You can keep him out in the field, but you can't keep him out of the "vill." You can frustrate his desires, but you can't frustrate his drive. You can top his jokes, but you can't top his combat record. He's your conscience, your shadow, your second set of eyes, your psychiatrist, and your despair. But when the chips are down and the bullets richochet off your track, he's your pride and joy, your fair-haired boy; a slashing, hard-charging bundle of nerves and sheer guts.

When you return from three days of hard fighting, trudge wearily through the mud to your bunker, and settle down with a cup of hot coffee, he can bring tears to your eyes with those tender, sympathetic, and understanding words, "I sure am sorry about your jeep, sir, but we were just trying to beat the other tanks to the fuel pump!"

ARMOR

The Professional Bulletin of the Armor Branch, Headquarters, Department of the Army, PB 17-08-3

Features

Departments

By Order of the Secretary of the Army:

GEORGE W. CASEY, JR.
General, United States Army
Chief of Staff

Official: JOYCE E. MORROW

JOYCE E. MORROW
Administrative Assistant to the
Secretary of the Army

0809901

Points of Contact

ARMOR Editorial Offices

Editor in Chief
Major Mark A. Reeves   4087
E-mail: mark.reeves@us.army.mil

Managing Editor
Christy Bourgeois   4582
E-mail: charlotte.bourgeois@us.army.mil

Editor
Vivian Oertle   2610
E-mail: vivian.oertle@us.army.mil

Art Director
Mr. Jody Harmon   3923
E-mail: jody.harmon@us.army.mil

Editorial Assistant
Kathy A. Johnson   2249
E-mail: kathy.johnson5@us.army.mil

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EDITORIAL MAILING ADDRESS: *ARMOR,* ATTN: ATZK-DAS-A, Bldg 1109A, 201 6th Avenue, Ste 373, Fort Knox, KY 40121-5721.

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U.S. Army Armor Center

Commanding General   (ATZK-CG)
BG Donald M. Campbell, Jr.   2121
E-mail: donald.campbell@us.army.mil

Deputy Commander   (ATZK-DCG)
COL Peter Bayer, Jr.   7555
E-mail: peter.bayer@us.army.mil

Chief of Staff   (ATZK-CS)
COL Peter D. Utley   1101
E-mail: peter.utley@us.army.mil

Command Sergeant Major   (ATZK-CSM)
CSM Otis Smith   4952
E-mail: otis.smith@us.army.mil

Command Sergeant Major to DCG   (ATZK-DCG-CSM)
TBA   7091
E-mail:

Special Assistant to the CG (ARNG)   (ATZK-SA)
COL Marlin Levendoski   1315
E-mail: marlin.levendoski@us.army.mil

Directorate of Training, Doctrine, and Combat Development
COL Robert Valdivia   (ATZK-TD)
E-mail: robert.valdivia@us.army.mil   8247

TRADOC Capability Manager for Heavy Brigade Combat Team
COL Jeff B. Swisher   (ATZK-TS)
E-mail: jeff.swisher@us.army.mil   7955

TRADOC Capability Manager, Platform Battle Command/Combat Identification   (ATZK-PBC-CID)
COL Alan Mosher   4009
E-mail: alan-mosher@us.army.mil

Office, Chief of Armor   (ATZK-AR)
Aubrey Henley   5155
E-mail: aubrey.henley@us.army.mil   FAX 7585

Assistant TRADOC Capability Manager Soldier - Mounted Warrior   (ATZK-ATS)
Larry Hasty   3662
E-mail: larry.hasty@us.army.mil

U.S. Army Armor School

Director of the Armor School   (ATZK-DAS)
POC: LTC William T. Nuckols   1050
E-mail: william.nuckols@us.army.mil

194th Armored Brigade   (ATZK-BAZ)
COL David Hubner   8736
E-mail: david.hubner@us.army.mil

16th Cavalry Regiment   (ATZK-SBZ)
COL Robert R. Naething   7848
E-mail: robert.naething@us.army.mil

NCO Academy   (ATZK-NC)
CSM Ray Edgar   5150
E-mail: ray.edgar@us.army.mil

COMMANDER'S HATCH

BG Donald M. Campbell, Jr.
Commanding General
U.S. Army Armor Center

Information Revolution: Linking Technology with Human Thinking

Experimentation and simulation are essential for Army modernization and concept development. Current technology allows us to model and test future organizations with a variety of technology in a casualty-free environment. For the past 20 years, Fort Knox has been at the forefront of experimentation for the U.S. Army Training and Doctrine Command (TRADOC) and the U.S. Army. Our Mounted Maneuver Battle Lab (MMBL) has provided essential insights and findings to Army development on subjects such as joint warfighting, battle command, counterinsurgency, and combat vehicles. As the Unit of Action Maneuver Battle Lab, this same simulation test bed developed the initial doctrine, organizational structure, and leader development plan for the Future Combat System, and we continue to assist the Future Force Integration Directorate with this mission.

Recently, at the request of TRADOC's commanding general, the Mounted Maneuver Battle Lab developed a scenario that simulated what has been termed a "complex web defense." While this is not a current doctrinal threat, it represents a potential threat based on current world conditions and lessons learned from our allies. The threat is an irregular force with niche technology and weapons and has a highly organized cellular structure and the capability to leverage information technology and key weapons systems to achieve strategic objectives. Its ability to mask forces and weapons among the population adds to the complexity and cre-

ates use-of-force dilemmas for our troops. In short, defeating this type of enemy requires a highly trained force who understands the theory and application of full-spectrum operations.

As our force becomes more familiar with the most recent version of U.S. Army Field Manual (FM) 3-0, *Operations*, and as follow-on doctrine is released incorporating key points of full-spectrum operations, we will surely develop new tactics, techniques, and procedures that will help us operationalize this concept. Of course, each future operation will be based on a number of variables, and no two conflicts are ever completely the same, which is where the real power of simulation and experimentation come in. Our test beds have the capability to model a thinking force with human role players on both sides of the conflict from brigade to entity level. We team with experts in all major schools and centers Armywide, and we even have the capability to incorporate joint, interagency, intergovernmental, and multinational forces. In a short time, we can reset the enemy with added capability or in a different terrain, and we can model potential allied technology and spin-out capabilities. All of these trials are analyzed and the findings can be used at every echelon for individual tactical lessons learned all the way to assisting the Army on validating concepts and organizational structures.

FM 3-0 states, "Soldiers operate among populations, not adjacent to them or above

them. They often face the enemy among noncombatants, with little to distinguish one from the other until combat erupts. Killing or capturing the enemy in proximity to noncombatants complicates land operations exponentially." In the complex web defense experiment that we conducted, we found this statement to be true. Future battles in complex urban terrain focused against a non-uniformed, but highly organized, enemy may cause many civilian casualties, which is a fact that is not taken lightly. Our findings imply that our leaders and Soldiers must understand the human terrain, recognize opportunities to influence the population, and learn new ways to template enemy forces. A determined enemy will always study the vulnerabilities of his opponent and our potential adversaries are doing that every day. They understand that we attempt to avoid civilian casualties and that we would rather confirm an enemy location, even if it means putting boots on the ground, than kill innocent bystanders.

Future technology will no doubt assist us in our ability to find enemy systems; however, as General William Wallace, commanding general, U.S. Army Training and Doctrine Command, eloquently reminds us in his foreword to FM 3-0, *Operations,* "Soldiers remain the centerpiece of the Army — as they have been since 1775." By extension, warfare will remain a uniquely human interaction and will always require a thinking leader to defeat a thinking enemy.

Forge the Thunderbolt!

DRIVER'S SEAT

CSM Otis Smith
Command Sergeant Major
U.S. Army Armor Center

BE-KNOW-DO

Three Steps to Increasing NCO Promotion Potential

The 2008 sergeant first class (SFC) promotion selection list was released on 20 March 2008. There are 292 armor staff sergeants (139 19Ds and 153 19Ks) on the selection list for promotion to SFC, a 16 percent selection rate for career management field (CMF) 19. There is a significant difference in the 16 percent CMF 19 selection rate to the overall Army selection rate of 28 percent.

Enlisted promotions are solely based on inventory requirements, which are established by military occupational specialty (MOS) and fluctuate from board to board. This year's low selection rate is a result of stabilizing the CMF 19 inventory following several years of growth, as well as an over selection for promotion based on an extended timeline for conversion since the last list was released. According to the "Growth of the Army" plan, we project next year's list to be higher to meet "grow the Army" requirements. I would like to note that the results of this board in no way reflect the quality of armor branch NCOs; it only reflects a projected need for armor sergeants first class to fill MOS 19D and 19K requirements.

We have had several good promotion years, especially for 19D, to meet growing authorizations. This year's board definitely reflects a slower growth in CMF 19 authorizations and that last year's promotions were slightly higher than normal. We project that next year's board will be excellent for CMF 19 as we begin the "grow the Army" unit stand up. Over the next few years, we will likely have slight reductions in 19K rates as we reshape CMF 19 between 19D and 19K.

While serving as a member of the most recent SFC promotion board, I noticed a few trends that warrant discussion. First and foremost, NCO evaluation reports (NCOERs) are still the best way to paint a picture of the overall performance and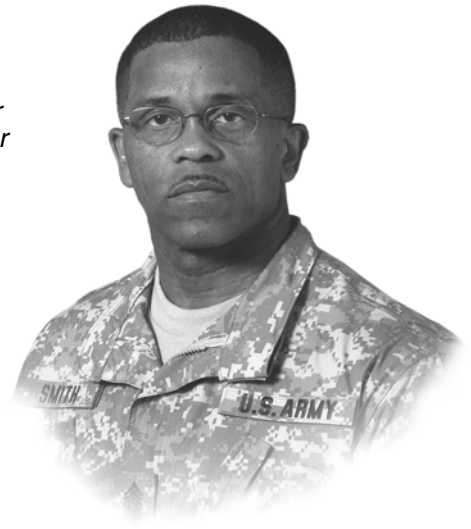 potential of an NCO. More times than not, raters attempt to justify an NCO's excellence rating based on how well he scored on his last gunnery density, or how he operated in a garrison environment, while barely mentioning the fact that he lead more than 100 combat missions during his deployment. We are a combat arms branch; raters should learn how to quantify actions NCOs are performing during combat operations.

During the board selection process, I also noticed several official military personnel files (OMPFs) were missing official photos. There are specific guidelines on when NCOs are required to have new photos, but missing a photo due to deployment is an invalid excuse. NCOs should ensure they have a valid photo prior to deployment. There are also several critical areas that should not be overlooked when preparing for promotion boards:

Records review. Review your records at least 21 days prior to your board appearance. Your OMPF is available through Army Knowledge Online (AKO). Ensure all documents, such as correspondence course documentation, military and civilian course/school certifications, awards, duty positions, assignments, time in service, time in grade, letters, etc., are all properly recorded. Always maintain a paper copy of personal records.

Study and preparation. To properly prepare for a promotion board, obtain a study guide, seek counsel, know your unit's history and current mission, know the history and significance of your unit crest, and know the MOS and skill level for which you are being recommended. Be familiar with the soldier's manual and proficient in the duties required of your skill level, and stay abreast of current events.

Uniform. Ensure your uniform is in accordance with U.S Army Regulation (AR) 670-1, *Wear and Appearance of Army Uniforms and Insignia*. Check the fit and location of sewn-on items to ensure that they are in compliance. Common uniform deficiencies are: poorly placed or frayed rank insignia and unit patch, sleeves or pant legs that are too long or short, or a coat that is too tight. Once uniform deficiencies are identified, send your uniform in for alterations and cleaning as soon as possible.

Several resources are available to assist in preparing for upcoming boards and to counsel subordinates on preparing career paths. One such valuable tool is the CMF Professional Development Model (PDM), which helps pave the path to success for armor soldiers and NCOs. It breaks down critical leadership time requirements, developmental assignments, and offers a list of institutional training required throughout an armor NCO's career. The Enlisted Professional Development Guide is also a great tool for NCOs when laying out a career plan.

Prior to each promotion board, the chief of armor and I produce the CMF 19 promotion board guidance, which details what the armor force requires from its future senior NCO force. It also describes, for promotion board members, the difference between "best qualified," "exceptionally qualified," or "qualified" NCOs. Once the board is completed, the Office of the Chief of Armor posts on its website, *http://www.knox.army.mil/center/ocoa/index.htm*, a copy of the Enlisted Professional Development Guide, board guidance, board briefing, and board analysis, which are invaluable tools that can be used to assist NCOs in preparing their career paths and records.

"Teach our young Soldiers and leaders how to think; not what to think."

From the Boresight Line:
"Master Gunners Bridging the Gap"

by Sergeant First Class Phillip Wilburn

For more than 3 decades, it has been the charge of the tank master gunner to ensure that our armor officers and noncommissioned officers (NCOs) possess the skills that are necessary to prepare and train soldiers for all aspects of tank gunnery and modern combat operations. The master gunner advises and assists the commander in planning gunnery training, as well as developing, conducting, and monitoring the unit's combat table and turret maintenance programs to ensure proper readiness posture is maintained. To accomplish his mission, the tank master gunner must remain vigilant and evolve in an ever-changing environment to stay current with the armor force of today's military.

Today's tank master gunner must be more versatile than ever; not only must he understand the fire-control system and gunnery methodology of the Abrams family of vehicles, but be a well-rounded "master of gunnery." Combined arms battalions (CAB) and heavy brigade combat teams (HBCTs) have a multitude of weapons platforms. Today's tank master gunner is quickly discovering that he is responsible for training soldiers on the Abrams, the Bradley fighting vehicle and the Stryker mobile gun system (MGS). In addition, he has become responsible for mortars and small arms, ranging from the M9 pistol to the MK19 grenade launcher.

To keep pace with the Army's transformation to meet the evolving challenges of the future, many of our combat units have restructured. Along with these changes comes a new brand of gunnery — HBCT gunnery. Company- and battalion-level master gunners in these new units have the challenge of training a combined force with multiple gunnery skill sets, while maintaining the ability to conduct counterinsurgency (COIN) operations.

Since many units are currently focused on COIN training, it has caused our readiness concerning high-intensity conflict (HIC) training and tank gunnery training to fall outside the Band of Excellence (U.S. Army Field Manual 7-0, chapter 2). As a result, the reduced amount of time spent on training tank gunnery has caused a reduction in the knowledge, skills sets, and proficiency of our tank crews and units.

Resources show that there are captains and lieutenants who have never taken part in a level 1 or 2 tank gunnery; NCOs who have become tank commanders without ever having been a tank gunner; and soldiers who have spent their first 2 years in the Army without being on a tank outside of one-station unit training (OSUT). Soldiers, NCOs, and officers have been working out of their military occupational specialty (MOS) while deployed, as well as during the stand up and training period before deployment. This has led the armor force to experience a serious lack of tank gunnery skills branchwide, which leaves our Army with a fast-growing gap in the experience level of our junior NCOs and officers in the aspects of tank gunnery.

All of this leads to a situation where a candidate selected for the Master Gunner Course is neither as experienced nor qualified as we might hope. The prerequisites set to attend the Master Gunner Course include: 1 year of tank commander time and attaining a qualified tank gunnery within the previous 12 months. With the current operational tempo (OPTEMPO), many young NCOs are selected to attend the course without meeting one, or sometimes both, of these prerequisites.

The Master Gunner Branch has always asked commanders and master gunners in the force to select highly qualified NCOs with considerable tank and tank gunnery experience, which means NCOs who have served with distinction and risen above their peers, with several gunneries under their belt, and who have gone the extra mile to learn the details of their craft — NCOs who have not only the desire to do well, but also the drive and potential to become one of the best — a tank master gunner. We rely heavily on the master gunners in the force to nominate an NCO with these traits.

The Master Gunner Course still maintains a high standard on all examinations; 100 percent for all hands-on examinations and 90 percent for all written examinations. This is why it is imperative that unit commanders and master gunners not only select highly qualified candidates for the course, but that they allow them to properly prepare before they attend the school. The unit master gunner can do a number of things to help prepare a potential candidate: allow the candidate to shadow him while preparing for and executing a gunnery rotation; ensure he is tank crew evaluator (TCE) qualified; teach him study habits; and provide him with reference materials to study prior to attending the course.

The Master Gunner Branch's AKO website is available not only to master gunners, but candidates as well. Our web page provides invaluable information for master gunner candidates, to include advance sheet booklets, course prerequisites, a link to the M1A1 Tank Advance Gunnery and Maintenance Course, and master gunner updates, as well as other helpful information. To access the master gunner page, log on to AKO and search for: "Abrams Master Gunner Network." Once there, click on "Group Profile" and then "Become a Member." If you have trouble accessing the website or any of the links, contact Sergeant First Class Dale Hall (site administrator), *dale.hall@us.army.mil,* and he will manually add you to the site.

Once you have been added to the site, you will have full access to the material. Please note that the advance sheet booklets are broken down into two parts, maintenance and gunnery; each advance sheet book is further broken down by exam point; and each exam point is broken down by class. Candidates accessing this information have a complete list of everything that will be taught and tested during the course.

The M1A1 Tank Advance Gunnery and Maintenance Course was developed to provide training to Abrams armor crewmen. We have found it to be an invaluable tool to prepare potential master gunners, as it provides base-line gunnery and maintenance training materials. The course offers topics, such as gun tube technology, conduct of fire, firing tables, basic electricity, and range determination and is designed for new lieutenants, young gunners, armor crewmen, and NCOs who have been working outside of the armor field for a couple of years. As it is a part of the University of Mounted Maneuver Warfare, soldiers who complete the Tank Advance Gunnery and Maintenance Course will be awarded correspondence course credit hours. This course can either be accessed by going to the University of Mounted Warfare at *http://147.238.16.151/umw3/umw/default.asp* or by following the instructions on the Master Gunner Branch website.

Taking a few simple steps to prepare potential master gunners substantially increases their chances of success, which supports the Master Gunner Branch's mission of returning an increased number of highly skilled master gunners to the field. These master gunners may then properly train the soldiers of our armor force for all current and future missions. Master gunners provide the knowledge, skills, and know-how to ensure the gap in experienced armor crewmen is bridged between yesterday's armor corps and the force of tomorrow.

Unique World War II Missions of Mechanized Cavalry

by Brigadier General Raymond E. Bell Jr., U.S. Army, Retired

General Dwight Eisenhower's ground assault from the sea during his "crusade in Europe" officially began on 6 June 1944, with the landing on five beaches in the French province of Normandy. Little known, however, is that the first ground troops to land on French soil were not infantrymen but troopers of the 4th Cavalry Group.

Two detachments, one which included 3 officers and 63 soldiers from A Troop, 4th Cavalry Squadron (Mechanized), and another also of 3 officers and 63 men from B Troop, 24th Cavalry Squadron (Mechanized), were the first to go ashore on the Saint Marcouf Islands lying close off the Normandy coast. Two hours before the infantry struggled ashore at Omaha Beach and literally walked onto Utah Beach from the English Channel, the assault force led by four troopers who swam ashore armed only with knives, became the first ground force occupiers.[1] Thus began what could be termed the innovative employment of mechanized cavalry during Eisenhower's campaign.

The exposition of several additional unique examples demonstrates how the horseless cavalry was nevertheless "forward in the saddle," conducting missions other than their traditional roles of screening, reconnaissance, combat, and security.

The detachments of the 4th Cavalry landed on the Saint Marcouf Islands, which flanked the proposed Utah Beach landing sites, because in May allied reconnaissance revealed that Germans might have been active in defending the islands. The reasons for possible enemy occupation were unclear, but thought to be for observation or control of minefields in the off-shore islands. Therefore, an enemy presence could have represented a potential threat to U.S. troops landing on Utah Beach and had to be eliminated.

The cavalrymen made almost-forgotten history early that sixth day in June when they stormed ashore. The versatility of the troopers was rewarded by finding the islands unoccupied but heavily mined; however, the cavalrymen did not accomplish their unique mission of neutralizing the islands without casualties. Unfamiliar with German land-mining techniques and subjected to a concentration of enemy artillery fire later that same day, 2 soldiers lost their lives and 17 others were wounded.[2] On that rather sad note, the mechanized cavalry entered combat in northwest Europe and subsequently joined the infantry divisions of Major General Lawton Collins' VII Corps in attacking up the Cotentin Peninsula to capture the port of Cherbourg.

The 4th Cavalry Group was followed onto the European continent by the 102d Cavalry Group, which landed in V Corps' lodgment area. The 4th Cavalry Group was soon engaged in combat with the 38th and 102d Cavalry Squadrons (Mechanized) as subordinate units. The 102d Cavalry Squadron screened the advance of the 1st Infantry Division on 12 June. During one of its patrols, the 102d discovered enemy positions to the front of the 2d Infantry Division on 15 June; however, later that summer, it was the 38th Cavalry Squadron that was charged with the unique mission of protecting a special task force.

On 26 August, the 38th Cavalry was formally attached to Twelfth Army Group's Target (T) Force, which had been activated and organized on 15 August. T Force's mission was to enter the French capital city of Paris and "immediately after its liberation, secure and make available for exploitation, important intelligence, counterintelligence, and other targets, including civil and military records, cultural treasures, and public utilities whose preservation and security was essential."[3]

According to *Breakout and Pursuit, U.S. Army in World War II: European Theater of Operations*, the 38th Cavalry Squadron, however, was ostensibly, just "to accompany Leclerc [commander of the 2d French Armored Division] to 'display the [American] flag upon entering Paris.'"[4] In actuality, T Force was to guard the perimeter area of headquarters (T Force Paris) and also perform reconnaissance and "target" missions.[5] Such target missions were to investigate the whereabouts of critical enemy personnel and sympathizers, apprehend critical personnel and sympathizers for interrogation, occupy key installations, and recover critical items from different facilities.

The T Force entered Paris close on the heels of the 2d French Armored Division on 25 August while there was still sniping in the streets. Teams of intelligence personnel quickly sought out key people for interrogation, and along with the cavalry troopers, occupied various building complexes in search of critically important material. Not only were enemy documents sought, but items, such as a large cache of maps of Eastern France, that could expedite combat operations were found.[6] The 15 deployed target teams sought out information of special interest such as chemical warfare, jet propulsion, including jet-propelled airplanes, submarines, radar, and metallurgy.[7]

"On 26 August, the 38th Cavalry was formally attached to Twelfth Army Group's Target (T) Force, which had been activated and organized on 15 August. T Force's mission was to enter the French capital city of Paris and 'immediately after its liberation, secure and make available for exploitation, important intelligence, counterintelligence and other targets, including civil and military records, cultural treasures, and public utilities whose preservation and security was essential.'"

Because the troopers of the 38th Cavalry Squadron lacked the investigative capability of the specialized intelligence teams, the cavalryman's investigative activity was rudimentary. Most often, the troopers assisted the French in guarding installations that were vulnerable to sabotage attacks, such as telephone exchanges, post offices, and telegraph stations, within the city. Outside the city, protecting electrical power plants, waterworks, and gas-producing plants required trooper protection.[8]

Because the provisional French government quickly assumed responsibility for, and control of, most installations important to the functioning of required city services, the role of the 38th Cavalry lasted for only a few days. The squadron suffered no casualties during the execution of their various tasks, and on 1 September, it was released back to the 102d Cavalry Group.[9] No doubt, the cavalrymen were glad to leave their static guard duties behind; however, they had the opportunity to see some of Paris while participating in a mission unique to mechanized cavalry.

While the 38th Cavalry Squadron briefly sojourned in Paris, the 6th Cavalry Group was racing across France executing another unique mission. The 6th Cavalry was assigned to the newly committed Third Army in August 1944, but initially did not operate as a corps asset, unlike most mechanized cavalry groups. The Group eventually joined the newly activated III Corps and fought in the Battle of the Bulge; however, the 6th Cavalry initially did the exclusive bidding of Army commander Lieutenant General George S. Patton Jr.

One of the principal reasons the 6th Cavalry was chosen to do Patton's special bidding was that its radio operators were recognized as an exceptionally talented group of technicians. The troop radio nets operated on what was termed an "18-word-per-minute basis." However, radio net operators on the troop-to-squadron and echelons above nets were capable of flawlessly transmit-

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ting up to 30 words per minute. In a rapidly changing situation these capabilities were very important and were skills that operators of the signal battalion in direct support of Third Army headquarters, on its commitment to operations in late July 1944, just did not have.[10]

In the swift and unrelenting charge across France, General Patton, who was, "... prone to give his subordinates free rein ... [and] expected them to exercise independent judgment and tactical daring," nevertheless eagerly sought information about not only the enemy situation but the changing locations of his attacking divisions.[11] He wanted the most current information, which might often take hours and even days to make its way up through the regular chain of command's communications channels. Combat commanders, busy "pushing the envelope" in the dash through France, tried their best to keep Patton informed through regular channels, but Patton had a unique idea to expedite the flow of information.

Soon after the 6th Cavalry appeared on the continent in Normandy, the Group became the "Army Information Service," better known as Patton's "Household Cavalry," after the appellation of the Queen of England's "own" mounted regiments. Operating as an independent formation, the 6th Cavalry Group's intelligence and communications personnel bypassed regular reporting channels and reported directly to Third Army's advance command post, where Colonel Oscar Koch, the Third Army G2, and Colonel Halley G. Maddox, the G3, could quickly apprise General Patton of fast evolving situations.[12]

The 6th Cavalry Squadron, 6th Cavalry Group, posted a reconnaissance platoon at every division headquarters. Each platoon usually consisted of a couple of officers and 28 troopers equipped with six armored cars and six quarter-ton trucks.[13] At each corps headquarters, a company (troop) was present, and the squadron headquarters was located at Third Army headquarters.[14]

The 6th Cavalry performed a valuable, although unconventional, role as it accumulated information, coordinated its receipt, and condensed the results before forwarding it directly to Patton's advanced command post.[15] Often, Patton knew more about a local situation than his corps commanders, who may have been unaware of information that the "Household Cavalry" was gathering in their areas and sending directly to Third Army's forward headquarters command element. General Patton's very current knowledge allowed him to not only gage progress, but also to change plans quickly or prod a commander he thought was not acting aggressively enough.[16] At the division level, indeed, the cavalry troopers had to be careful how they reported information because some of the divisions' headquarters initially regarded the 6th Cavalry unit personnel as spies.[17]

George S. Patton Jr. was General Eisenhower's only commander whose military career had been as an armor and cavalry officer. His staff was always "forward in the saddle" and worked as an efficient and well-oiled team. The staff was constantly looking beyond the horizon of ongoing combat operations and sought opportunities to exploit developing situations. Sometimes, however, imagination would overtake reality. Such was a case in September 1944 when the shortage of gasoline forced the Third Army to halt along the line of the Moselle River in eastern France.

Cavalrymen had not yet given up the idea that there was a place for the horse in modern warfare. With a staff of key personnel, who, if not all, thought and operated like cavalrymen, relished the thought of the horse reclaiming its rightful place on the battlefield. So, the occasion arose where the horse-mounted soldier again entered combat and was warmly greeted — or so it appeared.

One of Patton's premier cavalry leaders, Colonel Charles Reed, commanded the 2d Cavalry Group, the XII Corps' mechanized cavalry formation. During the autumn campaign to capture the fortress of Metz in eastern France, the 2d Cavalry is purported to have accomplished a particular mission under horrible weather conditions. The group was ordered to advance on the French town of Dieuze, which is located on the perimeter of a large lake and marsh. In the autumn of 1944, the area was a sea of mud, which made mechanized operations extremely difficult. Regardless, Colonel Reed was ordered to clear the enemy area.

Reed adopted the unique method of organizing a troop of horse cavalry to accomplish the mission. He rounded up approximately 60 German artillery horses and had a troop commander improvise saddles and other horse furniture. The horse cavalry troop purportedly operated for about a week and captured several nearby towns and a number of German soldiers who were reportedly astonished to encounter the horse-mounted troopers. General Patton was purportedly so elated about Colonel Reed's initiative that he sent a detailed report on the operation to the Supreme Headquarters Allied Expeditionary Force.[18]

There is, however, a problem with the authenticity of this example of a unique method of combat by the 2d Cavalry. A young modern historian, an avid student of General Patton, sought to authenticate the horse cavalry story to use in a lecture during a battlefield tour. After consulting any number of sources, both original and secondary, to include after-action reports in the National Archives, he found no evidence that the story had any basis. But for soldiers, still enamored with the utility of the horse on the battlefield, it was a good tale indeed.

Colonel Reed's 2d Cavalry Group, however, did execute a thoroughly documented unique mission involving horses toward the end of hostilities in late April 1945. His troopers rescued the mares and foals of the famous Lippizaner horses, which traditionally performed intricate maneuvers at the Spanish riding school in Vienna, Austria. The horses were being kept in a remount depot in the Czechoslovakian town of Houstoun (Hostau) just across the border from Germany. When Patton learned that the horses were in danger of being captured by the Russians, who were advancing rapidly through Czechoslovakia, he gave Reed a simple order to rescue the horses, "Get them!"[19]

"Getting them" turned out to be easier said than done; it was a race against time into a part of Czechoslovakia where fanatical German soldiers were still ambushing American infantrymen using subterfuge.[20] The Russians had also learned of the herd of prized horses and quickly advanced to cut the 2d Cavalry's rescue attempt; however, by astute maneuvering, the Americans succeeded in driving the horses out of Czechoslovakia and into Austria where the recovered stallions were safely in American hands.[21] Austrian equestrians have never forgotten the successful rescue — and with it the name of George S. Patton Jr.

Members of another nation will never forget that mechanized cavalry units liberated thousands of Nazi prisoners, as did many

other allied formations, so it was not an unusual mission for rapidly advancing troops to perform. Among the liberated prisoners were many who enjoyed high stations in their homelands, including being part of a country's nobility. However, it was unique that the 121st Cavalry Squadron (Mechanized), 106th Cavalry Group, the XV Corps cavalry unit, was the only unit to liberate a king — King Leopold of the Belgians.

The 106th Cavalry had just participated in the capture (some would say "liberation") of Salzburg, Austria, and established its headquarters there early in May, just before the end of the war. Troop B, 121st Cavalry Squadron, moved into the nearby Austrian town of Saint Gilgen, a little resort town on the shore of Lake Wolfgangsee. Two other scenic resorts were the nearby towns of Strobl and Saint Wolfgang.

Having set up billets in Saint Gilgen, a reconnaissance party from the troop and squadron headquarters set out to investigate the surrounding territory. The history of the 106th Cavalry Group in Europe spells out the results of the expedition: "At [the town of] Strobl the party found one Prince Georg Furstenberg, a well known anti-Nazi, from whom they learned that King Leopold was under guard in a nearby villa. The villa was located. It was a comfortable structure guarded by SS troops. The guards at the gate were waved aside by Lt [sic] Moore. While the party

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was disarming the unresisting guards, Major Howard was announced to the King. Thus was Leopold, King of the Belgians liberated."[22]

King Leopold III had surrendered the Belgian armies to the Germans during the invasion of Belgium during May 1940. He and his family were then taken prisoner and incarcerated in Austria near Salzburg where they were guarded by the Schutzstaffel (SS). Naturally, the liberation of the king and his family was greeted with relief and great joy. King Leopold went on to express his gratitude in a letter he wrote to the officers and men of the 106th Cavalry Group on 23 July 1945. He stated in part, "The 7th of May, 1945 is a date which I shall never forget, for it was on that day that my family and I had the good fortune to be delivered from the enemy by your unit. I am especially happy to be able to express here my profound gratitude for this act. For a number of weeks you have maintained my Guard of Honor and I wish to compliment you upon the distinction with which you have performed this assignment."[23]

The last sentence of the cited part of the king's letter refers to another unique mission performed by cavalry troopers, this time just after victory in Europe. Because King Leopold could not be immediately repatriated to Belgium, he and his family continued to reside in Auhof, a villa in Saint Wolfgang. Security for him and his family in the form of a "guard of honor" was performed by mechanized cavalrymen of the 106th Cavalry Group.

Truly there were other unique missions performed by mechanized cavalrymen during World War II, but for the most part, the cavalry groups (mechanized) operated according to doctrine, embellishing it where ever possible and expedient. Often, cavalrymen were out in front of the attacking American divisions; but just as often, they were engaged in economy-of-force operations or screening flanks.

On one unfortunate occasion at the beginning of the Battle of the Bulge, the 14th Cavalry Group was nearly wiped out by a horde of German panzers in the so-called Losheim Gap on the German border. The group was performing a mission for which it was ill armed and equipped in comparison to the immensity of its foe. After spending many years on the east-west German border, the 1st Squadron, 14th Cavalry, was given a new mission as a reconnaissance, surveillance, and target acquisition (RSTA) squadron. The unit fought in Iraq as a battalion element of the 3d Stryker Brigade Combat Team, 2d Infantry Division, presently based at Fort Lewis, Washington. The 2d RSTA Squadron, 14th Cavalry, was also resurrected from its time on the German border and is a component of the 2d Stryker Brigade Combat Team, 25th Infantry Division, based at Schofield Barracks, Hawaii.

As the examples cited above denote, unique missions are not something unusual for cavalrymen; they were not during World War II, and certainly throughout history, there were many occasions when cavalry troopers were called on to perform flexible and versatile missions. One thing is certain — the best mounted horse soldiers, regardless of steed, have always been "forward in the saddle."

Notes

[1]National Archives, Box 17981: 4th Cavalry Group CAVG-4-0.1, Organization History; Record Group 407, Washington, D.C. The history states, "Outstanding service was performed in the operation by Corporal Harvey S. Olson and Private Thomas C. Killoran, Troop A, 4th Cavalry Reconnaissance Squadron, and Sergeant John Z. Zander and Corporal Melvin F. Kinzie, Troop B, 24th Cavalry Reconnaissance Squadron. These four men, each armed with only a knife, courageously swam to what was supposedly an enemy-held shore to mark the beaches for those who followed. They were thus the first American soldiers of the ground forces to land on French soil on D-day."

[2]Ibid., Sergeant John Zander of Troop B, one of the swimmers, was among those wounded as were two officers from Troop A. Those killed in action were Sergeant John C.F. Onken of Troop A and Private First Class Anton J. Elvasaater of Troop B.

[3]"'T' Force Report on Target 'Paris,' October 1944," Declassified Draft, Headquarters T Force, Twelfth Army Group, APO 655, U.S. Army, p. 1.

[4]Martin Blumenson, *Breakout and Pursuit, U.S. Army in World War II: European Theater of Operations*, Center for Military History, Publication 7-5, Washington, D.C., 1961, p. 607.

[5]"'T' Force Report on Target 'Paris,' p. 2.

[6]"Report of Operations," Final After-Action Report, 12th Army Group, Vol. IV, Part V, G2 Section (Parts V through VII), p. 10.

[7]"'T' Force Report on Target 'Paris,'" p. 16.

[8]Ibid., p. 10.

[9]Ibid., p. 7.

[10]James H. Polk, *World War II Letters and Notes of Colonel James H. Polk, 1944-1945*, Elderberry Press, Oakland, OR, February 2005, p. 51.

[11]Blumenson, *Breakout and Pursuit*, p. 349.

[12]Ibid., p. 353. In the race around the French province of Brittany, communications up and down the chain of command were very inadequate. The 6th Cavalry Group helped assuage the problem: "One armored car with a high-powered SCR-506 radio, as well as several armored jeeps, accompanied each armored division. The radio car possessed choice and workable frequencies, and the armored jeeps, often entrusted with situation reports, were able to shoot their way through small roadblocks. Even though the cavalrymen were burdened with their own radio traffic and could absorb only a small part of the division communications, they sometimes relayed division messages."

[13]Ibid., p. 350.

[14]Polk, *World War II Letters and Notes,* p. 51.

[15]Blumenson, p. 350. See also Mary Lee Stubbs and Stanley Russell Connor, *Army Lineage Series: Armor-Cavalry Part I,* Office of the Chief of Military History, United States Army, Washington, D.C., 1969, p. 73.

[16]Blumenson, *Breakout and Pursuit*, p. 377. Patton also pressed his Army Information Service for action. In the attempt to swiftly capture the port of Brest, he "instructed his Household Cavalry to get busy and tell him whether Brest had or had not been taken."

[17]Polk, *World War II Letters and Notes,* p. 51.

[18]Robert S. Allen, *Lucky Forward*, The Vanguard Press, Inc., New York, 1947, p. 169.

[19]Fred Ayer Jr., *Before the Colors Fade*, Houghton Mifflin Company, Boston, 1964, p. 223.

[20]On 5 May, just a few days before the end of the war, a platoon of the 2d Cavalry Group was ambushed and captured by fanatical Germans. Using the captured 2d Cavalry vehicles, the Germans set up another ambush in the Czech town of Zhuri, and advancing members of the 90th Infantry Division's I Company, 357th Infantry Regiment began to enter the town unaware it was occupied by the enemy. When they approached the town, which appeared to be occupied by other Americans, they were taken under fire and suffered many casualties. The surprised infantrymen launched a vicious counterattack and wiped out the Germans. Today there is no trace of the town in what is now a national park, but an historical marker commemorates the event on the town's former site. See John Colby, *War from the Ground Up,* Nortex Press, Austin, TX, 1991, p. 456, for a slightly different version of this incident.

[21]National Archives, Box 17945: 2d Cavalry Group CAVG-2-0.3 Operation Report, 2d Cavalry Group (Mechanized), 1 Mar-8 May 1945, Section II, Narrative, Report of Operations, 1 March-8 May 1945; RG 407 NA. Item 108 reports the deed of Captain Thomas M. Stewart on 28 April at Hostau, Czechoslovakia, in rescuing the famous horses: "An opportunity arose to capture a valuable horse-breeding depot intact. Stewart, accompanied by a German guide, proceeded on horseback through the mountains at night, evaded outposts of SS troops along the border, made contact with the commandant of the depot, and by a tactful presentation of the strength of American forces, persuaded the depot commander to surrender if the border outposts of SS troops could be overrun. Later, with great personal danger, Stewart returned with a task force, attacked and dispersed the outposts, and received the surrender of the depot." Captain Stewart was awarded an oak leaf cluster to the Bronze Star Medal.

[22]Thomas J. Howard, et al., Eds., *The 106th Cavalry Group in Europe*, J.P. Himmer KG, Augsburg, Germany, 1945, p. 131.

[23]Ibid., p. 152

Brigadier General Raymond E. Bell Jr., U.S. Army, Retired, is a 1957 graduate of the United States Military Academy. He received an M.A. from Middlebury College and a Ph.D. from New York University. His military education includes the U.S. Army War College and the National War College. As an armor officer, he served in the 3d Armored Cavalry Regiment, 32d Armor, 15th Armor in Korea, and 5th Cavalry in Vietnam. His last two assignments included the U.S. Army Reserve's 5th Psychological Operations Group and its 220th Military Police Brigade.

4th Cavalry Brigade Staff Assessment Standards

Training Staffs and Operations Centers
for Sustained Combat Operations

by Colonel J.R. Sanderson and Major Devin Larson

> **Efficient: 1.** Being effective without wasting time or effort or expense. **2.** Able to accomplish a purpose; functioning effectively.
>
> **Effective: 1.** Producing or capable of producing an intended result or having a striking effect. **2.** Able to accomplish a purpose; functioning effectively. **3.** (military) equipped and ready for service.
>
> — Webster's Online Dictionary

The 4th Cavalry Brigade is a traveling observer controller (OC) team comprised of a headquarters, six subordinate OC battalions/ squadrons, and a logistics support battalion. As a part of First Army, the brigade specializes in every Army warfighting function and provides high-end collective training and pre-deployment Army training and evaluation programs (ARTEPs) to Reserve Component (RC) units during post-mobilization. The "Saber Brigade" deploys year round to mobilization stations across the eastern United States, providing tough, challenging, and realistic collective training to prepare RC units for sustained combat operations.

During the course of training, and with extensive collaboration with the 3d Brigade, 75th Division, Saber Brigade developed a system for tracking the training and progress of brigade and battalion staff operations centers. We refer to the system as the staff assessment standards (SAS), which has a set of criterion intended to increase the efficiency of staffs. These standards are not intended to increase the effectiveness of a staff, as staff effectiveness requires judgment and experience in application. However, SAS does increase staff efficiency in the five critical areas of time management, staff estimates and integration, common operational picture, information analysis and dissemination, and generating relevant options, which enables them to become more effective.

Each of these five categories has established standards that are evaluated on an assessment level ranging from 1 to 5. An as-

Figure 1

sessment level of 1 or 2 indicates the staff section is lacking and not performing its functions efficiently; in which case, observer controllers provide feedback to section leaders on how to improve to meet the standard. If the section earns a level 3 assessment in a category, it is consistently meeting all standards in that category; level 3 is the standard for a staff section. When staffs function as collective teams, going beyond effectiveness at the section level, they will attain assessment levels 4 and 5, which are extremely difficult to achieve and are rare in young and inexperienced staffs at any level.

As a set of doctrinal, clearly defined, and achievable standards, SAS is used as a tool to measure the collective performance of the staff in accomplishing its purpose and function. We also use the SAS regardless of unit function, and because it is compilation of basic staff doctrine, it works just as well with a deploying engineer brigade conducting route reconnaissance and clearance as it does with a deploying infantry brigade combat team (IBCT) conducting convoy or route security missions.

Time Management

Time is always critical and good staff officers effectively manage time and resources. They must consider not only their own time, but that of the staff, as well as higher headquarters and subordinate units. The staff must prioritize work and set reasonable suspense dates and timelines. Nested and published battle rhythms and timelines that integrate current and future operations are the only acceptable way to manage time. Additionally, well-established work priorities and personnel roles and responsibilities will enable staff sections to effectively manage time.

To reach standard, the staff section must first understand the parameters of the mission and its functions in support of the collective staff effort. The section must consistently update internal timelines with regard to both the collective staff timeline and the mission timeline, and conduct continual self-assessments in terms of suspense commitments and actions. Section leaders conduct troop leading procedures, including internal section warning orders, on all internal and external missions. Requests for information (RFI) and commander's critical information requirements (CCIR) are continuously monitored for timeliness and requirements, both within the section and the collective staff, and are anticipated and proactively researched. The section coordinates specific timelines with other staff sections, as well as higher, lower, and adjacent units, and has a thorough understanding of higher headquarters timelines, limitations, and constraints, as well as higher headquarters' time-sensitive CCIR. The section consistently battle tracks its internal actions within the collective staff. (See Figure 1.)

Staff Estimates

A staff estimate is an assessment of the situation and an analysis of those courses of action (COA) a commander is considering that best accomplish the mission.[1] During planning, each staff section, to include special staff, must prepare a staff estimate that develops facts and analyzes information within their warfighting function. The estimates must be "running estimates," which are continuously updated throughout the operation. The estimates should consider both the quantifiable and intangible aspects of a given operation and translate into the ability to help the command see the battlefield in terms of themselves, the enemy, and the terrain.

Figure 2

To achieve standard in staff estimates, the section must clearly articulate, in doctrinally correct language, the specified, implied, and essential tasks for any given mission. The section must have a thorough understanding of the staff's collective requirements, as well as mission requirements, timelines, limitations, and constraints. They must continually monitor the tactical situation and maintain a "running estimate" of the staff's collective current and future missions, as well as higher, subordinate, and adjacent units. The section must generate options for the commander in the form of feasible, suitable, and acceptable COA based on current and future situations, and provide clarity and unity of effort in all written communications, warning orders (WARNOs), operations orders (OPORDs), and fragmentary orders (FRAGOs). The section continually updates the estimates based on incoming information, and anticipates changes to the mission or situation. (See Figure 2.)

Common Operational Picture

The unit will have an effective method of displaying information within the command post that provides the commander and key personnel with a quick update of the unit, enemy, and friendly situation. For a command post to function effectively, it must efficiently and effectively manage information, which provides the common operational picture (COP). The COP should provide the commander and staff with the ability to receive an instant knowledge transfer without asking copious questions; the ability to cross-level critical information vertically and horizontally; and provide a quick and efficient means of processing information and making decisions. There is value to all staff sections in the COP and it must be integrated to be effective. Current technology allows commanders to achieve a much higher level of situational awareness than previous technology. Technology also allows for a more efficient means to display and update the COP, but should be used with caution, as units who show an overreliance on technology often fall into the secure internet protocol router network (SIPRNET) e-mail trap of attempting to e-mail the problem away. Technology is an enabler, but it also lends itself to the negative trend of an "e-mail action passed is an action complete."

To reach the standard in COP, a staff section must prepare, consistently update, and continually monitor the COP. It is used as a situational awareness, situational analysis, and predictive analysis tool. All information posted is relevant, with background, and allows and enables immediate knowledge transfer, as well as the ability for the unit to see itself in terms of terrain, time, and friendly and enemy forces. The COP also provides basic knowledge on villages, towns, and cities within an area of operations. Any major updates or changes to the COP are immediately disseminated throughout the staff with acknowledgement. CCIR and COP relevant RFI are tracked and monitored in coordination with the COP. Updates from higher, lower, and adjacent units are added to the COP after analysis. (See Figure 3.)

Information Analysis and Dissemination

Information analysis and dissemination refers to the process of breaking complex battlefield information into relevant and manageable information and getting it to the right people in a timely manner. There are many acceptable ways to disseminate information, to include staff reports and briefings. There is, however, a fine line to disbursing information relevant to the current mission — too much dissemination can result in information overload. The true staff skill is to determine in the analysis what is important and who else needs to know, which requires a great amount of staff discipline. Staff members must analyze in-depth, looking for second- and third-order effects; they must also be

Common Operational Picture
Based on Assessment Levels 1-5:

5: COP provides enough information for immediate command decisions, staff synchronization, and monitoring of ongoing actions. All lesser included.

4: COP is central focus of all staff operations with each staff section using the COP for predictive analysis and collective staff option development. All lesser included.

3: Staff prepares and consistently updates the COP. The COP is used as both a situational awareness, situational analysis, and predictive analysis tool. All sections continually monitor the COP. All information posted is relevant with background. COP allows and enables immediate knowledge transfer as well as the ability for a unit to see itself in terms of terrain, time, friendly and enemy forces. COP also provides basic knowledge on villages, towns, and cities within the area of operations. Any major updates or changes to the COP are immediately disseminated throughout the staff with acknowledgement. CCIR and COP relevant RFIs are tracked and monitored ICW the COP. Updates from higher, lower, and adjacent units are added to the COP after analysis.

1-2: Unit battle tracks key events and maintains the COP.

Figure 3

cautious of and avoid overreliance on e-mail and avoid fire-and-forget dissemination.

To reach the desired standard in information analysis and dissemination, staff leaders must receive information, analyze the information, and determine who needs the information, all with a clear and articulate approach. Staff leaders use all means to disseminate information, such as briefings, e-mail, staff papers,

Information Analysis and Dissemination
Based on Assessment Levels 1-5:

5: The staff section (through a rehearsed battle drill) quickly receives and analyzes incoming information, produces immediate products for dissemination (if necessary), and is able to help the commander make a decision based off newly arrived information within a short timeframe from receipt. All lesser included.

4: Staff sections have the discipline to review all information at all levels in the section and provide analysis prior to submission. All lesser included.

3: Staff leaders receive information, analyze the information, and determine who needs to see this information, all in a clear and articulate way. A fine line exists here regarding disbursing information relevant to the current mission. Staff leaders use all means to disseminate information such as briefings, e-mail, staff papers, reports, and summaries, within an acceptable timeframe from receipt.

1-2: Staff leaders receive information, do not analyze it, and forward it without regard to who needs to see it; thus unnecessarily increasing the information overflow to the staff.

Figure 4

reports, and summaries, in an acceptable timeframe from time of receipt. A simple formula used to describe the desired endstate is: COP (seeing self, enemy, and terrain) + running estimates + predictive analysis = situational awareness, which leads to situational understanding. (See Figure 4.)

Generating Relevant Options

Generating relevant options is a staff function that requires time, imagination, creativity, and judgment. It allows the staff to become proactive and to focus on what *can* be done. In terms of options, the weak staff forfeits options for the commander through poor staff work, incomplete orders, and coordination. The average staff preserves options for the commander and the superior staff generates options for the commander. To be effective, the staff must help the commander by visualizing the COA for both current and future operations and producing a wide range of viable options. In developing options, the staff needs to determine the doctrinal requirements for the type of operation and then the decisive point of the operation, ensuring that all options are nested within the higher commander's intent. The staff members must avoid the common pitfalls of COA development, such as becoming personally tied to a particular action or developing throwaway COA just to have more than one. Staff estimates, specifically running estimates, are a critical piece of generating relevant options.

A staff section has met standard when: all staff members have gained situational awareness and translated it into situational understanding with an endstate of well-produced products relevant to both current and future missions; time has not been wasted on products that do not work with the current and/or projected future situation; relevant options are linked to priority intelligence requirements (PIR), friendly forces information requirements (FFIR), and decision points, and are feasible, acceptable, suitable, distinguishable, and complete; COA have been qualitatively and quantitatively analyzed and wargamed, and have the essential characteristics of all good orders — clarity and unity of effort; and all tactical and accidental risks have been identified and mitigated. (See Figure 5.)

Apprentice → Journeyman → Master

During training, we use a simple analogy from the trades and television industries to illustrate the staff's collective training level. A staff that simply battle tracks the ongoing operation is at the "apprentice" collective level. The apprentice staff (and operations center) is basically the commander's internal "history channel" and records recent and on-going histories of the organization, and is basically reactive in nature.

We consider the next higher staff level to be at the "journeyman" level when it is capable of efficiently receiving, analyzing, and then disseminating accurate and timely information and intelligence in the form of an order, such as an OPORD, FRAGO, or WARNO, containing both clarity and unity of effort. Far too many staffs do an excellent job of receiving and disseminating, but fail in the critical middle aspect of analyzing data and turning that data into something meaningful, such as an order, for subordinate units. Other staffs become mired in over-analysis and work diligently to pole-vault over simple coordination issues. Ideally, well-led staffs work based on the deputy commander/executive officer's judgment and experience level, and execute from a common work priority. A journeyman-level staff is much like *FOX* or *CNN* on election night — when information is received, goes through "expert" analysis, and is disseminated to the viewing audience.

The highest order in both the trades industry and staff profession is to have a staff with the capability to visualize, describe, and direct future actions while staying involved in the current fight; this staff is at the master level. Master-level staffs (and operations centers) are capable of dutifully battle-tracking current operations, analyzing data and turning it into a meaningful order (WARNO or FRAGO) as a lesser-included task, collectively "seeing the future," and generating relevant options for the commander. In essence, a master-level staff is the "future channel." The classic military history example of a master-level staff is that of General George Patton's Third Army staff and its actions prior to the Battle of the Bulge. This staff, due to its master-level of competence, was able to see the future and provide General Patton with relevant options and begin building COA to move combat power into the Bulge quickly and efficiently.

Each of the five categories relies on staff integration for the section to be efficient. The staff must understand how their section affects other sections, and they must understand the purpose and audience of running estimates. The staff must be integrated and have a mutual view of the battlefield and the commander's desired endstate to achieve the desired effect — without integration, the staff will lack clarity and unity of effort.

Using the trades industry and television analogies, and coupling them with known doctrinal standards in five key areas, allows and enables staffs (and operations centers) to judge themselves against a known standard and increase their efficiency (see Figures 6 and 7). Being efficient, however, is not enough in modern sus-

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Generating Relevant Options
Based on Assessment Levels 1-5:

5: Through rehearsed battle drills. The staff sections produced products that have relevance to the current situation and have looked into the future based on past relevance, thus able to give the commander future options before they are needed. All lesser included.

4: The staff sections produced products that have up-to-date relevance to the current mission through staff crosstalk. All lesser included.

3: The products that the staff produced all have relevance to the current mission. All staff sections have SA and SU and produce products that relate to the mission at hand. Time is not wasted on products that do not work with the current situation. Relevant options are linked to PIR, FFIR, and decision points and are feasible, acceptable, suitable, distinguishable, and complete. COAs have been qualitatively and quantitatively analyzed, wargamed and rehearsed. Produces COAs that have clarity and unity of effort. All tactical and accidental risks have been identified and mitigated.

1-2: The staff does not understand that the products they are producing and spending man-hours on do not have relevance to the mission. Wasting hours on products that do not concur with the current mission.

Figure 5

tained combat. The master-level staff must be effective in its outcomes and capable of producing "a striking effect;" unfortunately, this does not come easy and requires judgment in application. Sound military judgment is generally built from either a significant emotional event or "pressurized" repetitions. Both of these situations create the learning need in organizations. While our training methodology and SAS cannot magically build judgment in the formations we train, it can increase its internal functions and make the growth path to judgment easier due to increased efficiency.

Note

[1]Headquarters, Department of the Army, U.S. Army Field Manual 5-0, *Army Planning and Orders Production*, U.S. Government Printing Office, Washington, DC, 20 January 2005.

Colonel Jeffrey R. Sanderson is currently serving as commander, 4th Cavalry Brigade, First Army Division East, Fort Knox, KY. He received a B.S. from Western Carolina University, an M.S. from Western Kentucky University, and an M.M.A.S. from the School of Advanced Military Studies. His military education includes Armor Officer Basic Course, Armor Officer Advanced Course, U.S. Army Command and General Staff College, and School of Advanced Military Studies. He has served in various command and staff positions, including chief, Stryker Brigade Combat Team Transformation Team, TRADOC Systems Manager-Stryker, U.S. Army Infantry Center, Fort Benning, GA; commander, 2d Battalion, 69th Armor, 3d Brigade, 3d Infantry Division (ID), Operation Iraqi Freedom; S3, 1st Brigade, 1st ID (M), Fort Riley, KS; S3, 2d Battalion, 34th Armor, 1st Brigade, 1st ID, Fort Riley; small group instructor, Armor Officer Advanced Course, Fort Knox, KY; commander, C Company, 3d Battalion, 7th Infantry, 1st Brigade, 24th ID (M), Operation Desert Storm; and commander, D Company, 3d Battalion, 69th Armor, 1st Brigade, 24th ID (M), Fort Riley.

Major Devin Larson is currently chief of training, 4th Cavalry Brigade, First Army Division East, Fort Knox, KY. He received a B.S. from the University of Nebraska. His military education includes Field Artillery Officer Basic Course, Field Artillery Captains Career Course, Combined Arms and Services Staff School, Joint Operational Fires and Effects Course, and the Joint Targeting School Staff Course. He has served in various command and staff positions, to include S3, 1st Battalion, 410th Field Artillery, 4th Cavalry Brigade, Fort Knox; commander, Headquarters and Service Battery, 3d Battalion, 7th Field Artillery, 25th Infantry Division (ID), Schofield Barracks, HI, and Afghanistan; fire support officer, 2d Battalion, 27th Infantry, 25th ID, Schofield Barracks; and XO, C Battery, 6th Battalion, 27th Field Artillery, Fort Sill, OK.
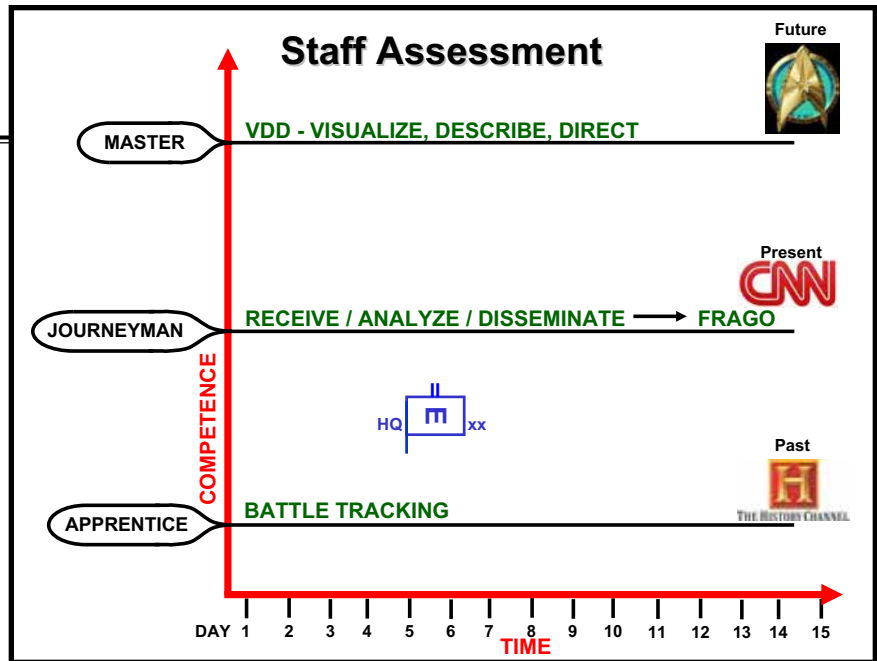
Figure 6

"Each of the five categories relies on staff integration for the section to be efficient. The staff must understand how their section affects other sections, and they must understand the purpose and audience of running estimates. The staff must be integrated and have a mutual view of the battlefield and the commander's desired endstate to achieve the desired effect — without integration, the staff will lack clarity and unity of effort."

XXd EN BN

Time Management	2	Will break 1/3 - 2/3 time-management rule during MDMP. Battle rhythm on administrative tasks and timelines are coming together. Staff sections track suspenses and actions. Battle update brief/commander's update brief is short and allows subordinate units maximum planning time.
Staff Estimates	2	Staff is not maintaining a running estimate. Logistics and maintenance are not being tracked in a way that could provide the commander timely information.
Common Operational Picture	2	COP was largely ignored during MDMP process. Was not consistently up to date. CCIRs and RFIs are posted. Tracking charts in S4 and battalion maintenance section would enhance COP. Questions about unit vehicle density and operational readiness cannot be answered timely.
Information Analysis and Dissemination	3	S3 is analyzing the situational changes and disseminates across the staff and to companies timely. CCIRs are sent to every staff section; no longer stovepiped. Commander continues to receive daily confirmation briefs of their daily FRAGO from subordinate units.
Generate Relevant Options	2	Wargaming too hasty; staff did not identify critical events, decision points, decision support template and matrix; did not identify associated CCIRs during MDMP. Reception, staging, onward movement, and integration planning is being overlooked.

Figure 7

Making the Staff Estimate Run

by Lieutenant Colonel Charles G. Heiden, U.S. Army, Retired

As the military transitions to a powerful reliance on computers, networking, and pervasive sensors throughout the battlefield, the intellectual processes of humans must also change. Part of this change will focus on how machine processes assist a previously manual method. Ideally, the development of the computer network into combat systems will parallel the changes in military thought. The addition of technology changes the way brigade and below units and their staffs will operate; so it is no longer business as usual. Most of the futuristic combat systems and methods continue development to fight a more symmetric enemy with some adapting to asymmetric ones. Meanwhile, the Army continues to experience combat with asymmetric forces, driving it away from training, leadership, and thought processes most closely aligned with systems under development. Operations and methods for small units necessarily require the ability to support either type of operational environment.

How it Works Today

Several "staff estimates" are recognized in the current series of field manuals. These staff estimates are primarily planning tools to help the staff collect and organize data to support a particular future mission. Data elements, organized in the staff estimate, become information to support selection of a course of action (COA). Each of the various staff sections, including the commander's estimate through special and personal staff members, seeks to list and consider possible influences within their area of expertise on selecting a COA. Results of the estimate's work are oriented on providing the commander up-to-date facts and the best analysis possible for the staff area. This results in a recommendation by the staff section regarding supportability of a particular COA. The commander's considerations are the intangible factors concerning soldiers, including their capabilities, equipment, history, experience, and esprit de

corps. Brigade and below commanders must evaluate these factors and decide how and where factors not easily assigned a quantitative value in a matrix or detected by a sensor system fit for success. Staff officers use their estimates to assist in planning, but also to decide what is important for tracking during execution of the selected COA. U.S. Army Field Manual (FM) 5-0, *Army Planning and Orders Production* (January 2005), details the requirements for estimates by staff officers as:

- Mission.
- Situation and consideration.
- Course of action.
- Comparison.
- Recommendations and conclusions.[1]

Commanders have the responsibility for integrating all the various considerations concerning the COA that may solve a tactical situation. Assisted by the staff, the commander selects, modifies, and final-

ly decides the overall COA. This point of decision marks the transition of the staff from a collection and processing organism to a providing and monitoring assistant to the commander. For the staff, there is a transition from "staff estimates" to "staff running estimates," or more commonly, "running estimates." These running estimates have limitations for tracking data, processing it into information within a staff area of responsibility, enabling the staff to build unit operational historic trends, which enable future unit operational predictions to become more accurate.

As information materializes during an operation or mission, the staff provides updates or revisions to their estimate, based on the differences between the COA and actual events. The running estimate gives the staff a method of tracking battlefield information against desired or expected results. Measurements against anticipated results permit the staff to track assigned units and success once the operation commences. Staff predictions fit inside or outside a band of acceptability, based on previous predictions, and may require some adjustment to subordinate unit tasks or a commander's decision. Those measures found inside the band of tolerance require close monitoring by the staff or decisions within their authority. Those things outside of tolerance, or the authority of a staff member to fix or adjust, require a coordinated solution with a recommendation made to the appropriate decisionmaker for the brigade or battalion.

In the recent past, the staff estimate depended on unit reports, historical trends from tables in various publications, and the training or experience of the individual staff officer. Unit reports reflected current information at a fixed time or date, which quickly aged. When unit status was the basis of planning and a COA selected, a new set of reports would likely have already been generated. The cyclic nature of manually collecting data and reporting it through layers of command on a time schedule meant most information was hours or days old.

Large changes in data or immediate operational reports could significantly influence the commander's decision, which places decisions in the operations cycle of act–react–counteract instead of the planning cycle. Staffs monitor changes closely, attempt to anticipate, and factor in changes as they occur. Historical trends from manuals are relatively stable, although revision or extension of the data is necessary. Unit historical trends from operations in theater would provide better and updated trends of consumption or enemy capabilities over time. Relative experience and education of individual staff officers remain a highly variable and difficult factor for the quality of an estimate as a product. There are staff schools to train officers and noncommissioned officers (NCOs) on their basic duties, until they can gain experience in their units. In the past, and likely for the near-term future, units compensate as a whole for the differing relative levels of knowledge and ability in relationships among brigade and battalion commanders, and their respective staff officers and NCOs. Over time, the staff members and commanders establish a bond of trust and experience, permitting concentrated and refined activities to support the unit as a whole.

During the planning phase, the staff estimate focuses gathering, tracking, and potential situations that may effect the envisioned operation. Once converted to the running estimate, the staff remains limited by their ability to have current information available directly from the unit. To gain immediate updates, the staff must generate more electronic traffic with subordinate units to update the last cycle of unit reports. Depending on current conditions, reports could be less than completely accurate.

**Transition from the
Present to the Future**

Each level of command in the Army is busy with tasks and requirements. Reporting requirements add a requirement of manual collection, processing, and reporting. Computer networking with subordinate units permits e-mail, chat, or voice communications, or file downloads and uploads, over a secure tactical internet. While this speeds the movement of information, there remains a sizeable amount of human interaction to collect and input the information. Having the ability to operate a database of unit statistics with subordinate units reporting or modifying data as it occurs provides a significant advantage. Increasingly, this collection, movement, and collation of data through basic processing for display gives the staff greater knowledge about the unit. Increased information velocity and overall processing of the data means better information to support recommendations and decisions at the tactical level.
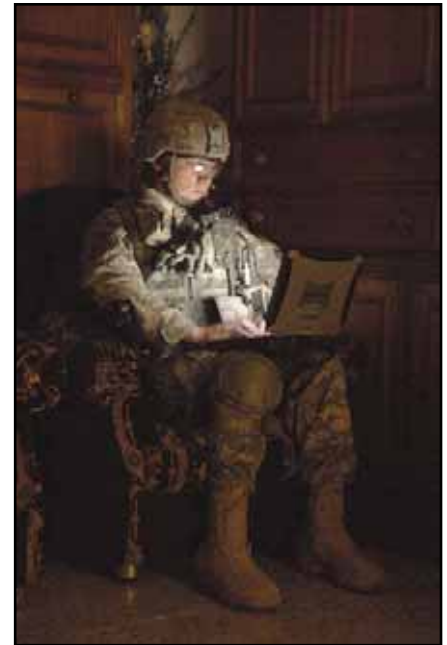
As a structure, the staff estimate has a basic format to assist with collecting and organizing information for supporting the COA selection process. The focus of the initial form is specifically on understanding the initial intent and desires of the commander regarding the next mission. Having the estimate as a general information collection and assessment tool for any of several courses of action assists the commander in ultimately making a selection. Details of a particular COA become available for specific use. Even though not every piece of data remains useful as part of the recommendation process, it does support the individual staff officer's situational awareness later. Each staff officer must then sort the information for usefulness based on how it supports, or does not support, any particular COA under consideration.

Computer data management, consisting of sensors mounted on vehicles and equipment, and carried by people, report to a centralized database that collates the various inputs into categories or summations of activity as immediate unit status reports. These types of production-monitoring systems are already widely available in civilian industry. They offer the capability to manipulate acquired data easily and permit access from remote locations, giving units the capability to have an immediate relationship with the data collection and transfer. At each higher

level, subordinate unit information is up to date and easily configured for display to decisionmakers. While traditional paper charts and butcher boards have transitioned to databases, spreadsheets, and PowerPoint slides, there has not been much work in using automation to perform an analysis. Gradually, vehicles and equipment systems would have incorporated sensors that would make them capable of reporting various status characteristics through the vehicle's data management system.

Having all types of sensors permits units to have responsibility for larger geographic areas, discover more data, and move data through quicker processing to an end user. The Army is currently using unmanned aerial vehicles to survey the battlefield generally or conduct specific reconnaissance missions to support operations. Networking vehicle internal data management systems provides friendly unit status to decisionmakers faster and more precisely than previous manual methods. While current soldier and vehicle systems primarily provide position data or enhanced communications, sensor systems for personnel status, vehicle fuel consumption, and ammunition status are not far off. The internal engine, fire control, and data management systems in the Stryker already link as a single system. For brigade and below units, this is a major advantage for monitoring a subordinate unit's status and mission performance. Leaning forward with these systems in combat permits the Army to gain direct feedback on how the running estimate actually collects information during the operation — actually running on the network and collecting information constantly — to determine how intelligent agents configure aggregated information for display to decisionmakers. The commander and his staff smoothly transition from planning to operations with a configurable tool that provides a powerful, familiar information tool.

The Automated Running Estimate Discussion

A multitude of sensors to find, track, and report information automatically for human decision support means change will occur for brigade and below units in their battlefield tasks and areas of responsibility. The brigade and battalion staffs have an increase in quality and quantity of information to sort and assign value. For staff members, this will mean some generic database information with tailored automatic inputs and collections to meet the staff section's requirements. The common

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Key

Comments or notes
Streaming updated inputs
Hyperlinks to maps, graphics, other estimates, automated inputs, or reference materials

**Mission name, phase, or other identifying method to avoid confusion with current order and plans.
DRAFT or FINAL**

"Draft" is usually not released outside the staff section or indicates the staff is still working on the information; "final" indicates information is released to the unit for use.

1. **MISSION.** Restated mission resulting from the mission analysis.
   a. Commander's intent.
   b. Concept of the operation.
   c. Specified tasks to units.

2. **SITUATION AND CONSIDERATIONS.**
   a. Characteristics of area of operation.
   (1) Weather. How will different military aspects of weather affect specific staff area of concern and resources?
       (a) Current conditions: Temperature, barometric pressure, cloud cover, visibility, thermal crossover, air density, precipitation, wind speed, wind direction, upper winds, turbulence, icing.
       (b) Light data: BMNT, SR, SS, EENT, MR, MS, % Illum, NVG use.
       (c) Last 48 hours. Updated one-sentence analysis.
       (d) Next 48 hours. Updated one-sentence analysis.
       (e) Effects on unit operations:
           Ground operations – Cross country, highway
           Air operations – Low level, mid level, high level.
   (2) Terrain. How will aspects of the terrain affect specific staff areas of concern and resources? Each link highlights that aspect on the AO map. Most info produced by the geospatial products system.
       (a) Cover and concealment.
       (b) Key terrain.
       (c) Observation and fields of fire.
       (d) Obstacles.
       (e) Avenues of approach.
       (f) Trafficability.
       (h) Critical infrastructure locations.
       (i) Protected locations.
   (3) Other pertinent factors/facts. Each link is a written analysis or overlay from a staff section.
       (a) Political/diplomatic/leadership (State Dept, CIA, intel and human terrain team).
       (b) Informational (IO, human terrain team, CIA, and State Dept).
       (c) Military (Intel, CIA, and State Dept).
       (d) Economic (CA and human terrain team).
       (e) Population (CA, human terrain team, and State Dept).
       (f) Sociological (CA and human terrain team).
       (g) Psychological (CA and human terrain team).
       (h) Religious (Chaplain and human terrain team).
       (i) Environmental (Engineer).
       (j) Infrastructure (Engineer and State Dept).
   b. Enemy Forces.
   (1) Enemy dispositions. Takes to map showing current locations.
   (2) Composition and strength. Takes to map showing unit equipment & numbers.
   (3) Capabilities. Takes to general illustration of enemy tactical possibilities.
   (4) Enemy COAs as they affect specific staff area of concern.
       (a) Enemy most dangerous COA. Indications of adoption.
       (b) Enemy most likely COA. Indications of adoption.
       (c) Enemy least likely COA. Indications of adoption.
   c. Friendly Forces.
   (1) Higher friendly courses of action. Current items are for linkage to the future possible courses of action, and show progress in the current phase of the operation with single "headline" type success criteria or alerts for users.
       (a) CURRENT COA. MOP. MOE. Branches. Sequels.
           Active MOP.
           Active MOE.
           Active cdr's intent criteria.
       (b) Future COA #1. MOP. MOE. Branches. Sequels.
       (c) Future COA #2. MOP. MOE. Branches. Sequels.
       (d) Future COA #3. MOP. MOE. Branches. Sequels.
   (2) Current status of resources. Within staff area of responsibility.
   (3) Status of affecting resources. Outside the staff area of responsibility.

(4) Comparison of requirements versus capabilities and recommended solutions.
(5) Key considerations (evaluation criteria) for COA supportability.
d. Assumptions. Short form of keywords to be used for ISR tasking, in priority.
  (1) Enemy critical equipment locations. (Examples only)
  (2) Enemy obstacles and engagement areas.

3. ANALYSIS. Analyze each COA using key considerations (evaluation criteria) to determine advantages and disadvantages. Current items are for linkage to the future possible COA, and show progress in the current phase of the operation with single "headline" type success criteria or alerts for users.

a. CURRENT COA. Text. MOP. MOE. Branches. Sequels.
  (1) Active MOP.
  (2) Active MOE.
  (3) Active cdr's intent criteria.
  (4) Current unit status and comments. This may include a pre-configured color coding of unit status as a total rating, by critical systems, or some other method the user desires to follow.
  When plans are approved, they may either be loaded as sequels to the CURRENT COA, or may be inserted here as a NEXT COA, at the user's option.
b. Proposed COA #1 simulation. Narrative. MOP. MOE. Branches. Sequels.
  (1) Current status of unit resources to support COA.
  (2) Current status of unit capabilities to support COA.
  (3) Comparison of required resources vs on-hand with deliveries shown.
  (4) Comparison of required capabilities vs predicted at start of operation.
  (5) COA evaluation criteria with rating and comments.
  (6) COA overall rating; end state prediction for unit.
c. Proposed COA #2 simulation. Narrative. MOP. MOE. Branches. Sequels.
  (1) Current status of unit resources to support COA.
  (2) Current status of unit capabilities to support COA.
  (3) Comparison of required resources vs on-hand with deliveries shown.
  (4) Comparison of required capabilities vs predicted at start of operation.
  (5) COA evaluation criteria with rating and comments.
  (6) COA overall rating; end state prediction for unit.
d. Proposed COA #3 simulation. Narrative. MOP. MOE. Branches. Sequels.
  (1) Current status of unit resources to support COA.
  (2) Current status of unit capabilities to support COA.
  (3) Comparison of required resources vs on-hand with deliveries shown.
  (4) Comparison of required capabilities vs predicted at start of operation.
  (5) COA evaluation criteria with rating and comments.
  (6) COA overall rating; end state prediction for unit.
e. Key considerations, which form the evaluation criteria for COA support and comparison.
f. Assumptions. Short form of keywords to be used for ISR tasking, in priority.
  (1)
  (2)

4. COMPARISON. Compare COA using key considerations (evaluation criteria). Rank order COA for each key consideration. Comparison should be visually supported by a decision matrix.

a. Comparison of requirements versus capabilities.
  (1) Narrative version.
  (2) Matrix version.
  (3) Recommended COA illustration; graphic overlay; and justification.
b. Comparison of simulation results.
  (1) Narrative version.
  (2) Matrix version.
  (3) Recommended COA illustration; graphic overlay; and justification.
c. Comparison of COA by evaluation criteria.
  (1) Narrative version.
  (2) Matrix version.
  (3) Recommended COA illustration; graphic overlay; and justification.

5. RECOMMENDATION AND CONCLUSIONS. Most supportable from specific staff perspective.

a. Overall rank order of COA:
  (1) Consolidated narrative comparison.
  (2) Consolidated matrix comparison.
  (3) Rank order selection of COA: COA #; COA #; COA #. Comparison produces a best, middle, and worst COA alternative.
  (4) Justification narrative for selection.
b. COA deficiency mitigation.
  (1) Known issues with recommended COA and mitigation measures.
  (2) Deficiencies with recommended COA and mitigation measures.
  (3) Identified risks with recommended COA and mitigation measures.

Figure 1. A Proposed Automated Running Estimate

display of battlefield and unit information may ultimately resemble a PowerPoint-like slide for quick reference, or a web page full of hyperlinks with vital information shown as automatically updated color-keyed headlines and live streaming statistical data.

Defining and sorting some initial recommendations from the current standard format begins the process of linking together information. Much of the information needed by a staff member will be available and entered into accessible format by subordinate, adjacent, or higher units during their normal operations. Additional information feeds into the data management systems integrated into vehicle systems through sensors or manual inputs connected together on the battlefield. Feeding into the networked database, sorted by identification numbers to individuals, positions, and/or vehicles, sensor information amalgamates into quickly comprehended critical information. The detailed displays are available through hyperlinks to maps, overlays, live video, pictures, matrices, or text documents.

A proposed running estimate for brigade and lower staffs and unit commanders covers their immediately required supporting information for the unit, the current operation, or during planning for the next operation; the running estimate and staff planning estimate may be different sides of the same page with integrated information links. Individuals will then tailor the estimate format to their specific requirements. See Figure 1 for a proposed automated running estimate.

As an example for use and discussion, Figure 1, paragraph 2, a. (1) Weather, shows a hyperlink, which, if followed, takes the user to the detailed weather predictions and trends from the local weather team, possibly a brigade asset or an averaged reported condition from all responding vehicles equipped to monitor the weather. In the detailed information, a user might have access to satellite views of the area of operations with overlays for isobar maps and short- or long-term predictions. The next subparagraph, (a) Current conditions, shows a series of configurable local information in icons, numbers, or some other representation of select items taken from detailed weather predictions, shown as regularly/constantly updated references for the user. In some cases, localized data, such as temperature, could be an average of all operational vehicle sensors that measure outside temperature, instead of a distant weather team location.

In paragraph 3, ANALYSIS, the heart of the staff estimate to running estimate transition occurs. Prior to this, the staff member has been collecting information and building an intellectual, intuitive, and anticipatory understanding of the total environment against what the commander intends or desires to happen. The first subparagraph provides access to the components of the current operations of the unit, showing locations, tasks, a narrative of the expected action, measures of performance and effectiveness, and access to any designated branches or sequels to the main plan through hyperlinks to maps, overlays, text, or pictures. At the same time, the use of streaming headlines, well known on the Internet web pages of news organizations, permit the "current" phase or other critical information to remain prominently displayed. The following subparagraphs are set up and populated as necessary to support new or follow-on COA for the unit to work. At the initial use, the "current" hyperlinks might be empty, but the normal condition would quickly become populated from unit current operations. If a COA were selected but not implemented until time or conditions occurred, the estimate could be configured to move the "pending" COA to Current — Sequels, or add a subparagraph between "Current" and "COA #1," labeled "NEXT COA." The ability to configure the automated running estimate and have the estimate track past work for access and trending is a major advantage over past methods.

Configuring the automated running estimate for text or icons as status or alert symbology would be an individual preference. Other information updates constantly on the equivalent of a web page-type arrangement as shown in Figure 1. In the near term, this permits a smooth transition from the current stylistic formal staff estimate to the less-developed running estimate. User configurable formatting permits adding or deleting displayed information to support either style or times. During a planning period, the operations officer could view all potential COA or switch back to view only current operations information to tighten the display to only what is currently critical. Likewise, using paragraph 5, "Recommendations and Conclusions," serves a dual function. First, this paragraph shows the most supportable COA during planning. It may contain a decision matrix, with annotations and wargaming results from various simulations, available for viewing. Second, once a COA is selected, additional simulation wargame runs can show branches from the main plan under a wide range of conditions, along with any newly identified decision points for the commander or staff considerations.

"While current soldier and vehicle systems primarily provide position data or enhanced communications, sensor systems for personnel status, vehicle fuel consumption, and ammunition status are not far off. The internal engine, fire control, and data management systems in the Stryker already link as a single system. For brigade and below units, this is a major advantage for monitoring a subordinate unit's status and mission performance."

This could even include sub-identified actions by the staff section to ensure continuous support to the main COA and any differences during operations.

The estimate, as a process for collecting, sorting, and making information available throughout a brigade or below sized unit or staff, remains a reasonable and useful method. Rapid and automatic collection displaying that information allows soldiers to apply experience and rationalizing logic to situational information. Unit users can configure displays according to their needs. Adding intelligent agents, subscription lists, and artificial intelligence to the process permits users to monitor additional information as it changes, but also to begin data mining the vast resources on the network.

The automated running estimate in Figure 1 shows only a small example of potential capabilities for linking with critical information. Brigade and below staffs continually seek to gather information for their respective commanders and process it to supplement the commander's mental power to direct the unit during operations. By performing this assistance, the staff requires a constant stream of the latest and most accurate information possible. As the ability to collect and move information has changed with technology — dispatch rider, telephone, and radio — the depth of collection has also increased, making it possible for the brigade to query individual vehicles and collate requirements. In the short term, technology has advanced the ability to network units together for information exchange on the battlefield, but they are using the same old gathering and processing methods to make PowerPoint slides for the commander. In the far term, this collection and display of information must be the equivalent of an F-16 fighter pilot's heads-up display on a far greater scale. The automated running estimate is a minor step of what should be the currently envisioned result for futuristic combat systems. Today can no longer be like yesterday; in fact, tomorrow requires bettering today.

Note

[1]Headquarters, Department of the Army, U.S. Army Field Manual 5-0, *Army Planning and Orders Production*, U.S. Government Printing Office, Washington, DC, January 2005.

Retired Lieutenant Colonel Charles G. Heiden is a senior research scientist, Human Resource Research Organization, Radcliff, KY. He received a B.S. from Michigan Tech University, an M.A. from University of Phoenix, an M.A. from School of Advanced Military Studies, and a Ph.D. from Capella University. His military education includes Armor Officer Basic Course, Armor Officer Advanced Course, U.S. Army Command and General Staff College, and Air Assault School. Throughout his 21-year Armor officer career, he served in various command and staff positions, to include professor of military science, Northern Michigan University; special assistant to commander, 7th Army and U.S. Army Europe, Germany; chief of plans, G3, V Corps, Germany; S3, 2d Battalion, 32d Armor; and commander, Headquarters and Headquarters Company and A Company, 1st Battalion, 68th Armor.

Back to Basics: Training for Today's Battlefield

by Major Ian C. Palmer

Soldiers and leaders of combat units returning from Operations Iraqi Freedom (OIF) and Enduring Freedom (OEF) consistently report the skills critical to their success in the counterinsurgency (COIN) fight were the same skills they would have trained on in preparation for high-intensity conflict. Faced with the challenge of returning a recently redeployed unit back to an acceptable level of combat readiness, the leaders of Anvil Troop, 1st Squadron, 4th U.S. Cavalry (subsequently reflagged to 1st Squadron, 91st U.S. Cavalry), took that feedback to heart. They developed a training methodology, consistent with the Department of the Army's Warrior Tasks Program, grounded in the fundamentals of Army training management and rooted in the combat experience of a solid corps of noncommissioned officers, which focuses training on basic reconnaissance and security tasks applicable to any operational environment.

It's Basically Basics

The fire hose of lessons learned, tactics, techniques, and procedures (TTP), and after-action reviews (AARs) can drown any leader in an overabundance of information. Moreover, that fire hose of information draws not from a single source, but from a staggering operational tempo (OPTEMPO) across a global battlefield that generates tremendous velocities in the flow of data. These varied experiences and insights challenge leaders to select and apply this superfluity of information according to their needs.

One lesson, however, is immediately apparent — soldiers across the Army must have fundamental warfighting skills to survive on the battlefield. This is hardly news. For centuries, American soldiers trained on basics of marksmanship, drill, leadership, first aid, and other basic tasks. Further, common task training and testing was, until recently, an annual requirement for every soldier in the Army.

Fighting Linear in the Contemporary Operational Environment (COE)

How training and testing is conducted and how much emphasis it receives is very much a function of command and the commander's understanding of the modern battlefield. Until recently, combat maneuver units emphasized basic warfighting skills as a matter of course, which was less true for combat service (CS) and combat service support (CSS) units — commanders in these units trained with a linear battlefield as a combat setting. Even maneuver commanders with CS and CSS units in their command openly accepted, or accepted by default, the idea that a linear battlefield, with its front line and rear areas, made warfighting for CS and CSS soldiers less imperative. This was not true, as years of rotations at the Joint Readiness Training Center (JRTC) documented the opposition force's ability to cripple or even kill a light brigade by targeting its CS and CSS units.

In the late 1990s, newly emerging doctrine labeled what had been happening at the JRTC the contemporary operational environment (COE), which meant there were no rear areas and battlefields were no longer linear. Still nothing changes quickly in a military until war forces such changes. Combat units in Afghanistan in 2002 credited their JRTC experience as the best possible preparation; however, the rotations they referred to occurred prior to 9-11. Unfortunately, the same could not be said for all units as they prepared to invade Iraq in 2003. During the drive on Baghdad, the 507th Maintenance Company met with disaster, which had been foretold during hundreds of rotations at the JRTC. The incident, soldiers being unable to fire their weapons because they

"...soldiers in the COE fight on a nonlinear, asymmetrical battlefield where there is no true "rear area" and everyone must be prepared to close with, engage, and destroy the enemy. The board shaped, save minor modifications by General Schoomaker, what we now know as the warrior tasks and drills. These tasks and drills serve as the foundation for all initial entry training (IET) and provide all soldiers universal warfighting skills."

were jammed with dirt, stirred a bit of publicity, which accomplished what those hundreds of rotations at the JRTC failed to do — get senior leaders' attention.

The Warrior Task Site Selection Board

In the fall of 2003, U.S. Army Chief of Staff, General Peter Schoomaker, established the Warrior Task Site Selection Board, whose purpose was to "compile a list of essential tasks and drills that all Soldiers should be proficient in." This directive was based on information coming from the front lines of Iraq and Afghanistan, which identified that there was no real "front," and soldiers of all military occupational specialties (MOS) were subject to enemy fire, and all soldiers required a baseline of warfighting skills. Images of Private First Class Jessica Lynch, and the dramatic mission to rescue her and her comrades after falling into Iraqi captivity, were still fresh on the minds of America and its armed forces.

The AAR for this incident and many others unearthed several lessons learned, specifically those that indicated that non-combat arms soldiers were not receiving the same level of training on basic soldier warfighting skills as their combat arms peers. So-called common-task testing was not as common as Army regulations directed and, as a result, soldier's lives were at risk. As exemplified by the 507th Maintenance Company, soldiers in the COE fight on a nonlinear, asymmetrical battlefield where there is no true "rear area" and everyone must be prepared to close with, engage, and destroy the enemy. The board shaped, save minor modifications by General Schoomaker, what we now know as the warrior tasks and drills. These tasks and drills serve as the foundation for all initial entry training (IET) and provide all soldiers universal warfighting skills.

Once the tasks and drills were identified, several questions were raised: does the collective Army experience in Iraq and Afghanistan alter how combat arms units train for conflict; do the warrior tasks and drills replace or augment MOS-specific warfighting tasks; and how should already scarce training time be shared between mission-essential training list (METL)-focused training and warrior tasks training? The cavalry's answer was that experience validated the need for basic warfighting proficiency. Training and mastering basic tasks allow a unit to apply its warfighting capability on any battlefield against any level of threat. The same skills a cavalry scout or infantry-man would train to fight in a high-intensity conflict also suited operations in support of full-spectrum operations in Iraq and Afghanistan. While the spectrum of missions executed in Iraq and Afghanistan vary from lethal brigade combat team-level operations to civil military operations in support of reconstruction, the tasks that made small units successful were fundamental skill level I, II, and III tasks. By focusing training on critical tasks in support of the troop/company and squadron/battalion METL, soldiers can adapt basic capabilities to any environment on any platform, such as tanks, Bradleys, and high-mobility multipurpose wheeled vehicles (HMMWVs), or dismounted. This training methodology enables units to deploy on short notice to any battlefield and perform its mission effectively by mastering the basics of skills.

Melding Combat Experience Training: The Noncommissioned Officer (NCO)

Based on the flexibility of basic skills, the challenge then was to meld lessons learned from Iraq and Afghanistan into a coherent, sustainable training plan that allowed the unit to reconstitute soldiers and equipment, as well as accommodate a major reorganization under Army transformation. Again, the answer was in the basics. We had to teach leaders down to the squad level the fundamentals of training management and assign priorities that align with the squadron/battalion and troop/company METL. NCOs were the bridge to success — we supported them by allotting sufficient time to plan, resource, and execute training inside of the constraints of reconstitution.

"Training and mastering basic tasks allows a unit to apply its warfighting capability on any battlefield against any level of threat. The same skills a cavalry scout or infantryman would train to fight in a high-intensity conflict also suited operations in support of full-spectrum operations in Iraq and Afghanistan."

Training is an Operation and Should be Planned

Many leaders do not regard training as a true form of an operation, which is incorrect, and many unit leaders have relegated training to the "too hard to do" box leaving what used to be home station training to the combat training centers. There are many reasons this happened over the past decade, none of which make it an acceptable solution. Units must train and leaders must make sure they do. Training time is perhaps the most valuable resource a leader must manage if that leader is to accomplish the mission while preserving soldiers' lives. As such, training must be studied and planned just like any other operation.

Reading and internalizing U.S. Army Field Manual (FM) 7-0, *Training the Force*, and FM 7-1, *Battle Focused Training*, is the first step to successfully managing training for all leaders.[1] Certainly training management begins at the command level, but does not stop there. True master trainers understand that training management is a combat multiplier in combined arms operations. The more leaders who understand training management and apply it daily, the more effec- tive the unit will be in meeting its training goals. Training management should dictate how we manage our time in all that we do. If our daily activities are not planned, resourced, and executed effectively, we will waste our soldiers' time and fumble away opportunities to make our unit better. By training leaders to understand and implement training management, we allow ourselves to structure

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an effective training plan that can be executed at the first-line leader level, where unit training is most important as proven on battlefields in Iraq and Afghanistan.

Aligning Training Models and Schedules

Within our troop, we used a technique that relied on aligning the eight-step training model with the T+6 training week lock-in — near-term review (T+6 to T-1); platoon leaders and platoon sergeants back brief training for each week from T+6 to T-1 using the following standard aligned with the eight-step training model:

- T-1 (AAR). Platoon leaders and sergeants provide a minimum of one sustain and one improve from the previous week's training. Sustains and improves need not be limited to training events, but may include anything on the training schedule such as command maintenance and physical training.

- T+6 (guidance). The troop command briefs templated and squad-

ron/troop-mandated training events for T+6 and allots time for platoons to conduct internal training. The troop commander also briefs the METL focus for T+6.

- T+5 (plan the training). Platoon leaders and sergeants brief training events based on T+6 guidance, including, but not limited to:

  ➢ Tasks to be trained (platoon critical tasks at a minimum).

  ➢ Primary instructor/alternate instructor (as applicable).

  ➢ Location.

  ➢ Resources required from troop/squadron, such as land, ranges, and training support.

- T+4 (train and certify leaders). Platoon leaders and sergeants brief date, time, location, and method for leader certification.

- T+3 (recon the site). Platoon leaders and sergeants confirm training location.

- T+2 (issue the plan). Platoon leaders and sergeants issue operations or fragmentary order (OPORD/FRAGO) to platoon or troop, as required.

- T+1 (rehearse). Platoon leaders and sergeants report the completion of rehearsals with primary/alternate instructors.

During weekly planning, a task-focused METL is assigned to each platoon, which includes the individual, team, squad, and platoon levels. The task focus is based on whatever training event the squadron has assigned as the quarterly capstone event. Figure 1 is an example of a tool our troop developed to help platoon leaders and platoon sergeants organize and brief their training for each training week.

NCOs are Primary Trainers

The next component of our training plan was to get training back into the hands of NCOs. Too often during preparation for deployment, training is dictated and tracked at echelons higher than it should

Training Week	T-1	T+6	T+5	T+4	T+3	T+2	T+1	T-Week
	AAR		Plan the Training	Train and Certify Leaders	Recon the Site	Issue the Plan	Rehearse	Execute
	* AAR	* Troop commander guidance	* Tasks to be trained (PLT critical task at a minimum) * Primary instructor/alternate instructor (as applicable) * Location * Resources required from troop/squadron (land, ranges, training aid support, etc.)	* PL/PSG brief date, time, and location, and method for leader certification	* PL/PSG confirm execution of training location recon	* PL/PSG issues OPORD/FRAGO to platoon or troop, as required	* PL/PSG conduct rehearsals with primary/alternate instructors	* Execute
Week 44	Week 43	Week 50	Week 49	Week 48	Week 47	Week 46	Week 45	Week 44
Week 45	Week 44	Week 51	Week 50	Week 49	Week 48	Week 47	Week 46	Week 45
Week 46	Week 45	Week 52	Week 51	Week 50	Week 49	Week 48	Week 47	Week 46
Week 47	Week 46	Week 1	Week 52	Week 51	Week 50	Week 49	Week 48	Week 47
Week 48	Week 47	Week 2	Week 1	Week 52	Week 51	Week 50	Week 49	Week 48
Week 49	Week 48	Week 3	Week 2	Week 1	Week 52	Week 51	Week 50	Week 49
Week 50	Week 49	Week 4	Week 3	Week 2	Week 1	Week 52	Week 51	Week 50

Figure 1

be. For example, the program of instruction for individual readiness training (IRT) was a "round robin" approach dictated at the division level and run by the squadron. This approach limited the NCOs' abilities to train their own soldiers, who were being trained by NCOs not in their chain of command.

Putting training back into the hands of NCOs allowed them to be where they should — with their soldiers. This approach was value added, in that:

- It forces first-line leaders to become subject-matter experts on the skills they are required to train, thus increasing their level of proficiency.

- It reinforces first-line leaders' credibility and trustworthiness during soldier training.

- It enables combat experience at the NCO level to be integrated into training at the same time tasks are trained to Army standards.

- It enables training management to be understood and implemented at all echelons, creating a unit that can focus, plan, resource, execute, and evaluate training.

- Finally, it enables NCOs to best assess their soldiers by training them and improving their skills in a supervised training management program.

No Time To Waste

To put training back in the hands of NCOs, we had to ruthlessly protect training time. Units just returning from a combat deployment encounter significant distractions. In particular, as other home station units prepare for combat deployments, requirements to support their deployment increases, and training time seems to melt off the training calendar. Additionally, the effort to reconstitute vehicles and equipment cannot be overexaggerated. Inevitably, a number of soldiers leave the service or the unit after a deployment and unit leaders change command and new soldiers arrive — all of these events (and more) take a toll on calendar space.

It is very easy to regard training as something "too hard to do," and NCOs are the ultimate guard against that tendency — they ensure that even when the unit is focused on reconstituting equipment and vehicles, soldiers have the opportunity to train on individual-level tasks. Soldiers appreciate such efforts and are more responsive in all areas. Basic individual training reestablishes training systems and builds a foundation for future collective-level training. Individual skills training establishes a toehold for future training plans, around which a unit can build other effective systems on the way to beneficial collective-level training that is focused on basic tasks.

Training Doesn't "Just Happen"

To further enhance training, our NCOs identified a need to allot time for planning and preparation on the weekly training schedule. They needed to integrate training enablers, such as local training areas, training support center (TSC) training aids, and fellow soldiers, and plan and resource for these enablers. So, we allotted time on the training schedule to allow junior NCOs to plan, resource, rehearse, and develop training. Training immediately reflected the additional planning and preparation time that the NCOs had put into it.

In conjunction with the ability to examine scheduled training 4 to 5 weeks ahead, NCOs could prepare well in advance of a training event, eliminating a lot of the last minute "oh nos" that often plague small unit training events. NCOs had available time on the training schedule to develop training plans, coordinate and sign for training aids and training areas, and conduct reconnaissance of training areas. As time passed and NCOs became more adept at planning and executing training, the training quality continued to increase. By focusing on basic skill sets, this also allowed for repetition at the soldier level, further building a foundation of proficiency to build on during future collective-level training. Finally, giving the NCOs the mission to train soldiers and the time to prepare training reinforced their basic skills in troop leading procedures.

Adding the Platoons

As the time required for reconstitution tasks subsided, the troop leaders began to identify areas during the weekly training schedule to conduct platoon-level training. Platoon-level training time allowed platoon leaders and platoon sergeants, now fully versed on training management, more opportunities to exercise those skills. Additionally, it allowed platoons to build progression into their weekly training plans. For example, on weeks when Wednesdays were platoon training days, NCOs conducted "crawl phase" training, such as classes or written tests, to build the foundation for practical exercise training in local training areas during collective training on Thursday. This greatly enhanced soldiers' task retention and it increased the pace at which training was conducted on Thursdays. Because the overall training plan focused on fundamental, low-resource, high-payoff tasks, platoons built repetition into the training plan by training similar tasks in successive days. Lastly, this allowed more time for small units to integrate retraining into their plans, a step commonly overlooked. Retraining allowed junior leaders to train all soldiers to a common standard or raise the standard when all soldiers had met common standards.
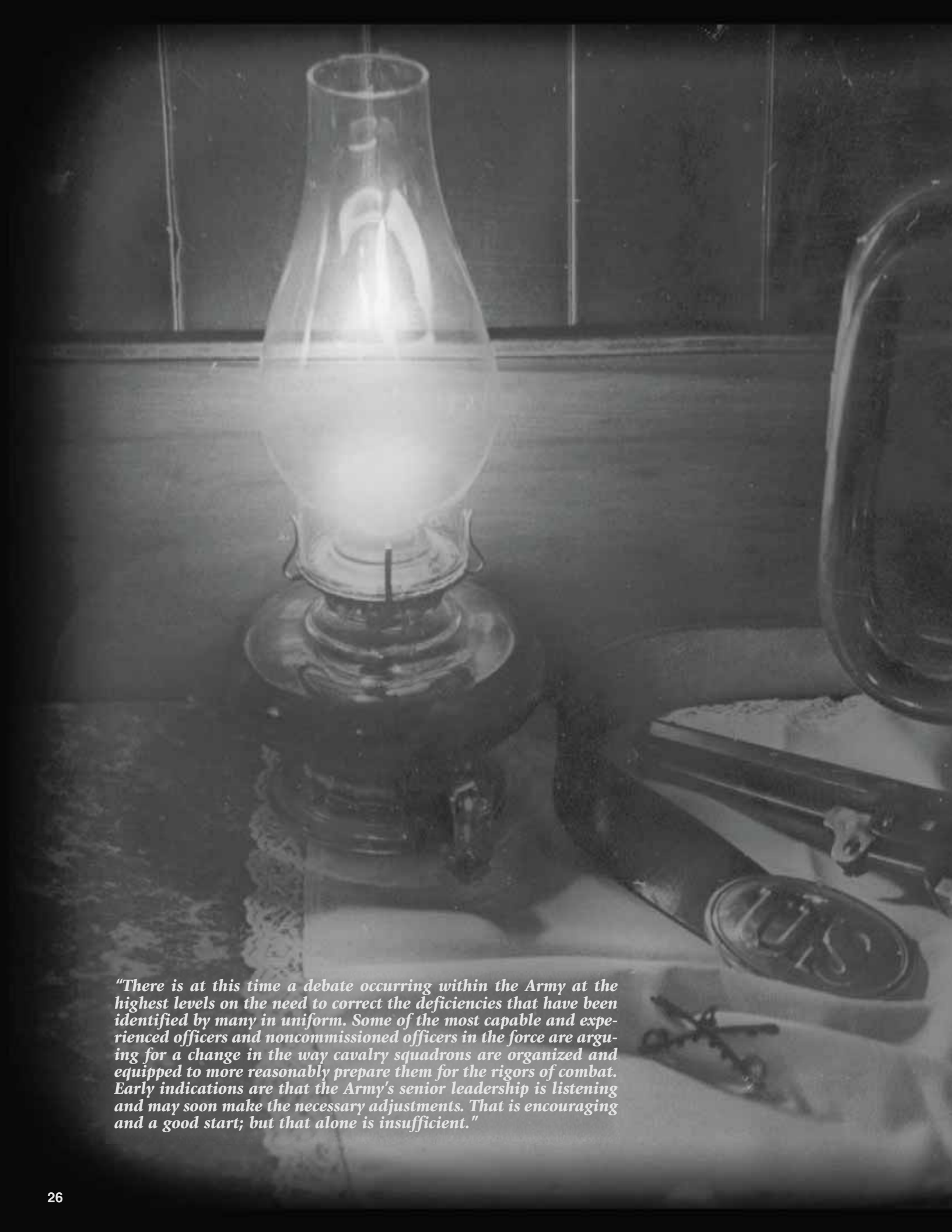
War stresses soldiers, units, and leaders as they train to meet the ever-changing challenges of combat. No military has entered a sustained war and emerged unchanged; however, all successful militaries have anchored the process of change in basics. Keeping up with transforming TTP and lessons learned from Iraq and Afghanistan is a challenge. NCOs can help break down complex tasks and teach soldiers to use them on any battlefield against any threat. Commanders must set the conditions for their NCOs to successfully accomplish this — before, during, and after combat operations.

Notes

[1]U.S. Army Field Manual (FM) 7-0, *Training the Force*, Headquarters, Department of the Army (HQDA), U.S. Government Printing Office (GPO), Washington, DC, October 2002; FM 7-1, *Battle Focused Training*, HQDA, GPO, Washington, DC, September 2003.

Major Ian C. Palmer is the senior maneuver observer controller, Task Force 3, Joint Readiness Training Center, Operations Group, Fort Polk, LA. He received a B.A. from the University of Notre Dame and is currently an M.A. student at Louisiana State University. His military education includes Armor Officer Basic Course, Amphibious Warfare School, and Combined Arms and Services Staff School. He has served in various command and staff positions, to include commander, A Troop, 1st Squadron, 91st U.S. Cavalry, 173d Airborne Brigade, Schweinfurt, Germany; commander, heavy division cavalry troop, A Troop, 1st Squadron, 4th U.S. Cavalry, Schweinfurt; XO and scout platoon leader, brigade reconnaissance troop, G Troop, 10th U.S. Cavalry, 4th Infantry Division, Fort Hood, TX; and tank platoon leader, A Company, 3d Battalion, 66th Armor, 4th Infantry Division, Fort Hood.

"There is at this time a debate occurring within the Army at the highest levels on the need to correct the deficiencies that have been identified by many in uniform. Some of the most capable and experienced officers and noncommissioned officers in the force are arguing for a change in the way cavalry squadrons are organized and equipped to more reasonably prepare them for the rigors of combat. Early indications are that the Army's senior leadership is listening and may soon make the necessary adjustments. That is encouraging and a good start; but that alone is insufficient."

Fighting for Information

by Major Daniel L. Davis

If the United States were to be required to unexpectedly engage in major combat operations, the cavalry squadrons on which we rely to accomplish critical reconnaissance and security tasks would not succeed. As a result of previous iterations of Army transformation and reorganization, these formations would not long survive modern battle because they are not organized, equipped, or manned to survive in an increasingly lethal world. The current and future cavalry squadron must be immediately reorganized so that once again it will be capable of fighting for information.

It seems inconceivable that the Army would take an organization that has routinely proven itself in combat as one of the most formidable forces on the battlefield and "transform" it so that it becomes incapable of executing its mission. And yet, as this article demonstrates, that is precisely what has happened and unless major structural change is undertaken, the stage is set for American soldiers to suffer unnecessarily on future battlefields.

This article briefly describes how cavalry units have performed in combat over the past 20 years and ascertains the reasons for their successes. It also describes the threat environment the U.S. Army could face during battle in both a current and future fight. The article further discusses organizational changes the Army has enacted as a result of modular transformation since Desert Storm and analyzes what would happen if the resulting formations had to fight against an aforementioned threat. Finally, it makes recommendations for both the current and future force regarding the most combat effective reconnaissance organizations the Army should consider fielding. This article's analysis is limited to the heavy cavalry of the past and present and the cavalry squadron of the future combat system (FCS), brigade combat team (FBCT).

The Foundation

There is very little doubt that the Army put afield by the United States in March 1991 was the most powerful land force ever assembled. Although America presently possesses an awesome array of lethal capabilities, the eighteen division, three armored cavalry regiment (ACR), three corps Army then in existence, dwarfs even today's high-tech force in terms of sheer capability. Shortly after the successful completion of Desert Storm, Department of Defense embarked on the transformation of its armed forces to improve their ability to defend American interests. Now, nearly 17 years and 2 wars later, it is reasonable to expect that this transformation has created combat organizations more capable than either the Desert Storm or Operation Iraqi Freedom (OIF) 2003 version; on balance, I would argue it has not.

In the late 1940s as relations between the Soviet Union and the West deteriorated, Western European states looked nervously toward the growing threat from the east. Having been badly mauled by 5 years of total war, they were unable to mount the necessary forces to present the Soviet juggernaut a deterrent sufficient to ensure their security. The United States, however, was in a position in terms of manpower, economics, and industrial potential to provide that deterrence. Still, with large numbers of mechanized forces in theater from World War II, the United States placed the mission of security on the formation most suited for that role — armored cavalry.

In the early 1960s, the east-west border was patrolled by the 2d, 11th, and 14th ACRs. In 1972, the 14th ACR was inactivated, leaving the 2d and 11th ACRs to continue the mission. Until the post-Desert Storm drawdown, these two regiments were responsible for patrolling almost 1,100 kilometers of the east-west border. The ACRs were designed to perform reconnaissance and security missions against a peer competitor in rough, difficult terrain in areas that experienced extremes in weather conditions, particularly snow, ice, and fog, and against an enemy that was expected to bring significant firepower to bear at the point of attack. Under these conditions, the ACR was expected to successfully accomplish all security and reconnaissance missions.

To enable it to succeed, the modern ACR was organized with key elements of combat power, to include M1 tanks, M2/3 Bradleys, 155mm self-propelled howitzers, 4.2" mortars, scout helicopters, attack helicopters, dismount soldiers, and organic military intelligence organizations. These combat elements were task organized with other enablers such as engineer, air defense artillery, and larger field artillery units. The officers and non-commissioned officers of the three regiments, including the CONUS-based 3d ACR, conducted rigorous training, spending on average more than 240 days a year in the field. The organization, equipment, and training paid dividends in Iraq during 1991 as the 2d ACR was pulled from its border mission in Europe and placed at the head of VII Corps in its mission to drive the Iraqi Republican Guard from Kuwait.

Although the 2d Dragoons demonstrated the power of an ACR in combat, there were those in the Army's senior leadership that believed technology would enable future formations to be as effective as the ACR, but at less cost in terms of manpower, equipment, and dollars. As a result, the 2d ACR was inactivated in 1992 (the unit's name passed to an infantry regiment that was redesignated as 2d ACR) and less than 2 years later, the 11th ACR followed suit. Thus, despite demonstrating extraordinary capability in combat, the Army reduced the number of active duty regiments to one. Unfortunately, however, the ACR would not be the only cavalry organization to fall victim to modernization.

The divisional cavalry squadron (DIVCAV) of the heavy division was organized to have capabilities, similar to those of its ACR cousin, to provide all-weather, all-condition, all-circumstance reconnaissance for the division commander. This unit was organized with three ground troops (each with nine M1A1 tanks, thirteen M2/3 Bradley Fighting Vehicles, and six 4.2" mortars), and two air cavalry troops (each containing eight scout helicopters). But much like the ACR after its success in Desert Storm, the DIVCAV, after a successful Operation Iraqi Freedom (OIF), was deemed replaceable, and by 15 August 2007, 1st Squadron, 1st U.S. Cavalry, the last of the Army's heavy DIVCAV squadrons, was inactivated.

One would reasonably expect that the Army would not eliminate an organization that had repeatedly demonstrated its ability to crush all opponents in combat based only on the promise of future capability. With the inactivation of two of the Nation's three ACRs and all ten of its DIVCAV squadrons, one would assume that they had been replaced with equal or better capabilities than had previously existed, and that in the future, an even greater capability will exist. Such an assumption would be misplaced.

Yesterday's Success

During Desert Storm, the 2d ACR was given the mission of leading the VII Corp's attack to dislodge the Republican Guard holding Kuwait. The regiment's second squadron fought one of the most significant tank battles of that war during the Battle of

73 Easting. It is important to note that during that battle, the squadron rapidly fought over extended distances to even get to the battlefield. At the most critical moment of the war, the squadron was deprived of its air cavalry support due to a heavy sand storm. As a result of inconclusive intelligence of enemy locations, the squadron found the enemy's combined armor and infantry formation by driving into its kill zone. Once there, however, the ability of the unit to go toe-to-toe with tanks, armored personnel carriers, and infantry equipped with heavy machine guns allowed the squadron to obliterate the Iraqi armor in a hasty attack that lasted all of 23 minutes, a success that was not unique to the 2d Squadron, 2d ACR.

A lesser known, but extraordinary effort, was demonstrated by the DIVCAV of the 3d Infantry Division (3ID) during the initial stages of OIF. Because of the highly relevant lessons this battle has for both our present and future forces, we will closely examine the experiences of 3d Squadron, 7th Cavalry Regiment (3-7 CAV) as it led 3ID in its drive to Baghdad:

The squadron was charged with providing reconnaissance to the division commander and developing the situation in advance of his maneuver brigades in support of the division's ultimate objective of Baghdad. In the execution of their mission, 3-7 CAV fought a number of armed skirmishes. For the purposes of this article, however, we will focus on the most significant engagement the squadron fought against Iraqi armor.

Apache Troop commander, then-Captain H. Clay Lyle, recently took time out of his educational courses at Fort Belvoir to recount some of the key lessons learned from those battles. Below are his comments regarding his experiences conducting major combat operations (MCO) during OIF in March and April 2003. He addressed intelligence, the utility of aerial assets, the impact of the sand storm, and the nature of his fights against both conventional and unconventional forces:

Intelligence. *"Before we crossed the border between Kuwait and Iraq, our squadron was told to be prepared for a possible parade in As Samawah! Beyond that, we were shown templated positions for mechanized infantry and armor, and imagery showing dug-in fighting positions. At least our squadron S2 mentioned the Fedayeen; nobody else did. Even after we started fighting, we never got anything from higher that told us where to expect contact. The only way we were able to find the enemy was by coming under direct fire. I guess things like JSTARS [joint surveillance and target attack radar system], theater-level UAVs [unmanned aerial vehicles], and satellites were looking for tanks and APCs [armored personnel carriers], but they could not, nor can they now see things like a group of 50 guys with machine guns, RPGs [rocket-propelled grenades], and 23mm anti-aircraft guns. That's what we found by running into them. But once 9 tanks, 15 Bradley's, and other armored vehicles go into action firing 120mm and 25mm main guns, machine gun fire, etc., that enemy is quickly eliminated!*

Air Assets. *"We did not yet have UAVs, but even better, we had two air cavalry troops (ACT). When they were in the air, they did a great job and were really useful, but for various reasons we did not have ACT support for any of our major fights after As Samawah. When we made the big 120-kilometer move from Samawah to Najaf, we outran the air support. Many things worked against them — the distances they had to cover, refueling, issues with crew flight hours after the intensity of As Samawah, and expectation of a later fight — all of which caused the air to be unavailable that evening. Then when all the various issues were resolved and they were ready and in position to support us, the sand storm hit and they couldn't fly! When we*

got to Baghdad and engaged in our most significant fights against Iraqi armor, the commanding general of 3ID decided no rotary aircraft would initially cross the Euphrates and into Baghdad.

Limited Visibility. *"We were hit with a 3-day sand storm that reduced visibility, sometimes down to as few as 15 meters. When it hit, we were in the process of moving to isolate Najaf. Even with thermals of the tanks and Brads, we couldn't see very far. Obviously, no rotary air assets were flying, so as we moved east of the Euphrates, it became very difficult to find the enemy. Another complicating factor was the ground clutter. There are buildings, trees, undulating terrain, roads, bridges, and just junk all over the place, which makes it difficult to find the bad guys. They can be hiding in buildings, camouflaged bunkers, behind abandoned vehicles, and many other places. The way we found most of them was when we came under fire. Once that happened, of course, we were able to pinpoint their locations, communicate those locations throughout the rest of the formation, and coordinate the destruction of the target.*

Nature of the Fight. *"Our biggest fight came in western Baghdad on 4 April. We got a call that the U.S. Air Force had identified 22 T-72 tanks in a certain area and they were going to attack them with close air support (CAS); we were supposed to go 'clean up' whatever was left. After a road march, I halted the troop at the last covered and concealed position prior to the target location while the Air Force jets made their runs. I could see lots of explosions from the bombs the jets dropped, but I didn't see any black smoke. I had already seen enough destroyed enemy vehicles to know that when T-72s get hit, there is a lot of black smoke.*

"I then got a call saying the Air Force was off station and we were clear to continue. We cautiously moved along the route and unmasked ourselves from our position. As we quickly discovered, there were no tanks where the jets dropped their bombs. Instead, they were dug into a berm behind a canal with their gun tubes pointing directly at us — we had unwittingly driven right into their kill zone!

"The realization that we were facing a large armor-infantry team (we later discovered, there were 16 T-72s and 100 infantrymen manning the position) came when my lead tank fired its main gun. Suddenly, I could see T-72 tank rounds and machine gun fire coming at us. The battle started at dusk, and there was lots of dust from the Air Force bombs, so visibility wasn't great. We fired sabot first, but couldn't tell if we hit anything, so we started firing high-explosive, anti-tank (HEAT) rounds. As I had done before, I immediately used the map on my FBCB2 [Force XXI battle command brigade and below] to work up a fire mission to suppress the target. These guys were maybe 500 meters in front of us. A lot of training kicked in because there were very few spoken orders. We immediately returned fire with our main guns, and along with the artillery, destroyed the entire force. From the first round to the last enemy tank destroyed, the whole thing lasted about 3 minutes.

"The thing I found most amazing was that the CAS had flown right over the real tanks and had fired at nothing! I never figured out what they were shooting at, but they blew up a lot of nothing."[1]

Assessing the Situation

There are a few critical facts that must not be overlooked regarding 3-7 CAV's experiences. First, as a result of the fast pace of modern combat, enemy actions usually occur without warning and require split-second decisions. Major Lyle later explained that regardless of the formal missions he had been given, everything from the border to Baghdad turned out to be a movement to contact because of the uncertainty and chaos of a fluid and dynamic battlefield. Trying to develop the situation out of contact is a worthy goal, but one is rarely afforded the luxury to do so, even with technological overmatch as great as what we enjoy over Iraq; a potent adversary will make things even more difficult.

Second, because the enemy was successful in avoiding detection from the enormous, unprecedented, and unchallenged array of sensors, satellites, high-altitude reconnaissance aircraft, signals intercept, and UAVs, the squadron was often and repeatedly attacked from unexpected locations with weapons ranging from heavy machine guns and RPG fire to cannon fire from tanks and APCs. Third, particularly regarding the 4 April tank battle in southwestern Baghdad, the squadron unexpectedly ran into significant enemy armored formations where they were not expected.

Finally, Major Lyle explained that after many days of uninterrupted combat, his troopers were feeling the strain of combat. This is significant because the Iraqi enemy, although armed with heavy weapons and second-generation armor, was possibly one of the poorest trained and led forces of its size in the world. If, in the future, the United States must fight against something close to a peer competitor, who is armed with modern weapons, well trained, well led, and motivated to fight, even an organization as good as 3-7 CAV will have a significantly more difficult time accomplishing its assigned missions.

These facts are of critical importance when considering that the reorganized reconnaissance formations that replaced the DIVCAV organization, and those we have designed for the future, are

"Currently, the reconnaissance squadron for the HBCT is composed of wheeled vehicles and some Bradley fighting vehicles. This compares with the now-defunct DIVCAV squadron that had 27 M1 tanks, 41 cavalry fighting vehicles (CFVs), 16 scout helicopters, and a mortar platoon; the disparity in combat power couldn't be starker. If war broke out tomorrow with a North Korea-caliber or greater enemy, this less capable, less survivable HBCT reconnaissance squadron would be required to accomplish the same mission assigned 3-7 CAV during OIF, but against a more heavily armed, trained, and led opponent; they would likely not survive the first 24 hours of combat."

"One of the most often cited reasons officials have given in the past as justification for reducing the cavalry's heavy armor and weapons has been the increased situational awareness afforded by the UAV and other sensors. Those who could someday fight against the United States are well aware of the utility of these platforms and are aggressively pursuing the ability to counter their effect. China is particularly advanced in this area."

less capable than the organization under which 3-7 CAV fought during OIF. Let us then consider how the reconnaissance squadron of today's heavy brigade combat team (HBCT) would fare if it had to execute a mission similar to that required of Major Lyle during OIF. This particular assessment is not encouraging.

Today's Capabilities

As mentioned earlier, it would seem reasonable to accept as an article of faith that the Army would not eliminate a robust combat capability in its formation until something of equal or greater capability was available to replace it. Since the Army inactivated two ACRs and disbanded all of its heavy DIVCAV squadrons, one would assume that the organizations that replaced them are as, or more so, capable of executing the same missions. Such an assumption would be wrong.

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Tomorrow's Challenges

Just as most countries learned to use past break-through military technologies, such as machine gun, airplane, submarine, and tank, they will learn to use today's so-called revolution in military affairs and apply this technology on future battlefields in more or less similar ways. Therefore, regardless of who we may someday face, there will be certain similarities in the weapons and tactics we face. Since it is beyond the scope of this article to examine military doctrine and weapons systems of multiple nations, we will examine the most potent foreign force we could someday face — The People's Liberation Army (PLA) of China — and examine the weapons and tactics they employ, which are common to other potential adversaries.

I must clearly point out, however, that this work takes no position whatsoever on the likelihood of whether we will ever go to war against China — indeed, it is in our interest to develop friendly relations with them to develop the best chance for world peace. Rather, this article seeks solely to identify the *capabilities* that exist, which pose the greatest *potential* threat to American forces and examines how we would fare in the event of conflict. It bears pointing out that it is not only China, but the greater part of Asia that is modernizing its military, and thus many of the capabilities associated with China discussed in the following sections may also be associated with a number of other states with whom the United States may someday find itself engaged.

In the early 1980s, it was a commonly held opinion that anything bearing a "made in China" label was understood as being cheaply made. Many Americans still believe China to be a backward, unsophisticated country that produces substandard "knock-off" products and is inferior to the West in most important categories. This unsubstantiated belief, unfortunately, extends to many in the U.S. military as well. The truth is, today's China has many significantly advanced weapons, and because of advanced training methods copied from the United States, is producing a quality military capable of competing on the modern battlefield. We will now examine their capabilities as they relate to what present and future American cavalry units might face.

One of the most often cited reasons officials have given in the past as justification for reducing the cavalry's heavy armor and weapons has been the increased situational awareness afforded by the UAV and other sensors. Those who could someday fight against the United States are well aware of the utility of these platforms and are aggressively pursuing the ability to counter their effect. China is particularly advanced in this area.

On the strategic level, China has demonstrated its understanding of the criticality of space-based assets and the impact they have on the operational and tactical fight. Most are aware that the Chinese successfully demonstrated the ability to launch an anti-satellite missile in January 2007 when they attacked and destroyed one of their own weather satellites. What is less known, however, are statements made by leading Chinese military thinkers in officially sanctioned People's Republic of China (PRC) military journals on the subject.

As part of a master's program given to senior Chinese officers by the Academy of Military Science in Beijing, two text books, *Teaching Materials on Combined Arms Offensive Combat* (hereafter referred to as *Offensive Combat*) and *Teaching Materials on Combined Arms Defensive Combat* (hereafter referred to as *Defensive Combat),* were published in May 2000, and are still apparently used to educate future senior leaders.[2] The information contained in these two books provides important insight for those who may someday have to fight against the Chinese or a similarly arrayed foe.

An excerpt from *Defensive Combat* clearly articulates the Chinese understanding of the danger they face from aerial reconnaissance: "In a battle fought under modern conditions, in particular, high-tech conditions, aerial reconnaissance has become the basic means of acquiring battlefield information for the forces.… As a result, the mission to prevent the enemy from conducting aerial reconnaissance before the start of the battle is in general carried out by an antiaircraft artillery force and a subunit equipped with portable surface-to-air missiles formed into a highly maneuverable elite air defense subunit."[3]

In addition to focusing significant assets on shooting down aerial platforms, China devotes considerable resources to countering the electronic aspect of the battlefield. Knowing how re-

liant we are on command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR), China has incorporated special units into their combat formations to attack this capability. *Offensive Combat* explains, "Three-dimensional posting refers to adding army aviation troops and electronic countermeasure troops within the combat organization of a combined arms corps.… In order to fully make use of the combat effectiveness of helicopters, electronic warfare equipment, and various air defense weapons, commanders should carry out deployments or conduct maneuvers in the airspace most beneficial to executing tasks…while battling enemies in multi-dimensional space."[4]

Moreover, they have resourced their maneuver formations with organizations whose express purpose is to conduct electronic countermeasures. *Offensive Combat* explains, "Electronic countermeasure (ECM) groups are also called electronic reconnaissance and jamming groups.… They are mainly used for continuous interception of enemy radio communications and radar signals; capturing the technical parameters of enemy radio emitters and obtaining their locations; jamming enemy's main radio network and radar at important times; and guiding firepower strikes against enemy electronic targets."[5]

Additionally, as has been their historic norm, the Chinese give extensive focus to deception and camouflage and are among the best in the world in the application of both. An article on 31 December 2007 in the Chinese military newspaper, *Beijing Jiefangjun Bao,* describes how a Chinese armored unit on maneuvers executed battle drills to hide its vehicles. "A warning voice could suddenly be heard: 'Have personnel disperse, conceal the vehicles!' The reporter saw vehicles rapidly move to the side of the road and into depressions, as well as being concealed on mountain slopes.… Currently, anti-visible camouflage burlap covers, anti-infrared camouflage nets, and the like, used on the division's equipment afforded a relatively good solution to the problem of concealment in the high plateau wilderness."[6] Aside from countering UAVs, attacking in the electronic realm, and practicing effective camouflage in the field, it is the Chinese firepower at the tactical level that should most get the attention of the cavalryman.

There has been debate among Western military theorists for decades as to the relative importance between maneuver and firepower. Many will argue that maneuver is of highest importance and firepower secondary, pointing to historical examples to support their views. The Chinese view articulated in *Offensive Tactics,* however, comes to the conclusion that firepower is of primary importance and maneuver — while important — is subordinate.[7] Whether we agree or disagree with this thinking is irrelevant. If we have to face an enemy who has this belief, the only thing that matters is understanding how they operationalize their theory. This has particular importance for reconnaissance elements that may someday fight against the Chinese.

In most of the major combat operations scenarios used by the U.S. Army in the majority of its command post exercises, the enemy portrayed is mainly equipped with second-generation armored vehicles, a small number of equally old helicopters, poor air defense, and moderate-to-poorly trained soldiers. When reconnaissance operations are conducted in this enemy environment, there is very little in the way of enemy artillery, rocket fire, attack aviation, or effective direct fire with which to contend. In contrast, the reconnaissance force that engages Chinese forces will encounter a rather different reality.

Offensive Combat devotes significantly more space to the subject of firepower, particularly regarding artillery, than any other subject.[8] The Chinese believe the application of extensive fire-

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power against the enemy is the key to ultimate triumph because of their definition of success — annihilation. They do not seek to simply "outmaneuver" an opponent; they seek to wipe him out. Recognizing the importance of their opponent's reconnaissance forces, they devote important resources to eliminating that capacity.

One of the primary purposes of artillery in the forward area is, according to Chinese doctrine, expressly to counter enemy reconnaissance elements. To overwhelm those and other mechanized forces, *Offensive Combat* explains that "on the main line of attack suppressive artillery should be *5-6 times that of the enemy*, and antitank weapons should have about *6-8 units for each armored target of the enemy* [I use the italics for emphasis]."[9] In practical terms, if a Chinese unit were to conduct offensive operations against a U.S. squadron-sized unit with an artillery battalion in direct support, the Chinese side would seek to engage with *five to six artillery battalions* and ideally attack with several hundred anti-armor platforms!

Today's American soldiers simply cannot fathom the power of that much artillery because we have never seen anything like it. In a recent interview, Raymond Wells, a former noncommissioned officer in the 36th "Texas" Division and winner of the Silver Star for actions at the 1944 Battle of San Pietro in Italy, was one of the toughest infantrymen in World War II. And yet, this battle-hardened veteran recalled the fear he experienced under artillery fire. "The helplessness and hopelessness you feel is overwhelming as you try to squeeze yourself into a tiny ball to escape the flying shrapnel and the sounds of the bombs and exploding shells. It is something that a body does not get used to," he said. "As morbid as it may sound, while in an active combat zone, an infantryman eventually gets numb to the killing and even the deaths of his buddies, but he never gets used to the fear

of those screaming sounds of shells coming his way; no matter how many men are with you when the rounds start falling, you always feel like its directed personally at you, and you feel completely isolated and alone."[10]

During one of 3-7 CAV's engagements against Iraqi armor, Major Lyle's unit came under artillery fire. Compared to historical norms, it was light both in number of rounds and duration. And yet, even of this so-called "light" attack he said, "There is nothing that can ever simulate the effects of receiving artillery. The earth shakes, the sound is deafening, the concussion is numbing, and smoke and dirt are thrown everywhere."[11] Imagine if instead the strike had been fired by several battalions and lasted hours. Tanks and CFVs are not impervious to heavy artillery, but do provide meaningful protection. Now imagine being on the receiving end of such an attack protected only with the high-mobility, multipurpose wheeled vehicle (HMMWV) of an HBCT reconnaissance squadron. You do not have to have much of an imagination to understand you would not long survive. Artillery, however, is only one of the dangers a Chinese-like force poses.

Unmanned aerial systems (UAS), perhaps as much as any technology, represent the modernization of the U.S. military. We rely on UAS for visual reconnaissance of the battle area to remotely fire weapons against point targets, direct precision-guided weapons, and in the future act as communications relays to help enable networks. In every scenario I have seen used to depict future or current battlefields in simulation, UAVs of several varieties are depicted as providing significant enhanced capabilities to the blue force, assisting them in bringing overwhelming firepower to bear on the enemy. What has been lacking, however, is any depiction of a robust enemy capability in kind. Particularly in regards to China, that is a dangerous omission.

The January 2008 issue of the Chinese magazine, *Tank and Armoured Vehicle*, publicly reveals for the first time that the PRC has a 35mm anti-air weapons platform that uses Swiss-designed advanced hit efficiency and destruction (AHEAD) technology.[12] This system uses either radar or a passive computer-aided optics system to acquire targets. It fires 35mm shells at a rate of 500 to 1,000 rpm. These shells contain 152 tungsten steel sub-projectiles that are expelled from the primary shell casing between 1 and 40 meters prior to impact that spreads a shotgun-type blast pattern on the target. This weapon would be devastating against any UAV (or manned aircraft for that matter) operating within visual range of the enemy. But recognizing the tactical utility UAVs confer on their owners, China is not only interested in shooting down its adversary's systems, they are equally concerned about possessing a fleet of their own.

On 1 March 2007, the Chinese magazine *Xian Binggong Keji*, published by the Shaanxi Province Science and Technology Association, reported on a number of the most modern Chinese UAVs and their functions in combat.[13] Demonstrated at the Sixth Zhuhai Aviation Exhibition, the "Dark Sword, Sky Wing, and Flying Dragon" are among the most advanced unmanned aerial systems in the world. According to the magazine, these platforms contain "a color image platform, infrared imager, digital camera, and other such mission equipment. …(It) can also complete wireless communications interruption, electronic countermeasures simulation," and direct precision-guided weapons on target.[14] And while the U.S. Army is excited about the development of a future unmanned helicopter, the Chinese already have three variants in various stages of production.

Richard D. Fisher, Chinese military expert and Vice President of the International Assessment and Strategy Center in Washing-

ton, DC, explained that if China and the United States were to fight a war, the Chinese would attack both America's manned and unmanned aerial reconnaissance systems, "(U.S. aerial reconnaissance assets) will face a phalanx of PLA air force and army surface-to-air missile and AAA gun systems. The PLA air force is on its way to purchasing up to 1,000 of the deadly Russian S-300 surface-to-air missile systems," he continued. "Organic army anti-air systems include the formidable Russian TOR-M1 short-range surface-to-air missile, which can also intercept precision-guided munitions, and an array of mobile short-range, self-propelled anti-air gun/missile and surface-to-air missile systems."[15]

Moreover, China doctrinally understands the critical nature of reconnaissance in modern battle and the role technology plays. As a result, they expressly emphasize the need to use all means necessary to knock out the enemy's capabilities in this area. *Defensive Combat* specifies that, "(I)n a battle fought under modern conditions, in particular, high-tech conditions, aerial reconnaissance has become the basic means of acquiring battlefield information for the forces. In wars of the future, in order to identify the defensive force deployment, positional organization, firepower system, and other information about our side, the enemy will inevitably use all means of airborne surveillance to conduct repeated aerial reconnaissance of the front line and the depth of our defense before launching an attack all through the course of a battle.… As a result in a defensive battle, in order to positively assist with the counter-surveillance actions of the defense forces, air defense forces must also actively fight the aerial reconnaissance weapons of the enemy by jamming and preventing their surveillance actions."[16]

One can reasonably assume, therefore, that in the future, if the United States has to fight a force with the same doctrine as China, that our UAV and helicopter fleet will suffer some degree of potentially significant attrition; our signals and computer networks will suffer to some degree as a result of being blocked, jammed, and attacked; we will potentially suffer limited to catastrophic loss of satellites that will degrade or temporarily eliminate our navigation ability, impact our strategic and operational communications, and impact our ability to fire precision-guided munitions; and our physical platforms will occasionally face withering artillery and anti-armor fire. Given these facts, it becomes clear beyond doubt that the reconnaissance squadron for an HBCT that is sent to do battle against an armored or mechanized enemy cannot be equipped with HMMWVs and a few CFVs and without the firepower and protection afforded by tanks.

These same fundamentals apply to our future force reconnaissance organizations as well. Without question, China will continue to focus its research and development efforts with a view toward creating the ability for its armed forces to compete with or defeat future American forces. But China is not alone in this effort. Since the U.S. military's burst from its post-Vietnam malaise with its stunning rout of Iraq in Desert Storm during 1991, every potential adversary on the planet has been studying every aspect of American military action, both in the current fights in Iraq and Afghanistan, as well as on presumed future capabilities. We must, therefore, devote an equal amount of mental energy to finding creative ways to counter those opponents.

As part of that effort, we must ensure that we field a formation, particularly the reconnaissance squadron, which can take a slug to the mouth, can endure a bloody nose, and yet still be able to continue the fight and accomplish the mission. When forced to engage in sub-optimal conditions, we *must* have a cavalry organization that can fight for information critical to the needs of the maneuver commander.

Given all the above, it is crucial, therefore, that both the current HBCT and FCS reconnaissance squadron reflect these realities so that they will have a fighting chance to succeed in their missions.

Recommendations

The U.S. Army's Field Manual 17-95, *Cavalry Operations*, describes the utility cavalry provides for the battlefield commander: "For maneuver to be successful, the commander must have a high degree of situational awareness. He must reduce the enemy, terrain, and friendly unknowns of the battlefield to fight effectively and to operate within the enemy's decision cycle. The successful execution of maneuver warfare continues to be the product of thorough reconnaissance and continual security. As the 'eyes and ears' of the commander, cavalry provides the commander with situational awareness and enhances his ability to maneuver successfully."[17] To effectively execute the twin requirements for reconnaissance and security in the threat environment described in the preceding sections, we must alter our cavalry organizations. That said, we will examine recommended changes for the current force, followed by those for the future force:

Current force HBCT. When designing a fighting organization, it is important to ascertain the most dangerous situation in which that organization could someday find itself, and then ensure it can both survive and succeed; if it can accomplish its mission under the most difficult circumstances, it can survive and succeed against anything less. For the HBCT, that means it must be able to operate against a China-caliber enemy force that can destroy or degrade the satellites on which we rely, can launch mass

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indirect fire strikes, has the ability to bring modern heavy armor to bear, has robust anti-air capabilities, and is equipped with its own fleet of UAVs. In other words, our fighting formation must be able to defeat a modern near-peer enemy force.

The current force HBCT reconnaissance squadron should be reconfigured to eliminate soft-skinned wheeled vehicles and re-equipped with CFVs and M1 tanks. The squadron should be organized with a headquarters troop and three line troops; each troop would include two scout platoons and two tank platoons. The scout platoon should include six CFVs, manned with two crewmen per vehicle and four dismounts, and be equipped with one PakBot Explorer for dismounted operations. The tank platoon would have four M1A2 tanks. The troop headquarters section would have one Raven UAV and one M1 tank for the troop commander. The squadron headquarters troop would have one M1 tank for the squadron commander, one CFV for the S3, one mortar platoon (to be used as the squadron commander sees fit), and two Raven UAVs.

A force organized as such could take a slug to the face and still fight back, gaining critical information so that the supported maneuver commander can develop the situation while his main body is still out of contact and adjust his scheme of maneuver as the situation dictates. Even if the enemy knocks down all the satellites in a theater of operations, brings heavy artillery and tanks to the battlefield, uses his own UAVs, and/or attains parity in the air, this formation could still function. If the enemy force is less capable in any of the aforementioned categories, the cavalry squadron would be all the more effective.

Future force. The cavalry organization for the future force must likewise be able to take the most severe blows any opponent could inflict and still accomplish its mission. Although we are building an impressive array of state-of-the-art technologies that are designed to provide overmatch against our opponents, we must *assume* that in some cases, against some opponents, this overmatch will not exist. Sometimes we may face an enemy who can, at times, gain temporary tactical superiority. The FCS reconnaissance formation must be able to accomplish its mission when there is no satellite coverage, when the network has been degraded, when sensors are temporarily unavailable, and against a heavily armored foe with the ability to bring robust firepower to bear at the point of contact.

In a future, chaotic, uncertain enemy environment, the cavalry formation we field in the future must be able to conduct not only reconnaissance and surveillance, but also the full array of security missions — screen, guard, cover, and area security missions. Without adequate armored ground platforms, security missions become impossible. Additionally, particularly in the modern and future eras, commanders at each echelon, from battalion to corps, have a specific set of reconnaissance/security objectives and must have an adequate cavalry force to execute those requirements.

In the future, each combined arms battalion (CAB) commander will require a cavalry troop to aid him in accomplishing his mission. This troop should be composed of three scout platoons of six FCS reconnaissance and surveillance vehicles (RSV); each RSV would include two vehicle crewmembers and four dismounts; and each platoon should have one small unmanned ground vehicle (SUGV) and one class I UAV. Further, each troop should have one mounted combat system (MCS) platoon of four MCS vehicles to provide robust direct fire capability for the troop commander. Finally, the troop headquarters should have two class I UAVs and one mortar section.

The cavalry squadron for the FBCT should be organized with a headquarters troop, a surveillance troop, three ground troops,

an air cavalry troop, and a support troop. The three ground troops would be organized and equipped the same as a CAB troop (except for the mortar platoon being organic to squadron control for use as the squadron commander sees fit). The surveillance troop will be composed of four UAV platoons equipped with one combat observation lasing team and eight class IV UAVs. The flight troop would be composed of three reconnaissance platoons containing 15 scout helicopters and one headquarters platoon. This organization enables the squadron to fully exploit all possible benefits when the system is working as designed, providing unprecedented reconnaissance and security capabilities to the supported maneuver commander; but critically, it will permit the squadron to function even in suboptimal conditions, providing the maneuver commander the critical time and space necessary to accomplish his mission.

Paying the Bill

Particularly for the current force, one of the first questions a reasonable person would ask is, "How ya gonna pay for it?" Adding a squadron of tanks, CFVs, and additional dismounts to the 25 HBCTs of the current force is a significant bill to pay. The Army has recently decided to grow the force, adding an additional 65,000 soldiers to its Active Duty rolls. Concurrent with this effort, the Army plans to add an additional six infantry brigade combat teams (IBCTs) to the force. If we alter this additional number of IBCTs to three instead of six, we would be able to afford the increase of both soldiers and equipment. To add a squadron's worth of equipment and soldiers (M1 tanks and CFVs, plus soldiers to man them) for 25 HBCTs would increase the manpower requirement by approximately 5,500 (which also accounts for the increased requirement for maintenance and support personnel), and add 675 M1 tanks and 450 CFVs.

One of the main arguments against lowering the number of new IBCTs is the effect it will have on Army Force Generation (ARFORGEN) models regarding the Iraq and Afghanistan BCT rotation policy. The theory is that the larger number of IBCTs will enable soldiers to have more dwell time and shorter deployments in theater. Frankly, that is a solution to a short-term problem that cannot and must not impact on long-term force manning decisions. Consider the results of such a policy: in the interests of capping soldiers' tours in Iran and Afghanistan to 12 vice 15 months, we would accept a force of 25 HBCTs (and building to 43 IBCTs) whose reconnaissance squadrons would be incapable of surviving against even the woeful Iraqi armed forces we fought in March and April 2003. It would be a significantly better course of action to field 25 HBCTs (increasing to 40 IBCTs) that include robust armored cavalry squadrons that can fight against the best the world has to offer.

Cause for Hope

Although my assessment is that neither the current heavy cavalry squadrons nor the projected future reconnaissance units are adequately organized or equipped for the combat missions they could someday be called to execute, there is reason for optimism. There is at this time a debate occurring within the Army at the highest levels on the need to correct the deficiencies that have been identified by many in uniform. Some of the most capable and experienced officers and noncommissioned officers in the force are arguing for a change in the way cavalry squadrons are organized and equipped to more reasonably prepare them for the rigors of combat. Early indications are that the Army's senior leadership is listening and may soon make the nec-

essary adjustments. That is encouraging and a good start; but that alone is insufficient. There are many officers and enlisted soldiers of all ranks who have critical combat experience that need to make meaningful contributions to this debate. I have met soldiers of all ranks whose combat experiences and informed opinions could be of great value to the force; we need to hear from them!

Of equal importance, I have had numerous discussions with field grade officers and senior noncommissioned officers who have both the understanding, education, and tactical experience to know what needs to happen, and yet they muzzle their own voices because all too often they say, "But I can't do anything; no one is going to listen to me." To those officers and men, I say, "you are wrong!" I would argue that we *need* to hear from them because they have a point of view and experiences that the Army needs and can acquire from no other source. If the men who have the best ideas and most applicable combat experience remain silent, who does that leave expressing the ideas that will eventually shape our force?

As soldiers, we should all have a great interest in trying to become part of the solution to rectify shortcomings in our current and future reconnaissance forces. If we pool the ideas, thoughts, and energy of our experienced officers and noncommissioned officers, these problems can be turned from shortcomings to strengths. We owe it to the current, and future, force to get this right.

Notes

[1]Personal conversation between Major H. Clay Lyle and author.

[2]Academy of Science in Beijing, Text Books, *Teaching Materials on Combined Arms Offensive Combat* and *Teaching Materials on Combined Arms Defensive Combat,* Academy of Science, Beijing, China, May 2000.

[3]*Teaching Materials on Combined Arms Defensive Combat.*

[4]*Teaching Materials on Combined Arms Offensive Combat.*

[5]Ibid.

[6]"Li Qinwei, "Elevation 5,000 Meters: High Plateau Crack Force Travels the Length and Breadth of Kala Kunlun (Mountain)," *Jiefangjun Bao*, Beijing, China, 31 December 2007.

[7]*Teaching Materials on Combined Arms Offensive Combat.*

[8]Ibid.

[9]Ibid.

[10]Personal conversation between Raymond Wells and author.

[11]Personal conversation between Major Lyle and author.

[12]*Tank and Armoured Vehicle,* January 2008.

[13]Mu Xiaoming and Fan Yong, "A Review of China's Military UAV Development," Shaanxi Province Science and Technology Association, *Xian Binggong Keji*, Beijing, China, 1 March 2007.

[14]Ibid.

[15]Personal conversation between Richard D. Fisher and author.

[16]*Teaching Materials on Combined Arms Defensive Combat.*

[17]U.S. Army Field Manual 17-95, *Cavalry Operations*, Headquarters, Department of the Army, U.S. Government Printing Office, Washington, DC, 24 December 1996.

Major Daniel L. Davis is currently a doctrine writer at Fort Bliss, TX. He received a B.S. from Texas Tech University and an M.S. from Troy University. His military education includes Armor Captains Career Course, Field Artillery Officer Basic Course, Combined Arms and Services Staff School, and U.S. Army Command and General Staff College. He has served in various command and staff positions, to include XO, 1st Squadron, 1st U.S. Cavalry, Buedingen, Germany; liaison officer, Central Command, Combined Forces Command, Afghanistan; action officer, Army Operations Center, Department of the Army, Pentagon; and assistant G3, 1st Infantry Division, Wurzburg, Germany.

Measuring Success in Counterinsurgency Warfare

by Captain Jason E. Fritz

Current operations in support of the war on terror, specifically in Iraq and Afghanistan, are unquestionably counterinsurgency conflicts. The U.S. military's combat experience between Vietnam and the current struggle are, generally speaking, classical wars between uniformed combatants. The ability of commanders at all levels to determine their successes were relatively simple and were an analysis of whether they owned key terrain, or not, and whether the enemy still possessed the ability to fight, or not, among other qualitative measures. Counterinsurgency (COIN) requires a drastically distinct method of measuring the success of U.S. forces as COIN relies on not just combat operations, but also on socioeconomic, political, and psychological operations. Current systems of metrics do not account for the noncombat operations that are conducted at all levels.

The current system still consists of the relatively qualitative measurements of high-intensity combat (HIC) and does not take into account the complexities of COIN. Success is generally defined by individual statements of accomplishments and statistics without cohesive argument on how these statements relate to each other to achieve the long-term goals of the organization. This is not to say that staffs at all levels between brigade and corps are not conducting thorough and thoughtful analysis in the methods and measurements required to achieve desired endstates. There does appear, however, a lack of unity of effort between the components of COIN and formalization in the development of goals to achieve long-term objectives. This lack of unity and formality is what causes commanders to assess their achievements by a laundry list of mildly related accomplishments and statistics.

These statements of qualitative achievements are often based on input from the staff officer responsible for that organization's particular aspect of COIN. The analysis of progress achieved is subject to the whim of his or her assessment based on nonstandardized evaluation. The complex nature of COIN and the massive effort of resources involved in waging it demand a more quantitative method be used. Otherwise, scarce and precious resources will be wasted as units flail through their deployments. Staffs know where they want to be, but are unaware of how far toward that goal they are, and in the most extreme cases, are unaware of what path to take to reach their desired endstate.

Logical Lines of Operations

Any metric of success must meet the following requirements: it must be logical, simple enough for any staff officer or noncommissioned officer (NCO) to understand, and it should be built around already existing methods. This proposal is built around logical lines of operations (LLO), as defined in U.S. Army Field Manual (FM) 3-24, *Counterinsurgency,* as "A logical line that connects actions on nodes and/or decisive points related in time and purpose with an objective(s)."[1] The definition itself tells us that these actions must be related; however, as stated above, statements of success do not show their relationship to each other. This begs the question: are commanders determining that each line is working toward the same objective, and is each

LLO given the necessary resources to accomplish those objectives?

Figure 1 is the LLO example used in FM 3-24 for a counterinsurgency.[2] Although individual units may have different LLO, most units will use these basic five lines because they lead a counterinsurgent fight to a stable endstate, allowing for a legitimate government to relieve the foreign military of its duties.

Units now in Iraq develop a series of intermediate objectives for each LLO, usually set for a particular month in the future. For example, most campaign plans have a desired endstate consisting of something similar to "conditions set for a free and stable Iraq that governs itself and allows the Iraqi security forces to conduct independent operations." These plans are developed starting with what units want to have accomplished by certain time periods such as in 3 to 6 months, 6 months to a year, or more than a year. The final desired endstate is usually left as 2 or more years from the assumption of the unit's battlespace. Though this may be a valid time period with which to actually achieve the desired endstate, this rationale in goal setting creates large gaps in logic as to how the short- and long-term goals create an environment in which the endstate is achieved.

This system of passively related, and sometimes illogical, goal setting is the major cause of qualitative metrics of success. If the
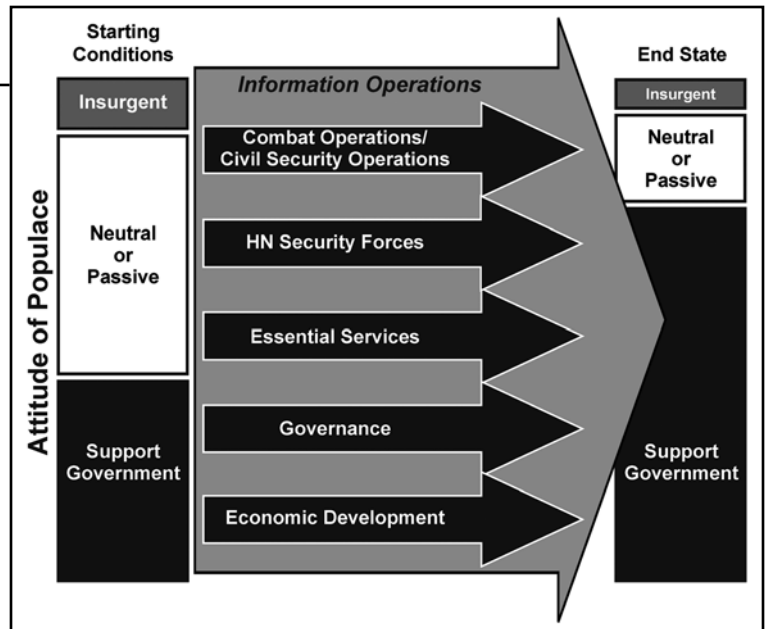
Figure 1: Example logical lines of operations for a counterinsurgency

goals are not inter-related, but are rather a collection of independent achievements, then how is success measured? If success is being met in one LLO, what does that say about the success of the entire operation?

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"This proposed metric system will begin with the assumption that all LLO are equally important. Success in counterinsurgency requires that all of these lines are attacked with equal vigor as the nature of the fight is based as much on social, political, and economic factors as it is on combat operations. It should be noted that not all LLO need to be attacked with equal effort simultaneously, but that commanders may focus on individual LLO as the situation dictates; however, the endstate requires that all LLO receive equal attention over time."

A Metric Proposal

This proposed metric system will begin with the assumption that all LLO are equally important. Success in counterinsurgency requires that all of these lines are attacked with equal vigor as the nature of the fight is based as much on social, political, and economic factors as it is on combat operations. It should be noted that not all LLO need to be attacked with equal effort simultaneously, but that commanders may focus on individual LLO as the situation dictates; however, the endstate requires that all LLO receive equal attention over time. The challenge then becomes to develop a quantitative metric that gives equal weight to each LLO and is simple enough for any staff member to develop and understand.

The actual work on defining success begins during the military decisionmaking process once the unit receives its mission. The outcome of this process, the commander's intent, is what will drive how LLO are executed. As LLO are developed and a chief for each LLO is identified from within the staff, each chief must analyze how his or her particular LLO fits into the commander's intent. More specifically, the chiefs must analyze the desired endstate for the battlespace and determine how the endstate for their LLO leads to achieving the overall endstate. This LLO endstate would most likely be a list of interdependent accomplishments that, if all achieved, create a state within the framework of the LLO that would exist if the commander's desired endstate were achieved. As each LLO chief defines the endstate for their LLO, the unit executive officer or chief of staff must then ensure that each endstate does actually meet the commander's desired endstate for the unit's battlespace.

Once the endstate for each LLO has been approved, each chief must then conduct the even more difficult task of determining which events are required to transpire to meet the endstate objectives for his or her LLO. These events are essentially the intermediate objectives necessary for achieving the endstate and they must logically build on each other. The reality is that each LLO would then have sub-lines of operations that build upon the greater LLO. The timeline of achievement is not nearly as important as the events themselves, as the timeline can follow, and be adjusted, at a later date.

Once each sub-LLO has been developed, the most difficult aspect of the analysis has been completed. If the staff were to stop developing LLO plans at this point, that unit would already be far ahead of units who use the current system. However, this does not solve the issue of how the staff would then measure the success of their operations or how the LLO objectives relate to other LLO. Now the quantitative aspect must be developed.

Using the assumption posited above, that all LLO are equal, and with the necessity of the metric to be understandable to the average staff member, the most logical method to use would be a system of averages. The metric would evaluate how far along the unit is between the state at which it assumed the battlespace and the desired endstate for the battlespace. To keep the mathematics simple, the beginning state would equal 0 (as a percentage of achievement to the endstate) and the desired endstate would be 100 (percent of all goals complete, suggesting that the endstate has been achieved).

To determine the numerical values, the LLO chief would start with his sub-LLO. The endstate of each sub-LLO would equal 100 and every task necessary to accomplish that endstate would be valued at somewhere between 0 and 100. The values would be assigned as logically and as proportionally as possible. This method would be done for every intermediate objective in each sub-LLO with the use of a table. The LLO chief would then use the following equation to determine the success of their LLO as a percentage of completion toward the desired endstate:

$$\text{LLO Value} = \frac{\text{Sum of sub-LLO values at time of assessment}}{\text{Number of sub-LLOs}}$$

This value, the average of all of the sub-LLOs, becomes the measurement of success within that LLO as it conveys how much progress the unit has made toward its desired final objective. This value would then be provided to whoever in the unit is responsible for determining the overall success of the unit. In the same manner as the individual LLO, the overall success of the unit would be an average of the LLO values. Using the example from Figure 1, the equation for success would be:

$$\text{Success} = \frac{(\text{Combat Ops}) + (\text{HN SF}) + (\text{Services}) + (\text{Governance}) + (\text{Economics})}{5}$$

Armed with these values, the commander and his staff can determine the progress their unit is making, as defined by their own objectives. It also allows the commander to determine if progress is lacking in a LLO and permits him to reallocate resources as needed to make up for any shortfalls in the overall success.

Comments and Limitations

This system of metrics allows for quantitative assessments of operations. It allows the LLO chiefs to be creative in their approach in achieving success within their line and allows them, and the commander, to accurately assess progress with a tangi-

ble value. But, almost as importantly, it forces LLO chiefs to logically and specifically plan how success is achieved within the realm of their duties.

The system is also adaptive. LLO chiefs may change their sub-LLO if they become obsolete or irrelevant. Additionally, it allows the unit to measure events that may set them back. For instance, if building and running a governance center is a key objective of the governance LLO and that building is destroyed by a vehicle-borne improvised explosive device, it allows the commander to determine how much time the event actually set him back from his stated endstate. This system is designed to allow staffs to understand where they are, and they should not be wary if the values decrease.

Building sub-LLO and associated tasks provides the framework of the unit's campaign plan. However, as the desired endstate may not (and will likely not) be achieved before the unit rotates out of theater, it allows the incoming unit to assess where the battlespace is and provides them with a road map on how to execute their operations as they assume their battlespace. For example, commanders may inherit a battlespace at a current rating of 60 and assess that if they attain a rating of 75 before their relief in place, then they have met their goals. The follow-on unit can then set their goals from 75 to whatever level seems attainable.

There are a few limitations on this system of metrics: it is extraordinarily time consuming for the staff during the initial stages of battlespace assumption, which is already a very busy time for a staff; and to be done correctly, it requires intensive analysis and development. On the other hand, once it is developed, measuring success is relegated to referring to a table of tasks and values and calculating a simple equation, and possibly the occasional adjustment to tasks and values. Also, developing the goals, especially within LLO of combat operations, may be difficult to assess and measure. It requires significant thought and creativity to develop the tables.

Another limitation is that the value for success cannot be used for information operations. The numbers are useless without the accompanying tables of values, which would be classified. As a corollary to that point, it is important that every member of the staff, as well as superior and subordinate commands, has the value tables. Without them, the value of success is as equally worthless as it would be to the general public.

Numerical evaluation of success would remove many staff members, and commanders, from their comfort zones. Even without the use of valuation, the goal development outlined here would prove very beneficial to any unit waging a counterinsurgency fight. Using metrics to further define those goals allows soldiers to wrap their minds around what all their actions imply in the quest to reach a desired endstate. This system allows for the logical execution of full-spectrum operations with a unity of effort, is not mathematically difficult, and could easily be built on LLO already in use. Actual success on the ground across lines of operation depends on accurate and honest evaluation of the present state and a specific plan to achieve the desired endstate.

Notes

[1]U.S. Army Field Manual 3-24, *Counterinsurgency*, Headquarters, Department of the Army, U.S. Government Printing Office, Washington, DC, December 2006, Glossary-6.

[2]Ibid., p. 5-3.

Captain Jason E. Fritz is currently a brigade combat team planner, 2d Brigade Combat Team, 3d Infantry Division, Iraq. He received a B.S. from the U.S. Military Academy. His military education includes Armor Officer Basic Course and Airborne School. He has served in various command and staff positions, to include S1, 3d Squadron, 7th (3-7) Cavalry, 3d Infantry Division (3ID), Fort Stewart, GA; XO, A Troop, 3-7 Cavalry, 3ID, Fort Stewart; scout platoon leader, A Troop, 3-7 Cavalry, 3ID, Fort Stewart; and tank platoon leader, A Troop, 3-7 Cavalry, 3ID, Fort Stewart.

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Counterinsurgency Train Up

by Staff Sergeant Christopher Bush

More than 5 years ago, our great Nation was thrust into a war against terrorism and tyranny. Training techniques for initial entry (IET) soldiers had to change to meet the demands of a new and dynamic operational environment. Since 2001, the procedures and training techniques used to change American citizens from civilians into soldiers have undergone a complete face lift. No longer is training focused on Cold War concepts, instead the 2d Battalion, 81st Armor Regiment focuses on today's contemporary operating battlefield, and is the only battalion in the U.S. Army that trains the tanker military occupational specialty (MOS) 19K10.

There are three major areas of change in 19K10 initial entry soldier training: the armor core competencies have been redefined to meet the challenges soldiers will face today and in future conflicts; dismounted operations play an instrumental part in the very foundation of 19K10 training; and the gunnery skills that make tankers the combat arm of decision on the battlefield have received a renewed emphasis. These three areas ensure that the training soldiers receive during 19K10 one station unit training (OSUT) is not only unrivaled, but it prepares our soldiers to fight, survive, and win our Nation's wars.

Armor Core Competencies

The first area of change is the 19K10 armor core competencies, which are essential individual skills required to maintain armor and cavalry capabilities in full-spectrum operations. There are five main categories that comprise the 19K-entry level core competencies:

(1) Loader's station operations.

(2) Driver's station operations.

(3) Weapons (M9, M4, M240, and M2).

(4) Medical/life-saving tasks.

(5) Basic tank knowledge and maintenance.

There are a total of 54 individual tasks that support the five main 19K10 armor core competencies. Soldiers are expected to receive a "trained," "proficient," or "familiarized" score on each of the 54 individual tasks to graduate 19K10 OSUT and earn the title of armor crewman. (See Figure 1)

Dismounted Operations

Training counterinsurgency operations is a critical requirement for today's operating environment and 2-81 Armor is on the forefront of this change. This new course is taught in a fast-paced, high-impact environment, using contact, evacuation, and reactionary drills embedded in scripted scenarios in which patrols and teams must assess, reason, and act with speed and violence of action. Our IET soldiers now train in a weapons immersion environment using tactical troop movement whenever possible or practical.

Soldiers also train and are evaluated on military operations on urban terrain (MOUT) four times during their 15 weeks of training. In addition to MOUT training, they also conduct room-clearing training in a customized shoot house equipped with video feedback, mannequins, and household furniture. They also conduct personnel searches, establish traffic control points, and call in nine-line medical evacuation and improvised explosive

device (IED) reports, while conducting mounted and dismounted patrols issued through operations orders and fragmentary orders.

Tank Commander and Gunner Sustainment Training

The third and final change involves tank commander/gunner sustainment training and OSUT tank live fire. To provide an intense and realistic training model to better prepare OSUT soldiers, many changes had to be made to funding and scheduling training ranges. Formerly, 2-81 Armor's course of action required the simultaneous dispatch of 27 tanks to one of two driving courses and the tank live-fire range. By changing the master training strategy (MTS), 2-81 Armor saved the 194th Armored Brigade and post-level resources by reducing the dispatch from 27 tanks to 17, lessening the impact on the Fort Knox Abrams fleet and freeing more time for training. For example, one way the battalion was able to reduce resource requirements was to road march tanks whenever possible instead of using civilian heavy equipment trucks. Once the decision was made to change the MTS, the 2-81 Armor commander extended gunnery range time from 4 to 6 days for an OSUT gold-phase field training exercise (FTX) gunnery while simultaneously implementing cadre sustainment live-fire gunnery.

The soldiers begin tank live fire with crew evacuation drills. During movement to their battle position, they encounter an IED strike, which requires a nine-line IED report. Once the battle position is occupied, a defense drill of two rounds are fired at long-range tank targets. A third round is fired on the move as an offensive engagement. The tank then sets a support-by-fire position while overwatching an urban cluster "village."

Fort Knox range control contributed the idea to construct several urban cluster facades (see Figure 2) with a target rich environment of wireless silhouettes arrayed to require target discrimination for the loader who engages with M240, M4, and M9 fire. Target discrimination is the first step in training, developing, and establishing a joint service combat identification system — identify your target first! Upon completion of the small-arms engagements, .50-caliber training commences. Night fire is conducted with two sabot and

Figure 1

one high-explosive anti-tank (HEAT) engagements fired from the baseline and concludes with M240 engagements using the PAS-13 thermal sight.

Long-range gunnery is a perishable skill. The 2-81 Armor cadre (tank commander/gunners) execute a conduct-of-fire armored gun training system (CAGTS), an advanced gunnery training simulator, train-up and meet all live-fire requirements in accordance with the field manual. The goal during each gold phase tank

Engagements:

1. A4 (DEF) PC, RPG TM, and truck
2. B1S (OFF) 2 x tanks (TCs)
3. A5AS (OFF) tank, PC, and troops
4. Crew evacuation drills
5. React to an IED strike
6. DEF: Tank and PC
7. OFF: Tank
8. DEF: LDR–RPG team (M240)
9. DEF: LDR–3 X troops (M4)
10. DEF: LDR–troops (M9)
11. DEF: .50-cal flex– troops
12. B4 (DEF) 3 x tanks (NBC)
13. B2 (OFF) 2 x tanks and troops
14. DEF Night: Tank
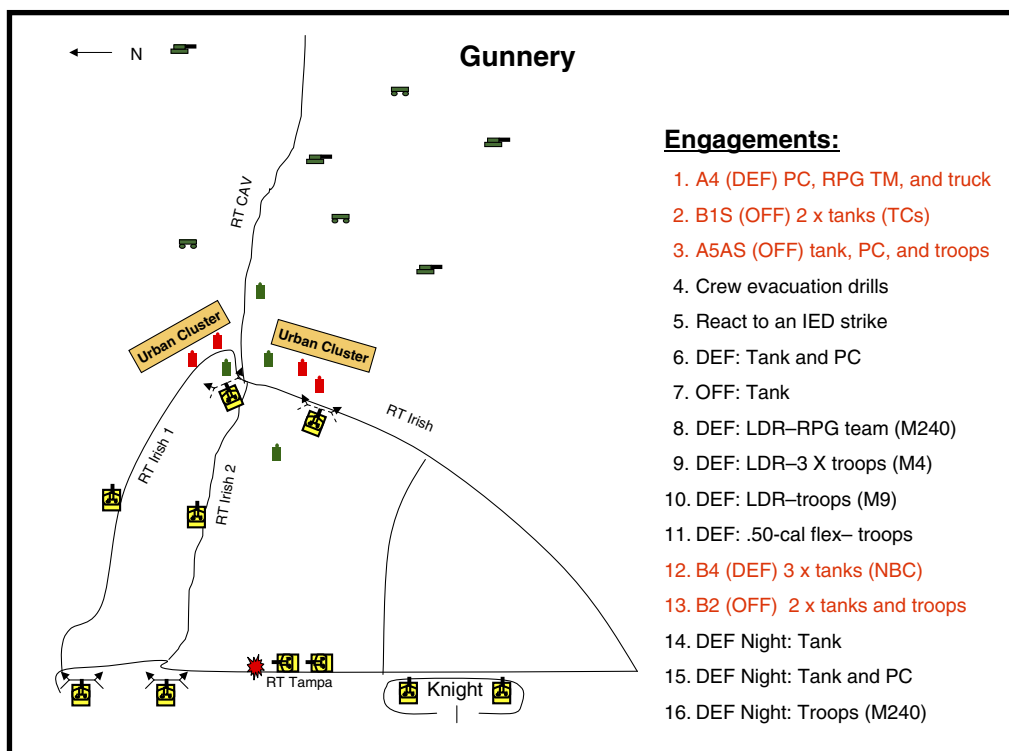15. DEF Night: Tank and PC
16. DEF Night: Troops (M240)

Figure 2

live-fire cycle is to fire four tank commander/gunner crews with excellence in armor (EIA); insert and reclassified soldiers occupy remaining crew positions as loaders and drivers. Crew tank table (TT) IV runs are conducted on screen day at Saint Vith tank range. The next day, the crews fire five TT VIII engagements (two defensive and three offensive), to include nuclear, biological, and chemical (NBC) and degraded-mode engagements.

The 2-81 commander, with the full support of the 194th Armored Brigade commander, had five M1114 turret mock-up trainers built and placed at Saint Vith tank range. Soldiers in training fire the M240, using M145 optics and PAS-13 thermal sights, and the M2 .50-caliber flex machine gun from the turret trainers. The OSUT soldiers fire multiple machine gun engagements, to include inducing lead on a moving target. The goal is to prepare young warriors, who knowingly enlisted in an Army at war, and on being assigned to their first unit will most like serve in combat, to be immediately ready

to serve as armor crewmen and high-mobility, multipurpose wheeled vehicle (HMMWV) gunners.

We owe our soldiers the best training available. With the impending move to Fort Benning, Georgia, the 194th Armored Brigade has established critical guidelines for the design and construction of mounted and dismounted training areas, as well as advanced gunnery range capabilities.

Soldiers must receive training that allows them to survive on the contemporary operating battlefield. The 19K10 OSUT training program is designed to increase soldier survivability, while enhancing mission success, by providing a more multi-faceted warrior. Today's 19K10 soldier training focuses on the five main armor core competencies designed to ensure soldiers are prepared for today's war on terror and the contemporary operating environment. Reinforcing the armor core competencies are the dismounted operations that 19K10s are expected to execute in our Nation's current war. To ensure 2-81

Armor tank commanders/gunners are trained to re-enter U.S. Army Forces Command (FORSCOM) units with a high degree of competency, cadre sustainment tank live fire is instrumental to achieving that objective. Our young soldiers and cadre are more readily deployable today than they were 5 years ago.

Staff Sergeant Christopher Bush is currently assigned as master gunner, 2d Battalion, 81st Armor Regiment, 194th Armored Brigade, Fort Knox, KY. His military education includes the Primary Leadership Development Course, Basic Noncommissioned Officers Course, Maneuver Advanced Noncommissioned Officers Course, Basic Instructor Course, and Master Gunner School. He has served in various assignments, to include armored crewman and M1A2 tank loader, 1st Squadron, 3d Armored Cavalry, Fort Carson, CO; M1A1 tank gunner, D Company, 2d Battalion, 72d Armor, Camp Casey, Korea; M1A2 tank commander and section sergeant, 1st Squadron, 3d Armored Cavalry, Operation Iraqi Freedom I and III; and M1A2 tank instructor, 2d Battalion, 81st Armor Regiment, 194th Armored Brigade, Fort Knox.

"Soldiers also train and are evaluated on military operations on urban terrain (MOUT) four times during their 15 weeks of training. In addition to MOUT training, they also conduct room-clearing training in a customized shoot house equipped with video feedback, mannequins, and household furniture. They also conduct personnel searches, establish traffic control points, and call in nine-line medical evacuation and improvised explosive device (IED) reports, while conducting mounted and dismounted patrols issued through operations orders and fragmentary orders."

The Art and Science of War through the Lens of Contemporary Doctrine

by Captain James D. Maxwell

Over the ages, volumes upon volumes have been written on the art and science of war. From antiquity to present day, arguments among theorists on whether war is an art or a science has taken place on the pages of their work. While opinions vary on what exactly war is — an art or a science — the conclusion is evident in reading primary theorists on the subject; it is both.

Just as with any other argument, a common basis must be established for comparison and that basis should be common and relevant to the contemporary military professional. Using contemporary definitions provides a lens through which each of the theorists can be equally viewed. U.S. Army Field Manual 6-0, *Mission Command: Command and Control of Army Forces*, compares art and science: "Science deals with the study and method of a body of *facts and processes based on principles* from the physical or material world. Art, as opposed to science, requires expert performance of a specific skill using intuitive faculties that cannot be solely learned by study or education."[1] "The art of command lies in the conscious and skillful exercise of its authority to fulfill command responsibilities through decisionmaking and leadership. *The true measure of the art of command is not whether a commander uses certain techniques or procedures, but if the techniques and procedures used were appropriate to the situation.*"[2] "Control, as contrasted with command, is more science than art. As such, it relies on objectivity, facts, empirical methods, and analysis."[3]

In looking at contemporary doctrine, the science of war is process-centric and is based on study and education, whereas the art of war is performance-centric and based on talent and skill. Through the lens of contemporary doctrine, classical strategic writers viewed war as both an art and a science.

Niccolo Machiavelli published several works on the conduct and execution of war. One piece is titled, like many others, *Art of War.* Had Machiavelli published his book today, and used the lens of contemporary doctrine, it would have been titled *Science of War.* His book focuses on the methods and the process of waging war. Machiavelli discusses the selection of soldiers, equipping the force, properly training it, and how to properly march an army.[4] Most of *Art of War* details how to perform certain physical processes. In his work *The Prince*, Machiavelli opens the chapter, "That which Concerns a Prince on the Subject of the Art of War" with, "A prince ought to have no other aim or thought, nor select anything else for his study, than war and its rules and discipline…"[5] This would focus the prince on the process, but with the purpose of its application in the execution of war. He insists that one should study "to exercise the intellect," and that "the prince should read histories, and study there the actions of illustrious men, to see how they have borne themselves in war, to examine the causes of their victories and defeat, so as to avoid the latter and imitate the former…"[6] While Machiavelli's prescribed study allows for its application in battle — the increase of a skill and fitting contemporary doctrine's definition of "art," — his writings center on war as a science. Very interestingly, this early writer captures the essence of war, that it is both an art and a science. His advocacy of study and education in the processes

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and principles of war to refine talent and cultivate skill allow for the increased ability to exercise the art of war. While this is not expressed directly by Machiavelli, it is inferred, just as it is with the other writers.

Jomini approached war as an art, but an art form with rules — rules more overtly stated than Machiavelli's. Jomini prescribes using a fixed set of principles as a guide in the application of the military art. In essence, Jomini advocates a system that is basically in use today — the study of war allows the use of principles and a refined doctrine which provides a set of instructions for battle captains. He wrote that, "Correct theories, founded upon the right principles, sustained by the actual events of war, and added to accurate military history, will form a true school of instruction for generals."[7] While Jomini does not go as far as to say this education is a replacement for talent or military genius, he does affirm that it produces "generals of sufficient skill."[8] There are several arguments over Jomini's work and how it relates to Clausewitz's (issues of jealousy, criticisms, etc.), but Jomini's inability to codify war as an art or a science is seen in his vacillation between the levels of war. Jomini does concede that, "war in its ensemble is not a science, but an art," but his writings focus on the process allowing for performance; Jomini believed in its *execution*, war is an art. This fits with contemporary

doctrine definitions that war is both an art and a science and also leads to Clausewitz's thoughts.

Clausewitz's works are probably the most difficult to read of any of the classical theorists. The best comparison is to the *Bible*. The Catholic Church prescribes reading the *Bible* over the course of 3 years, reading in small, related passages daily to allow for reflection. Clausewitz's works are similar with one disadvantage — there has been no refinement or editing of his works. One very important consideration any Clausewitz reader needs to keep in mind is that his works were unfinished, that he was unable to edit, refine, or even delete passages based on how conclusions written later affected what he had thought — and written — earlier.

At first glance, Clausewitz's works appear to be full of rules and absolutes, rules and absolutes that the U.S. Army loves to quote and sprinkle through its various doctrinal manuals. Several passages seem to have been written as rules, which fit the modern definition of science; however, Clausewitz leans to the side of war being an art. His views on military genius and what he refers to as *coup d'oeil* allow insight on the value he places on talent. Through his works, Clausewitz deals with both absolutes and application, which is important to remember, because without actually doing so, leads to taking his words out of context — the related thought may well have been written later or may have

still been in his head at his untimely death. The bottom line is that Clausewitz did not discount intelligence, education, or the study of history; much of his work resulted from studying Napoleon. He wrote throughout his writings, "It follows that the term 'art of war' is more suitable than the 'science of war.'"[9] Clausewitz simply placed a premium on talent and the ability to apply the military art. Clausewitz argues that opposite to art is not a mathematical science, but rather theoretical science. He writes that, "Theory should then be a guide to anyone who wants to learn about war from books…but this is simply in accordance with the scientific law of reason…never to construct an algebraic formula for use on the battlefield."[10] Again, like the *Bible*, the overarching philosophy of the entire work is important, not simply single passages, to allow the reader to gain a comprehensive understanding.

One military writer who was influenced by Clausewitz is Moltke. Much of his thought is connected to Clausewitz, as evident throughout his writings, where he quotes Clausewitz several times. A book edited by Daniel J. Hughes, *Moltke on the Art of War: Selected Writings,* is a compilation of selected works authored by Moltke and translated into English. Much shorter than Clausewitz's volumes, it is probably closer in size to what Clausewitz would have published had he not died due to cholera. Moltke contends that, "In war, as in art, we find no universal forms; in neither can a rule take the place of talent."[11] While in this passage Moltke acknowledges what is contemporary military science, he asserts that it is not replacement for talent, or in contemporary terms, military art. This is the opposite tact that Jomini takes. Moltke not only describes art as it relates to science, but he does so in the context of strategy as it relates to tactics in his assertion that war is both art and science. In fact, it is through the relationship of tactics and strategy that Moltke asserts the relationship of art and science is found in that, "…war becomes an art — an art, of course, which is served by many sciences."[12] Moltke argues that tactics requires a greater proportion of art than science, wherein strategy requires a greater amount of science than tactics. He wrote that, "Strategy furnishes tactics with the means for battle and assures probability of victory by directing the movements of the armies and bringing them together on the battlefield."[13] This does not condone "micromanagement;" rather, it introduces a concept persistent in contemporary doctrine, the concept of "nesting," or ensuring that lower-echelon commanders fit their in-

tent within their higher commander's intent.

Another writer that closely relates levels of war and the art and science of war is B.H Liddell Hart. In his chapter, "Strategy and Grand Strategy," *Strategy*, Liddell Hart discusses the relationship between strategy and tactics, "We can now arrive at a shorter definition of strategy as, 'the art of distributing and applying military means to fulfill the ends of policy.' …When the application of the military instrument merges into actual fighting, the dispositions for and control of such direct action are termed 'tactics.' The two categories, although convenient for discussion, can never be truly divided into separate compartments because each not only influences but merges into the other."[14]

It is here, with the advantage of studying other theorists, such as Moltke and Clausewitz, where Liddell Hart depicts the relationship between strategy and tactics not as two "levels" of war, but as a continuum across the spectrum of operations. In a later passage, he describes the relationship between the art and science of war in nearly the same manner, "The relativity is inherent because however far our knowledge of the science of war be extended, it will depend on art for its application."[15] The skills gained from formal education and experience allow for the increased ability to apply one's talent in war. Through the lens of contemporary doctrine, Liddell Hart views war as both an art and a science.

Sun Tzu's writings are considerably shorter than any other discussed piece; however, very much like every other classical writer, Sun Tzu looks at war as both an art and a science. In Samuel B. Griffith's translated version of Sun Tzu's *The Art of War,* the first chapter is "Estimates." In this chapter, Sun Tzu lays out "five fundamental factors" and "seven elements" to be taken into consideration by the general. Turning once again to the contemporary definition, "Science deals with the study and method of a body of *facts and processes based on principles* from the physical or material world."[16] In reading his work, Sun Tzu strongly advocates the use of military science. In what is perhaps one of his most infamous passages, Sun Tzu writes, "Know the enemy, know yourself; your victory will never be endangered. Know the ground, know the weather; your victory will then be total."[17] Sun Tzu speaks to "facts…from the physical or material world." But like Clausewitz and Moltke, Sun Tzu writes how art lies in the execution of operations. Looking again at contemporary doctrine, we are reminded that, "The true measure of the art of command is not whether a commander uses certain techniques or procedures, but if the techniques and procedures used were appropriate to the situa-

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"'…a skilled commander seeks victory from the situation and does not demand it of his subordinates.' At first glance, this passage appears to point to the application of the military art, but it speaks to both art and science. The description of the commander as 'skilled' refers to experience and education, while referring to the 'situation,' or the commander's knowledge of the factors described elsewhere in Sun Tzu's writings, speaks to the science of war. But it is the commander's skill and how he uses the information in the decisionmaking process that allows for application of the military art."

tion."[18] It is this definition of "art" that most think of when reflecting on Sun Tzu's writings.

Sun Tzu further writes, "…a skilled commander seeks victory from the situation and does not demand it of his subordinates."[19] At first glance, this passage appears to point to the application of the military art, but it speaks to both art *and* science. The description of the commander as "skilled" refers to experience and education, while referring to the "situation," or the commander's knowledge of the factors described elsewhere in Sun Tzu's writings, speaks to the science of war. But it is the commander's skill and *how* he uses the information in the decisionmaking process that allows for application of the military art. Sun Tzu continues: "as water has no constant form, there are in war no constant conditions. Thus, one able to gain victory by modifying his tactics in accordance with the enemy situation may be said to be divine."[20] This passage not only speaks to the application of the military art wherein, "Art, as opposed to science, requires expert performance of a specific skill using intuitive faculties that cannot be solely learned by study or education," it also sounds remarkably similar to other classical military writers previously discussed.[21]

The command and control of armies has been a complex problem from antiquity to the contemporary, and through the years, man has struggled to define how to study and conduct war. Classical strategic writers in their entirety have covered the entire spectrum, from science to art and strategy to tactics. In looking at strategy and tactics, and the ability of modern-day doctrine writers to codify nice, neat categories, it is done for the purpose of the definitions. As with discerning between the art and science of war, the levels, or categories, lies a continuum from one extreme to the other. Just as the theater-level commander must include tactical-level considerations in his strategic decisions, the rifle platoon leader must include strategic-level considerations in his tactical decisions. As the rifle platoon leader ascends to higher rank and greater levels of responsibilities, his formal military and civilian education is increased. Whether through professional reading, masters degree studies, or by attending a general staff college, the military professional's ability to apply "objectivity, facts, empirical methods, and analysis" to a tactical problem increases consistently with his development. Likewise, the ratio between talent and skill (art and science) changes. The sum of both does not remain constant; as the military professional gains the capacity for science, his capacity for art does not diminish. His talent — his ability to apply the military art — does not remain constant, but increases with formal education and experience. And it is from here, the perspective that the talents of the military professional are cultivated and refined over time through both

education and the conduct of campaigns that Clausewitz's assertion rings true: "For in the art of war, experience counts more than any abstract truth."[22]

Notes

[1]U.S. Army Field Manual (FM) 6-0, *Command and Control of Army Forces*, Headquarters, Department of the Army, U.S. Government Printing Office, Washington, DC, August 2003, pp. 1-3.

[2]Ibid., pp. 2-13.

[3]Ibid., pp. 3-9.

[4]Niccolo Machiavelli, *Art of War*, Translated and edited by Christopher Lynch, University of Chicago Press, Chicago, 2003, XLIV.

5Niccolo Machiavelli, *The Prince*, Translated by W.K. Marriot, The Project Gutenberg, 2006, p. 40. Available online at *http://www.gutenberg.org/files/1232/1232-h/1232-h.htm.*

[6]Ibid., p. 41.

[7]Baron Henri de Jomini, *Art of War*, Translated by Captain G.H. Mendell, The Project Gutenberg, September 2004, p. 321. Available online at *http://www.gutenberg.org/files/13549/13549-h/13549-h.htm.*

[8]Ibid., p. 325.

[9]Carl von Clausewitz, *On War*, Edited and Translated by Michael Howard and Peter Paret, Princeton University Press, Princeton, 1989, p. 148.

[10]Ibid., p. 141.

[11]Daniel J. Hughes, et al. eds, *Moltke on the Art of War: Selected Writings*, Ballantine Books, New York, 1993, p. 124.

[12]Ibid.

[13]Ibid., p. 125.

[14]B.H. Liddell Hart, *Strategy: Second Revised Edition*, Meridian, New York, 1991, p. 320.

[15]Ibid., p. 323.

[16]FM 6-0, *Command and Control of Army Forces,* p. 1-3.

[17]Sun Tzu, *The Art of War*, Translated by Samuel B. Griffith, Oxford University Press, Oxford, 1971, p. 129.

[18]FM 6-0, *Command and Control of Army Forces,* p. 2-13.

[19]Sun Tzu, *The Art of War*, p. 93.

[20]Ibid., p. 101.

[21]FM 6-0, *Command and Control of Army Forces,* p. 1-3.

[22]Carl von Clausewitz, *On War*, p. 164.

Captain James D. Maxwell is currently an instructor of military science, U.S. Military Academy, West Point, New York. He received a B.S. from the U.S. Military Academy and is currently a Masters of Arts student at the American Military University. His military education includes Armor Officer Basic Course, Scout Platoon Leader Course, Armor Captains Career Course, Combined Arms and Services Staff College, and M1A2 Tank Commanders Certification Course. He has served in various command and staff positions, to include commander, Company D, 1st Battalion, 8th Cavalry Regiment, 1st Cavalry Division, Al Dora, Baghdad, Iraq, and Fort Hood, Texas; assistant chief of operations officer, Headquarters, 1st Cavalry Division, Fort Hood; task force liaison officer, 1st Squadron, 11th Armored Cavalry Regiment (OPFOR), Fort Irwin, CA; and XO and scout platoon leader, A Troop, 4th Squadron 7th Cavalry, 2d Infantry Division, Korea.

120mm Tank Ammunition: Extremely Lethal; Equally Safe

by Wakeland Kuamoo and Cory Hubbard

The Abrams tank has proven to be the most effective fighting platform on the battlefield today; whether training or executing combat operations against hostile forces, U.S. tankers continue to lead the way.

As a part of the overall system, 120mm ammunition provides the high level of lethality required for the Abrams tank. While this lethality is well known, requirements also exist to make it as safe as possible for our tankers.

Development Procedures

During the development of 120mm ammunition, there are several phases which focus primarily on the safety aspects of our rounds. These phases are evaluated to ensure they conform to very rigid standards. These standards are outlined in the International Test Operations Procedures (ITOP), which are adhered to by the United States, the United Kingdom, the Federal Republic of Germany, and France.

The ITOP testing is divided into several major areas, which include hazards related to ammunition handling, transportation of ammunition, launch, flight, environmental conditions, and the compatibility of the ammunition with the weapons system regarding weapons safety. Several test facilities are required to fully evaluate each of the above areas. These facilities include:

- Firing ranges used to evaluate launch and flight characteristics.

- Temperature chambers that are capable of conditioning ammunition from -50 °F to +160 °F and can simulate relative humidity from 5 to 95 percent. These variations in temperature and humidity allow for simulation of environmental conditions found worldwide for storage and usage.

- Laboratory vibration equipment used to simulate transportation of ammunition, both packaged and unpack-

aged, at temperatures ranging from -50 °F to +160 °F.

- Drop test facilities used to simulate accidental packaged and unpackaged ammunition dropped from heights ranging from a few inches to 40 feet. One of the simulated incidents this facility can perform includes dropping a pallet or a round from various heights; ammunition is dropped individually and in its palletized (shipping) configuration, as well as exposed from its packaging.

- Laboratory chemical facilities used to perform analyses on explosive filler exudation, propellant characteristics, and propellant stability.

Testing: The Handling Phase

Special environmental chambers are used to condition a tank round at various temperatures and humidity. This capability allows the ammunition to be tested

Figure 1. The pallet above has been conditioned to a cold temperature for secured cargo testing. At right, a six-round tank hull ammunition rack undergoes vibration testing.

under environmental conditions found worldwide. It takes 24 to 48 hours to condition the ammunition to a uniform temperature throughout the cartridge and propellant. These conditioned rounds are used during the vibration and drop testing.

Vibration testing is accomplished in three phases: two phases use secured ammunition and the third phase is unsecured. Secured ammunition testing simulates transportation in the normal palletized shipping configuration by military truck or trailer for approximately 500 miles, which includes portions of paved and unpaved road surfaces. The rack vibration phase simulates 5,000 miles of transport in the tank, over paved, unpaved, and cross-country roads, in its normal stowage location. Unsecured or loose cargo testing simulates unpackaged items, such as ammunition, weapons, and communication equipment, transported in a truck bed for 150 miles.

During the secured cargo testing, a pallet of tank rounds is placed on a vibration table to simulate travel. As shown in the photo at left in Figure 1, the pallet has been conditioned to a cold temperature; the frost is still visible on the cans. The photo at right in Figure 1 is an example of rack vibration testing using a six-round tank hull ammunition rack.

The ammunition is then subjected to storage tests consisting of hot-dry, hot-humid, and cold storage. Hot-dry testing cycles the ammunition from 160 °F at less than 5 percent humidity to 91 °F and 10 percent humidity for 7 days. The hot-humid test repeatedly cycles the ammunition from 105 °F and 90 percent humidity to 70 °F and 95 percent humidity over a 10-day period. The cold storage test consists of maintaining a temperature of -50 °F for 72 consecutive hours.

During the loose (unsecured) cargo testing, unconstrained tank rounds, still in their original packaging, are set on vibration table fixtures to simulate rounds which may be transported outside of a banded pallet. (See Figure 2.)

To pass the vibration testing phase, the ammunition, although possibly damaged, must not detonate or burn, and be safe to handle and properly disposed of, should the damage exceed the condemnation limits. If ammunition is visually undamaged, it must chamber successfully and be confirmed safe to fire.

The second portion of the handling test involves dropping palletized rounds. The 2.1-meter drop test is conducted to simulate a sling-loaded pallet of ammunition

Figure 2. Unconstrained tank rounds undergo loose (unsecured) cargo testing.

being accidentally dropped from a hovering helicopter or a truck. (See Figure 3.) To pass this test, the ammunition must be confirmed safe to handle and fire.

The 2.1-meter drop test is also conducted on individually packaged rounds with each round being dropped twice. Orientations for the drops are directed by the ITOP. The same rounds that were used in the 2.1-meter pallet drop and the 2.1-meter individual packaged drop are then subjected to the 1.5-meter bare drop. (See Figure 4.)

The 1.5-meter bare drop test is conducted to simulate the accidental drop of unpackaged ammunition. Damage to the rounds during this testing phase is expected. However, regardless of the damage, the rounds must be safe to handle. If the rounds are deemed serviceable, they must be flight safe but are not required to meet performance criteria. Additionally, based on historical damage of tank rounds, the 1.5-meter height can be adjusted to a point where all, or nearly all, test items will be capable of being loaded and fired. It is implied that heights above this established standard would always damage a round beyond the serviceability criteria, thus wasting rounds. The new established height used in this test (where all, or nearly all, test items will be capable of being loaded and fired) must be published in the test results.

Simple release and drop mechanisms are used to conduct this test. Rounds are dropped at several different orientations: base down at 90 and 45 degrees; and horizontal and nose down at 90 and 45 degrees. The drop surface for these tests is a steel plate on a solid concrete base. We should note here that no electrical primers on the case base have ever detonated during the drop.

Two additional tests are performed during ammunition development and include a 40-foot pallet drop and a 10-foot bare drop, which usually damage all of the rounds involved. The purpose of these tests is to ensure there is no burning or explosion and the rounds can be safely disposed of using standard explosive ordnance disposal procedures. All current configurations of training and tactical ammunition have passed these tests and once the handling phase of testing is completed, the ammunition will undergo additional testing prior to full release for field use.

Figure 3. The 2.1-meter drop test is conducted on a sling-loaded pallet.

While the U.S. Army continues to teach care standards for storage, transportation, handling, maintenance, firing, and disposal of ammunition, safety is ultimately the responsibility of every person concerned. Safety is a state of mind, engendered from the top echelons of command down to the lowest working level through positive action and good leadership. Most accidents result from not applying proper safety principles.

Wakeland Kuamoo is currently working as a contractor, Large Caliber Ammunition, Training and Doctrine Command Capabilities Manager-Heavy Brigade Combat Team, Fort Knox, KY. He received an A.A. from Pikes Peak Community College and a B.S. from University of Louisville. His military education includes Basic Noncommissioned Officers Course, Advanced Noncommissioned Officers Course, Master Gunners Course, and Air Assault Course. During his career, he has served in various duty positions, to include senior armor trainer, Bosnia and Herzegovina; chief, Master Gunner Branch, Fort Knox, KY; first sergeant, A Company, 2d Battalion, 35th Armor, Fort Carson, CO; senior armor trainer, Technical Assistance Field Team, Republic of Yemen; and division master gunner, 2d Infantry Division, Korea.

Cory Hubbard is currently a test engineer, U.S. Army Aberdeen Test Center, Firepower Directorate, Large Caliber Systems Division, Aberdeen Proving Grounds, MD. He received a B.S. from Pennsylvania State University. For the past 18 years, he has served as an engineering test director, specializing in ammunition performance and safety specifically for large caliber ammunition.

Figure 4. A 120mm tank round undergoes the 1.5-meter bare drop test.

REVIEWS

Few of us have the rare opportunity to sit in the highest councils and listen as men of power consider their situation, make decisions, and evaluate the results. Neither do we know of the enormous pressures that are brought to bear on them by their enemies, their superiors, their colleagues, and other institutions of power. For those of us of the Vietnam generation who have contemplated the forces under which we served, we owe a debt of gratitude to Bob Sorley for opening the windows of history and allowing us to be witness to 3½ years of candor from the legendary Creighton Abrams and his senior staff during his command of Military Assistance Command Vietnam (MACV). This is a sobering read not just for what it tells us about our youth, but a jolting opportunity to see the present more clearly. By adding to his growing list of important work regarding the Vietnam War, Dr. Sorley has added clarity to the past and opened the door for policymakers of today and tomorrow to make more informed decisions. America's freedom and the lives of our warriors in harm's way demands no less.

The *Abrams Tapes* operates on three distinct levels of interest to the professional soldier and policymakers: the character of the men involved; the quality of their decisions; and the lessons that can be learned today and tomorrow. First, however, it is important to say a word about the extraordinary contributions of Retired Lieutenant Colonel Lewis S. Sorley III, transcriber and editor. This story would not be published without the dedication of this historian to wade through thousands of hours of tapes while making judgments about what to transcribe and what to discard. The transcription alone represents a heroic task of turning the spoken word into countless pages requiring accuracy and patience. The task of adding editorial comments for clarity and shaping a coherent history out of the material requires a craftsman of great skill. It is also important for the reader to understand that the story presented is through Dr. Sorley's eyes. Another historian might well have presented a different view of the characters and events described. Regardless, this is a history of great value and adds enormous clarity and truth to America's involvement in Vietnam.

Passing through the MACV "Weekly Intelligence Estimate Update" (WIEU) briefings were most of the U.S. Army's senior leaders of that era (June 1968–June 1972), as well as many of the Army's future leaders. We get to hear from many of the important political figures of the day, as well as key military leaders from the U.S. Air Force and Navy. There are many candid comments and strong opinions about other political and military figures of the day. These briefings took place during periods of high drama, such as Tet, the invasions of Cambodia and Laos, and the incredible drawdown of forces

after Richard Nixon was elected President. Given the incredible political restraints on the use of American military power, it is not hard to conceive of temptations to disregard or ignore the restrictive rules of engagement; however, only twice while reading *Tapes* did I find even a suggestion of disobedience (by an Air Force officer).

There are many things to admire about the character of General Creighton Abrams, but the period of drawdown of forces in Vietnam from 500,000 to 100,000 from 1970-1972 is arguably his finest hour. He understood his orders and through rigorous planning and execution, exceeded the requirements. Was it the right thing to do? He understood his orders and did not flinch despite his personal misgivings.

One target of criticism in the book by General Abrams and others is Ambassador Averill Harriman, chief U.S. negotiator at the Paris peace talks on Vietnam, who was not a participant in the WIEUs. Previously held in high regard by Abrams and others, Harriman's contradictions of fact regarding North Vietnamese withdrawals during the bombing halts during 1969 created an enormous problem for American and Vietnamese forces on the ground. It was of great relief to General Abrams when Harriman was replaced by Henry Cabot Lodge, a former Ambassador to the Republic of Vietnam (RVN) from 1963 to 1964.

Dr. Sorley is at his best in editing the story of General Abrams' dramatic improvements in the organization of RVN forces that take the war to the North Vietnamese fighting in the south. Building up the regional/popular forces (RF/PF) that seized the initiative from the North Vietnamese was a tour de force of leadership in creating, motivating, arming, and training a country to defend itself. There was a heightening sense of possible victory during the 1970 timeframe when South Vietnam invaded Cambodia in Operation Lam Song IV. There was also a sense that the heavy losses inflicted on U.S. aviation support during that operation said equally as much about the capabilities and determination of the North Vietnamese. Ultimately, political decisions by the U.S. Congress to drop support sealed the victory for the Democratic Republic of Vietnam.

What then are the lessons of this book for today? For the professional soldier, it is simply George Patton's famous remark, "I fight where I'm told, and I win where I fight!" Unfortunately, the U.S. Army's ability to fight and win battles does not guarantee victory or ultimate success. Rarely, do we study the Philippine Insurgency of 1903-1918, where the U.S. Army was committed and supported by the political structure for 18 years. Deep into our current engagement in Iraq there is a sense that Panama, Grenada, and Desert Storm still represent the limit of America's political patience. There is the famous response by Le Duc Tho to an American general's assertion that America had won all of the tactical battles, "It was not relevant!"

Members of the U.S. Army will take pride in the fact that a revered leader, General Creighton Abrams, was a commander of great vision, tenacity, and character. Faithful obedience to

the Constitution is a soldier's first obligation and our Army never wavered under his leadership. Further, his brilliance in devising strategies that wrested the initiative from the North Vietnamese is one of the untold stories clouded over by the antiwar movement. Finally, as we contemplate different conflicts under different circumstances, it is important to remember that it is not necessarily our invincible tactical and operational skills that ultimately win our wars, it is National will!

RICHARD D. CHEGAR
MG, U.S. Army, Retired

Editor's Note: Indiana University Press has released a new paperback edition of Lewis Sorley's acclaimed biography, **Thunderbolt: General Creighton Abrams and the Army of His Times.** Except for the addition of a new introduction by the author, the text is identical to the original work published in 1992.

What a great book! Until fairly recently, there has been a paucity of books on American arms collecting, particularly on swords. The one authoritative book, Harold Peterson's *The American Sword 1775-1945* was published in 1954, 54 years ago; only recently have new treatises been written, most with a very narrow focus. But now, John Thillman, with the able assistance and support of more than 100 other arms experts and collectors, gives us this definitive encyclopedic work on sabers.

This book examines the various sabers manufactured, assembled, and sold by 50 companies in America and abroad from 1833 to 1865 for use by cavalry and artillery units before and during the Civil War. Profusely illustrated, the book has more than 1,100 photographs, plus numerous drawings, which detail the many variations between sabers. The text clearly shows Thillman's monumental research effort; for example: "Only five manufacturers supplying the U.S. market made a model 1840 artillery officer's saber. They were Schnitzler & Kirschbaum (S&K), Ames, Horstmann, Roby and Schuyler, and Hartley & Graham. The S&K sabers are very rare as only 54 type I sabers were contracted for the ordnance department in 1840 (they are all dated 1841 on the blade). The text also includes hundreds of tidbits, such as "General George Armstrong Custer used a model 1860 Roby (dated 1864) enlisted cavalry saber," and "Major General Thomas, 'The Rock of Chickamauga,' used an enlisted S&K artillery saber in the 1840s and '50s and an Ames enlisted model 1860 during the Civil War."

This fine book is a collector's item and probably best suited for collectors. It has a hefty price, but is relatively inexpensive when you consider the enormous amount of detailed in-

formation in the book. For the serious saber student, it's a must have; for the rest of us, it's an intriguing and interesting read, both in learning about a unique subject and in reading the numerous anecdotes of cavalry and artillery actions during the Civil War. Congratulations to John Thillman for his Herculean efforts in researching and compiling this remarkable and very classy volume.

JOHN R. BYERS
COL, U.S. Army, Retired

On Combat: The Psychology and Physiology of Deadly Combat in War and in Peace by David Grossman and Loren Christensen, PPCT Research Publications; second edition, August 2007, 403 pp., $24.95 (paperback)

One of the most difficult subjects warriors have to discuss is what happens in combat — they do not discuss how they felt before battle; they rarely discuss what happens during battle; and they are ashamed of what happens afterward. In *On Combat*, David Grossman explores what combatants experience physiologically, psychologically, physically, and emotionally before, during, and after combat. He wrote this book in collaboration with Loren Christensen, a veteran police officer. *On Combat* is a continuance of the ideas first put forth by Grossman in his book *On Killing*, which is an extension of Brigadier General S.L.A. Marshall's classic *Men Against Fire: The Problem of Battle Command.*

Men Against Fire explores the fact that during the World War II, 15 to 20 percent of combat infantrymen fired their weapons in combat. *On Killing* expounds on the fact that the U.S. Army took these statistics very seriously and began training differently. The Army began to use human-shaped silhouettes, instead of bulls-eyes, to condition soldiers to fire at human targets. Thus the firing ratio increased to 95 percent during the Vietnam War. The argument is then made that this is the reason for the proliferation of post traumatic stress disorder (PTSD). Human beings naturally do not handle killing other human beings very well; in fact, it is repulsive, which is merely the psychological result of combat. *On Combat* is the natural extension to the physical; *On Killing* elaborates on conditioning the mind before battle and *On Combat* shows the aftereffects of combat on the human body.

On Combat is broken down into four major sections: the first section discusses the physiology of combat; section two covers the physical distortions that occur during combat; section three discovers that some people are naturally disposed to combat while the vast majority are not; and the fourth section discusses the emotional fallout of combat.

The effects of combat on the body are myriad. Grossman states that when warriors (and anyone placed in harm's way such as soldiers, policemen, and firefighters), approach combat,

adrenaline begins to pump through the body in unconscious anticipation of action. This increases the heart-rate to several different levels; white, yellow, red, gray, and black. The higher the heart-rate, the more primal the brain functions. As Grossman states, "human front, puppy midbrain, and reptilian brains stem." White is the normal function, defined as "human front brain," while black is the most extreme at over 180 bpm, defined as "brain stem functions." Most combat occurs between the red and gray rate, which means that the brain functions automatically with no conscious thought — the body automatically does what it is trained to do. If the training is repetitious and correct, then during a crisis or combat, the action is automatic and correct. But if the training is sporadic and wrong, then one cannot think when one has to and the actions are wrong and deadly.

Section two discusses other physical reactions to combat, which includes auditory loss, protecting hearing from gunfire, tunnel vision, and focusing on only one threat. Another common physical condition of combat exposure is shrinking capillaries, which explains why flesh wounds often do not bleed during a firefight. In this situation, training is an effective measure — if a combatant is trained to stop moving when hit by a paintball during training, he will react the same way during combat. If he trains to keep moving when hit by a paintball, then he will continue the mission during combat, and, if possible, seek cover and medical attention, thereby not exposing his comrades to fire as they try to save him.

The third section of *On Combat* discusses the warrior's role in society. He states that there are three types of people: those who kill; those who are killed; and those who protect the second group from being killed. He likens society to animals — the first group is wolves (predators), the second group is sheep, and the third is sheepdogs. He states that the sheep hate the wolf and despise the sheepdog because he reminds them of the wolf. Yet, when the wolf attacks, the entire flock hides behind the sheepdog, which protects them despite their earlier attitudes. This is the way of the warrior — he protects those who do not help themselves, yet they despise him for it. The only thing that sets the sheepdog apart from the wolf is a moral code and discipline.

Finally, the book addresses conditioning. Grossman goes to great lengths to show the correlation between high crime and our thirst for violent entertainment. He states that the media industry is lacking in moral values for not regulating violence. He also discusses the fact that discipline is the deciding factor between the wolf and the sheepdog in society. The military trains within the aegis of discipline, the media does not.

I found this to be an extraordinary book, one that I can relate to as a combat veteran; one that I wish was available prior to my own war. This book is an invaluable tool to teach new soldiers what to expect in combat, and what leaders expect of from their soldiers and from themselves. It shows the truths of properly trained soldiers and the consequences other-

wise. Most importantly, this book provides combat leaders another tool for their rucksacks for discussing a soldier's role in society. This is something I have used on numerous occasions, especially when my soldiers have a difficult time understanding why they are not always understood and even feared by those they are sworn to protect. All warriors should read this book.

ANTHONY ROSE
CPT, U.S. ARMY

The Highway War: A Marine Company Commander in Iraq by Major Seth W.B. Folsom, Potomac Books, Inc., Washington, DC, 2006, 424 pp., $29.95 (cloth)

In his journalistic narrative, Major Folsom details his exploits as a U.S. Marine light armored vehicle (LAV) company commander (captain) in the early days of Operation Iraqi Freedom. He navigates the petty frustrations of the modern military at war from pre-deployment politicking, to ensure his unit's inclusion in the coming offensive, through eventual deployment to Kuwait and the capture of Baghdad, and finally redeployment to the south of Iraq. Folsom paints a clear picture of his unit's activities and his personal trials and tribulations while riddled with the insecurities common to a commander about to lead his troops in combat for the first time. Ineffectual higher headquarters, an insubordinate and incompetent platoon commander, and an opposing force that resists open combat on nearly every occasion are only a few of his daily difficulties. While clearly proud of the cohesive and professional unit he helped build and apparently genuinely touched by the warmth expressed by his subordinates, he is truly conflicted by the moral ambiguity of low-intensity conflict, in general, and his first close-quarters combat experience, in particular.

Folsom avoids open critiques of the wisdom of the main effort and expresses no overt doubts about the legitimacy of the invasion (at least initially). Only when removed from the battlefield and training for duty as a foreign area officer does the text delve, albeit briefly, into the author's doubt about both the utility of the Marine Corps as a peacekeeping force and the lack of a salient and viable exit strategy for American forces.

This text largely ignores strategic issues surrounding the build-up, invasion, and occupation of Iraq. It is, however, a useful illustration of the personal challenges that small-unit leaders face in modern combat. Ranging from dealing with his first combat loss to the unique frustrations that specialty units feel when they believe they are being employed incorrectly, the text offers a glimpse into the thinking of a young cavalry officer on the uncertain modern battlefield. In all, Folsom provides an honest and forthright look at his experiences; this volume would be a solid addition to the library of any junior combat arms officer.

MICHAEL A. ROSS
SGT, USMC

Installing FBCB2 with a Thales MA7036 Vehicle Adapter Amplifier in an M1151

by Specialist Christopher Ramos with technical assistance from Staff Sergeant Gregorio Quintanar

The current operating environment has provided commercial off-the-shelf (COTS) capabilities to be injected into the military supply system faster than ever before. Oftentimes to meet the need of a particular shortcoming, a COTS system is procured without identifying all of the second- and third-order effects. Many of the new M1114 and M1151 high-mobility, multipurpose wheeled vehicles (HMMWVs) are being fielded with new COTS communications systems. The capability these new systems provide is tremendous. We were fortunate enough to receive a large fleet of HMMWVs with the Thales MA7036 radio system installed; however, the Thales is not designed to support Force XXI battle command, brigade and below (FBCB2) systems. This presented a challenge on how to maintain our command, control, communications, computers, intelligence, surveillance, and reconnaissance (C4ISR) capability with FBCB2, and our communications section was tasked to find a solution.

Ultimately, we figured out how to add an FBCB2 system to a Thales MA7036-equipped HMMWV that was not designed to have an FBCB2 system. In doing so, we enhanced our unit's situational awareness, thereby increasing its combat effectiveness. For similarly equipped units, this article can be used as a "how-to" manual to install an FBCB2 system on a Thales MA7036-equipped HMMWV.

Tips for Getting Started

The M1151 HMMWV has a Thales MA7036 multiband inter/intra team radio (MBITR) vehicle mount up front where the usual advanced system improvement (ASIP) radio vehicular amplifier adapter (VAA) mount is located. Our commander wanted to keep the MBITR mount in the vehicle, so we had to brainstorm on how to install the FBCB2. This particular HMMWV had no mounts of any kind for any of the FBCB2 hardware, nor any of the necessary cables. In short, we installed an FBCB2, with no instructions, in a vehicle that was not intended to have such a system installed.

The main problems we encountered were where to put the mounts for the hardware, running the cables, and installing a VAA so we could use the Internet controller (INC) portion of the VAA, which is necessary for the enhanced positioning locating reporting system (EPLRS) to talk to the central processing unit (CPU).

Hardware Installation

The following is a list of all vital mounts and associated hardware required, and the specific locations for each. Individual preferences and missions requirements may dictate the location of any of these components. This is what worked best for our own needs and is meant as reference only.

Hardware and mounts

- VAA and mounting base.
- AN/UYK-128 (CPU) and CPU mount.
- EPLRS and EPLRS mount.
- AN/UYK-128 (display) and display mount.
- PSN-11 (PLGR) and PLGR mount.
- PSN-11 antenna.
- EPLRS antenna and antenna mount.

VAA and CPU Installation

The sole purpose of the VAA is to provide the INC for FBCB2; an ASIP radio is not required for the FBCB2 to properly function. However, an ASIP radio can be used to default your INC when reconfiguring the role, and then it can be removed.

The best location for the CPU and VAA is in the back, on the driver side quarter-panel inside the M1151 right above the wheel well (see Figure 1). Most of the quarter-panels have installed brackets with predrilled holes for bolts.

The CPU mount should be installed on the quarter-panel closest to the back of the HMMWV with the opening of the CPU facing to the front of the HMMWV; install your VAA mount directly in front of this. Make certain there is enough space to open the CPU and access the hard drive, as the CPU will be mounted right next to the VAA.

We found two ways to install the mount for the VAA. The first is with the VAA facing the CPU, where, in all instances, if installed in the VAA, the ASIP radios would be facing toward the CPU. The second option is to have the VAA facing out where the radios would be facing toward the passenger side tire-well. Either way works, but make certain there is enough room to access the CPU's hard drive and insert an ASIP radio into the VAA to default the INC, if necessary.

Mount positions for the EPLRS and antenna, AN/UYR-128 display, and PSN-11 position, lightweight, GPS receiver (PLGR) and antenna are shown in Figures 2 through 5 at right.

Cables

To properly install the FBCB2, you will need:

- AN/UYK-128 CPU power cable (w1); NSN: 5995-01-478-4901.
- EPLRS power cable; NSN: 5995-01-198-0538.
- PLGR power cable; NSN: 6150-01-375-8661.
- Serial interface adapter device (SIAD) cable; NSN: 4920-01-478-3722.
- INC to SIAD cable (w3n); NSN: 5995-01-478-4913.
- Army data distribution system interface (ADDSI) cable (w6); NSN: 5995-01-453-3935.
- PLGR data cable (w3p); NSN: 5995-01-478-4891.
- PLGR antenna cable; NSN: 6150-01-375-8662.
- EPLRS antenna cable; NSN: 5905-01-182-7428.
- Display cable (w2); NSN: 5995-01-478-4876.

Figure 2. Above, the mount for the EPLRS is installed on the right quarter-panel (passenger side) above the wheel well.

Figure 3. The EPLRS antenna and antenna mount are mounted on the outside driver side right above the rear wheel well.

Figure 1. At left, the best location for the CPU and VAA is in the back, on the driver side quarter-panel inside the M1151 right above the wheel well.

Figure 4. The mount for the AN/UYK-128 display is installed up front near the passenger side, as well as the mount for the PSN-11 PLGR.

Figure 5. The PSN-11 PLGR antenna can be mounted right above the front passenger side, on the outside of the HMMWV. Most of these are magnetic, or can be secured with Velcro.

NOTE: Unit maintenance teams can install power cables with 25U assistance. Running most of the cables for the system will be based on mission necessity and tactical configuration of the vehicle. Ensure that cables, once installed, do not impede personnel safety or safe operation of the vehicle. To ensure proper installation of cables, the following procedures are highly recommended:

➢ Run the VAA mount power cable to the battery. Because the VAA is located in the back of the HMMWV, it may have to be extended to reach the battery compartment.

➢ The AN/UYK-128 CPU power cable can be connected from the VAA mount directly to the CPU.

➢ The EPLRS power cable also requires 24 volts and should be connected to the battery.

➢ The PLGR power cable requires 12 volts and should be run to the battery.

➢ Connect the SIAD cable to the CPU.

➢ Connect the INC to SIAD cable to the SIAD.

➢ Connect the PLGR data cable to the back of the PLGR and the other end into the SIAD.

➢ Connect the PLGR antenna cable to the back of the PLGR and connect the other end to the PLGR antenna. PLGR should be near the front passenger and there

should be room to run the antenna cable to the external antenna.

➢ Connect the display cable to the CPU and connect it to the display.

➢ Connect the EPLRS antenna cable to the EPLRS.

Once everything is properly connected, configure the system and you're ready to roll. As with many things in the military, it is all about capabilities and understanding the commander's intent. Our commander gave us a unique challenge, which enabled us to develop a technique to help warfighters maintain better situational awareness and use our FBCB2 assets to their fullest.

Specialist Christopher Ramos is currently serving as the communications security (COMSEC) custodian, Headquarters and Headquarters Troop, 4th Squadron, 2d Stryker Cavalry Regiment, Forward Operating Base Prosperity, Iraq. His military education includes Warrior Leaders Course, Standardized COMSEC Custodian Course, and 25U Signal Support Systems Specialist.

Armor Center Proponent for New Battlefield Surveillance Brigade

On 17 March 2008, the Commanding General, U.S. Army Training and Doctrine Command designated the U.S. Army Armor Center as the proponent for the battlefield surveillance brigade (BFSB). The Armor Center will perform as the Army's doctrine, organizations, training, materiel, leader development, personnel, and facilities proponent for this new organization.

The BFSB has a divisional focus with applicability to an Army corps, joint forces land component command, or a joint task force. The BFSB's core mission is to conduct intelligence, surveillance, and reconnaissance operations that will enable the division commander to precisely focus joint combat power while simultaneously executing current operations and preparing for future operations.

BFSBs will be tailored to meet the requirements of the command they support. The brigade's organic units include a reconnaissance and surveillance squadron and a military intelligence battalion. Attachments might include additional ground reconnaissance and military intelligence capabilities, fire support, and manned and unmanned Army aviation. There will be four BFSBs in the Active Army and six in the Reserve Component.

More information on these new brigades will be available in upcoming issues of *ARMOR*.