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**Heavy - Light Forces:
Determining the Optimum Force
Based on Forms of Action, Functions and Tempo**

**A Monograph
by
Major James M. Moon
Infantry**



**School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas**

First Term AY 92-93

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SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

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ABSTRACT

Heavy-Light Forces: Determining the Optimum Force Based on Forms of Action, Functions and Tempo by MAJ James M. Moon, USA, 59 pages.

This monograph identifies the different perspectives that heavy and light forces have when they analyze the elements of mission, enemy, terrain and weather, troops available and time (METT-T) during their estimate of the situation. Because the heavy and light perspective of METT-T differs, it is difficult for an integrating headquarters to efficiently and effectively identify all the factors of combat power that a heavy-light force can provide. A common criterion is proposed that enables the integrating staff to broaden their perspective by looking at the forms of action (attack and defend) developed by Carl von Clausewitz, the combat functions (reconnaissance, counterreconnaissance, fix, create weakness and maneuver) used by General Edwin H. Burba, Jr. and the elements of tempo (mobility, rate of movement, responsiveness to change) proposed by Brigadier Richard E. Simpkin.

The monograph examines historical examples from World War I, World War II, Southwest Asia and the National Training Center. A METT-T analysis highlights the situation of each unit during that period. Further analysis of the historical examples show how a staff increases effectiveness and efficiency by using the three criteria to task the heavy and light forces. This process increases freedom of action, integration of tactical capabilities, and the ability to act faster than the enemy.

Finally, the monograph provides some insights on how a staff can use the three criteria for planning. Additionally, the conclusion provides recommendations for improving doctrine, organizations and training of heavy and light force combinations to broaden Army perspectives.

Table of Contents

	Page
I. Introduction	1
II. National Parameters	6
III. Army Limitations	8
IV. Heavy-Light Defined	10
V. The Next Conflict	16
VI. Criteria for Integration	17
VII. Forms of Action	19
VIII. Combat Functions	22
IX. Tempo	27
X. Historical Perspective--World War I	29
XI. Historical Perspective--World War II.	33
XII. Historical Perspective--SWA and NTC	37
XIII. Application of the Three Criterion	41
XIV. Conclusion	42
Endnotes	45
Bibliography	54

INTRODUCTION

Any attempt to define warfare in simple compartments and dimensions is inherently flawed. ¹Balance and a rich choice of options are key.

FM 100-5, Operations (1992)

When brigade planners task organize heavy and light forces together, the first limitation they must overcome is their own lack of experience. In these situations, "planners must avoid mirror imaging from their own forces. Rather, they should determine the actual capabilities of our...partners, and then not exceed these limitations."² Light forces do not attain "Balance" by making the unit heavier. On the other hand, directing heavy forces to conduct tasks that maximize firepower, protection and rate of movement provides a "rich choice of options". Planners have difficulty developing an operation with heavy-light forces because each unit has different organizations, doctrinal foci and perspectives that temper their analysis.³

The use of mission, enemy, terrain (includes weather), troops and time available (METT-T) analysis provides a staff with a means to analyze the situation. The results of a METT-T analysis for the heavy and light forces differ. Perspectives differ because organizational capabilities and doctrinal focus vary. Can two organizations that have diverse METT-T assessments

obtain a viable tactical configuration for combat operations? A staff can properly integrate heavy-light forces into an operation if it has time to identify organizational and doctrinal differences between units. If information or experience is lacking, then they must seek some common criterion to prevent a METT-T analysis from addressing only one unit's capabilities. This monograph reviews current national policies, Army limitations, heavy-light forces and future conflicts. The review frames the requirement to mix forces. The paper also identifies three criteria that broaden the perspective of a brigade level staff to assist in the analysis for heavy-light operations. A historical review of operations in World War I, World War II, Southwest Asia and the National Training Center (NTC) highlight the results of a METT-T analysis that uses one unit's perspective. The historical review shows how to use the three criteria to broaden a staff's perspective and to identify additional tactical options for each operation. The conclusion states that the three criteria provide an effective method to broaden the perspective for METT-T analysis during heavy-light operations. The conclusion also identifies stationing, doctrinal, training and organizational changes that increase the ability to mix forces for contingency operations.

The different unit designs provide diverse methods

to generate combat power. Application of maneuver, firepower, protection and leadership transforms capabilities into combat power.⁴ Heavy and light forces generate combat power by using systems and human effects.

Brigadier Richard E. Simpkin states:

The main mechanized force, like the cavalry and naval and air forces, is primarily about hardware - the military counterpart of a capital-intensive industry. The infantry is about men - the equivalent of a labor-intensive industry...

Planners will maximize the strengths of light forces if they orient on human factors when assigning tasks. Light units prefer to use limited visibility, terrain effects that limit fields of fire and observers that provide undetected firepower. Light infantry maneuver effects capitalize on physical fitness to move through an unexpected approach. Knowledge of enemy tactics and use of subordinates' energy also enable decentralized maneuver. Minimizing target size, stealth and close integration of medical support to sustain the force provide the light forces with their best protection.⁶

Heavy forces generate their best combat power by employing their weapon systems. The high rate of fire, crew proficiency of direct fire systems, and use of maximum weapons ranges provide the most suitable firepower effects for heavy forces. The most advantageous maneuver effects for heavy forces balance the maintenance of equipment with mobility skills and

increased communications systems efficiency. Options that integrate the use of equipment design, target tracking and equipment repair increase the protection effects of heavy forces.⁷

Organizational diversity makes it difficult for inexperienced planners to understand the capabilities and limitations of heavy and light forces. This lack of understanding can cause planners to improperly task forces to accomplish an assigned mission. Placement of heavy forces in a situation that emphasizes the use of human factors or a light force in a systems oriented task, inefficiently and possibly ineffectively uses the combat power of each organization.

The planner has a dilemma when the demand to work toward a unified goal conflicts with the diverse methods that heavy or light forces use to generate combat power. Brigadier General Paul F. Gorman identifies diverse command and control techniques and methods for conducting operations as two challenges for planners.⁸ General Gorman states: "Infantry and armor will fight together, using the unique capabilities of each branch to best advantage, but always operating as a team."⁹ General Gorman's comment emphasizes a need for the unique capabilities in combined arms operations. His priority is for planners to maintain teamwork while balancing the preferred methods each organization uses to attain their maximum combat power. Planners must

ensure a unified effort and proper distribution of mission requirements so that units focus on tasks which align with their capabilities.

The difference in the technological, threat and lessons learned basis for heavy and light doctrine causes problems in an integrating headquarters. The preliminary draft of FM 100-5 recognizes that armored, light and special operating force combinations provide a versatile mix of combat forces. The field manual also emphasizes that each force is "unique", that combined arms operations are "complex" and each unit is designed to operate against a specific type of enemy or on a certain type of terrain.¹⁰ The authors of brigade and battalion manuals focus on the uniqueness of their particular organization. These manuals also identify the type of terrain each unit fights on and the enemy they fight against. Heavy and light forces, operating independently, apply diverse techniques that emphasize different aspects of offensive and defensive operations. In doctrine, the task and purpose of missions vary. Light infantry places priority on terrain over enemy in their METT-T analysis. The likely troops available to attack the enemy also differ.¹¹ All these factors influence the METT-T analysis of the integrating command and staff. FM 71-2(1988) and FM 71-3(1988), integrate similarities and differences for armor and mechanized infantry planning and execution. However, the heavy

and light infantry manuals do not provide a method for combined arms analysis to integrate the unique doctrinal focus of heavy-light forces.

NATIONAL PARAMETERS

Secretary of the Army Michael P.W. Stone forecasts that a reduced military budget will cause adjustments in structure and closer integration of airborne, airmobile, heavy, light and special forces capabilities to meet all regional requirements. He emphasizes that the ability to quickly tailor the forces will optimize the power of contingency units.¹² The new focus requires an adaptable unit and staff that understands how organizations contribute to the fight. A staff must broaden its perspective so it can integrate other Army, joint and combined forces to decisively win the first battle.

The Army has focused on providing a realistic capability to support the nation's political initiatives for the last ten years. The design of Army units reduce the probability of armed aggression against U.S. interests and end conflict on terms favorable to the country.¹³ Replacement of forward deployed forces with forward presence units puts more emphasis on the use of contingency units. Additional reduction of forward presence units and active U.S. based forces cause contingency planners to orient on preemptive or overwhelming action to stop aggression. If contingency

forces do not stop aggression, then they must delay long enough for heavier reinforcing forces to arrive.¹⁴

General Gordon R. Sullivan, Chief of Staff of the Army, says that the Army strategic mobility program sets the goal to lift one light and two heavy divisions from the continental United States to a theater 7500 miles away in thirty days.¹⁵ A contingency oriented Army demands that planners know how to balance the necessity to deploy rapidly with the requirement to develop enough combat power with heavy-light forces.

The projected funding and stationing constraints necessitate efficient and effective use of all military forces.

The side with the preponderance of military capability can afford to waste a good deal of it. No commander...has managed to utilize all of his capability. The successful ones tend to waste far less.¹⁶

Army planners need to improve efficiency because the United States has limited active military resources. Whenever soldiers go in harms way, the people of the United States will continue to demand effectiveness.

Battles are not always won by the commander who brings the most in capabilities to the battlefield. Very often they are won by the commander who can make the most effective use of what he has.¹⁷

To meet the constraints of efficiency and the demands of effectiveness, planners need a common criterion to organize force combinations. If combinations provide a wide range of capabilities, then planners can assign the

optimum missions to each unit. The greatest challenge for the future is to develop experienced commanders and staffs that can properly task units while obtaining effectiveness and efficiency.

ARMY LIMITATIONS

The United States Army orients force design, technology, doctrine and training to provide deterrence. Over the past nine years, the Army has focused its force development efforts to provide capabilities to respond to threats at the extremes of the "full range of military operations".¹⁸ The Bradley Fighting Vehicle and Abrams Tank systems in Europe and in reinforcing stateside units have helped deter aggression of conventional forces that are similar to previous Soviet threats.¹⁹ Light division force design, integrated with deployment capabilities have helped deter third world aggression and have provided forces for "operations other than war".²⁰ The current orientation enables the Army to effectively and somewhat efficiently conduct operations other than war or war. The Army has three limitations. Doctrine does not establish methods to integrate the capabilities of diverse combat arms to transition throughout the range of operations. Contingency forces have no integrated stationing plan to enable rapid task organization. Finally, limited integrated training opportunities are available to build an institutional base of knowledge through experience and documentation.

Integration of organizations and doctrine for heavy and light force combinations outside division structures will enable an efficient and effective transition between the range of operations.²¹

The current doctrinal literature shows little effort by the Army to define the capabilities, limitations, differences and planning criterion for heavy-light force combinations.²² Limited heavy-light school instruction and training opportunities inhibit the creation of institutional documentation, cause specialization in the heavy and light communities and have an impact on the tactical execution of heavy-light operations.²³

In an attempt to find a purpose for the U.S. Army following the Korean War and under a strategy of deterrence, the United States had a strong incentive "for the Army to organize itself to prevent wars rather than fight them".²⁴ A contingency oriented Army should collocate forces that will fight together. Stationing together enables units to integrate training, rapidly task organize and deploy. Today, the Army must learn from previous mistakes by developing a stationing plan that balances the requirement to maintain military presence with the need to position forces together to attain cohesive teams. Currently, the stationing of Army units separate the heavy and light contingency forces geographically which can cause additional rifts

between two diverse organizations. Collocating heavy and light forces together balances the demands to project forces throughout the world with the requirement to rapidly mix forces to attain an efficient and effective task organization.

"Evaluating new ways of fighting are as important as the development and production of new technologies."²⁵ If units are not collocated, then the next best option is to train together. Units attempt to overcome differences in perspectives toward the conduct of operations during heavy-light rotations at the NTC. The problem is that infrequent exchanges of ideas and short duration training programs do not build institutional knowledge or cohesive teams in units or the Army.²⁶ Mistakes that occurred in World War II have happened again at the NTC in 1988, 1989 and in 1992.²⁷ These limitations prevent units from integrating their capabilities and reduce the ability of the Army to simultaneously conduct its full range of operations.

HEAVY-LIGHT DEFINED

Heavy units are armored or mechanized forces. Light units are not mechanized or armored. Heavy-light operations occur when mechanized or armored forces task organize with light infantry.²⁸ Task organizing these units provide the planner with numerous options. Heavy-light forces have diverse mobility, rates of movement, methods of operation, deployability, firepower and means

to attain protection. When properly combined, these forces provide a wide array of systems and capabilities to defeat a variety of enemy threats.²⁹

The heavy division consists of three maneuver brigades, a division artillery, a combat aviation brigade, a division support command and division troops.³⁰ Armored or mechanized infantry brigades synchronize subordinate maneuver battalions and integrate combat support and combat service support to accomplish their assigned tasks.³¹ Heavy force doctrine orients on the use of shock effects and rapid maneuver to disrupt enemy operations and destroy enemy armor, infantry and antitank guided missile units. Mechanized infantry accompanies armor in order to defeat enemy armor, to overwatch with antitank fires or suppress enemy infantry and antitank elements. Mechanized infantry can also patrol difficult terrain, clear obstacles, infiltrate and attack enemy positions, protect tanks in urban and wooded areas and act as fixing forces or pivot points for maneuver.³² When heavy forces are task organized with light infantry, the latter can conduct some of the tasks that require less firepower or tactical mobility. When light infantry reduces the number of tasks for mechanized forces, the parent unit can focus its efforts to increase the overall rate of movement and firepower of heavy units.

The missions and doctrinal orientation of the heavy

unit influence the way a commander and staff conducts an estimate of the situation. The heavy force uses METT-T analysis to determine the effects on the mobility, firepower and protection of their forces. The integrating headquarters needs to understand that some things effecting a heavy force's capabilities may have less impact on the light force. The example most used is that "no-go" terrain to armor is "go" or "slow-go" terrain to light forces.³³

FM 71-2 says that the mission of the heavy force is obtained from the "higher commander's operations order".³⁴ The "why" portion of the mission statement provides "the basis" for determining "the overall effect on the enemy", "positioning" requirements and "activities that are otherwise critical to accomplish the higher commander's plan".³⁵ Planners should integrate these factors with light infantry factors when they analyze courses of action for heavy-light forces.

Capabilities of the heavy force include rapid movement and sustained fighting throughout the battlefield. The heavy force can attack deep into the enemy's rear, defend or delay over large areas³⁶. Use of light forces or a task organization of heavy-light forces prevents heavy forces from receiving tasks that distract them from optimizing their capabilities.

The heavy force is limited by its large sound and visual signature, reduced capability to infiltrate and

lack of infantry to conduct extended operations. Heavy forces also require secure lines of communication and lack mobility, firepower and protection in very restricted terrain.³⁷ Tasks that expose these types of limitations need to have light forces included to complement the heavy forces.

The light division consists of three maneuver brigades, divisional artillery, a combat aviation brigade, a division support command and division troops.³⁸ The division is designed to provide the Army with a rapid pre-crisis deployment force oriented on "low intensity combat".³⁹ Other forms of light infantry that have a similar rapid deployment orientation, method of operation and organization are the airborne and air assault divisions. Light brigades are designed for deployment with personnel and systems to defeat other light forces during operations other than war. Augmentation with heavy forces or proper placement in restrictive terrain increases the unit capability for fighting heavier enemy forces.⁴⁰

Light infantry orients on rapid deployment operations, hostilities short of war, seizing and holding restrictive terrain. Infiltration and rapid movement into rear areas are oriented on disrupting and deceiving the enemy.⁴¹ If these types of operations are not available, then the planners should task organize light infantry with heavier forces, transportation

or engineer support. Augmentation provides the coordinating headquarters with additional capabilities.

The light force uses METT-T for the analysis of the situation as part of the troop leading procedures.

The light infantry mission is derived from the operations order of the next higher unit and the mission and intents of units one and two levels above. The mission focus comes from "the commander's intent, the restated mission and the priority intelligence requirements".⁴² Emphasis on the commander's intent is due to the requirement to conduct semi-independent tasks at small unit level in order to attain synergistic effects on the enemy. Tasks derived from the order are analyzed along factors of "terrain, enemy forces, friendly forces or a combination of these factors".⁴³ The integrating staff needs to understand these factors and the factors that influence the heavy forces when they task organize a heavy-light force.

Light infantry has the ability to infiltrate through or around the enemy because of its small physical, thermal and electronic signature. The force is also capable of conducting operations in urban, rear or restricted terrain.⁴⁴ Light infantry units need minimum additional assets to provide these types of capabilities.

The limited number of vehicles and aviation available to light infantry constrains their tactical

mobility. The low density of artillery and antitank weapons also reduce the ability of the force to sustain a high volume of fire against heavier enemy forces.⁴⁵ The planner must closely manage limited resources, phase the light forces earlier into the operation or focus their combat power on specific objectives to overcome the limitations.

The heavy-light concept is a viable option for combat operations. The primary strategic reasons for heavy-light are limited strategic airlift and the need for rapid worldwide response. The increased number of tasks required to facilitate mobile operations are the reasons light forces need to operate with armor and mechanized units. The reasons for the heavy forces operating with light infantry are the requirement for tank killing assets, tactical mobility and protection against the threat of armored and mechanized forces throughout the world.⁴⁶

The planning for heavy and light forces is drawn directly from each organization's doctrine and identifies a subtle difference between the units.

A tanker halts between moves; an infantryman moves between locations. This simple statement depicts two ways of life and thought as different⁴⁷ as those of a sailor and a landsman.

Planners need to understand the differences, no matter how simple, before beginning to develop a concept.

THE NEXT CONFLICT

Peacetime innovation is dependent at the intellectual level on an assessment of the security environment that leads to a perceived need for innovation which, in turn, leads to new concepts of military operations.⁴⁸

The current national military strategy of the United States is based on the foundation of strategic deterrence and defense, forward presence, crisis response and reconstitution.⁴⁹ Emphasis continues to shift toward crisis response as the Army reduces in size and forward presence declines. This variation in the security environment is the seed for change in military operations.

The current and forecasted strategic military deployment capability for the next three to six years are designed around the use of United States based contingency forces and limited forward presence Pacific and Atlantic forces. These forces meet the needs of crisis response missions by defending key facilities and holding positions until the United States builds overwhelming force to stop regional threats.⁵⁰ The requirement to conduct deployment and entry to defend key facilities, to assist in the transition to decisive operations once overwhelming forces are on hand and the initiation of restoration are ideal tasks for a heavy-light organization.⁵¹ A predominantly light force with limited heavy force support can rapidly deploy to establish and protect arrival airfields and port

facilities. The predominantly heavy force with light force augmentation can conduct operations to facilitate the offensive phase by conducting breaches, deception operations or rapid and preemptive counterstrokes to seize pivots of maneuver for heavy unit attacks against the enemy. A light force with heavy force augmentation can conduct tasks to protect the flank of forces, secure lines of communication and logistics sites as the main effort conducts decisive operations. The light force, with heavy force protection, can also begin restoration operations with special operating forces, medical, military police and civil affairs/psyops organizations. The future dictates the requirement to tailor forces that are capable of conducting a full range of military operations.

CRITERIA FOR INTEGRATION

The application of combined arms...is complex and demanding. It requires well trained leaders and units, clear and straightforward planning, careful coordination, thorough rehearsals, and precise execution. When put together deftly (emphasis added), however, it paralyzes the enemy and opens the way to quick, decisive victory.⁵²

The requirement to memorize another set of concepts is not the intent behind the introduction of a new set of criteria. "As the officer progresses to field grade rank, he must be taught to supplement his experience with analytical thought processes which will help him make better judgments."⁵³ Practitioners do not

have time to memorize a handful of ideas to apply in the heat of battle. These concepts are for training a staff that has a working knowledge of how to fight their own organization but need additional perspectives on how to use different forces to increase tactical flexibility.

"The experience of some officers is too narrowly focused for them to gain a full understanding of the capabilities of higher level units and of the support available outside their own units."⁵⁴ A review of the criteria aids in training so that during application there is a broader understanding of how to effectively and efficiently employ a heavy-light task organization.

The current criteria for analysis is based on the use of METT-T. During heavy-light operations, without a cross reference, the staff could develop a one-sided perspective instead of optimizing all unit capabilities.

The number and variety of modern weapons are such that no single system can be expected to fight...to win; ...their integration into close knit, highly effective battle teams is essential to survival and victory.⁵⁵

The difference of heavy and light perspectives for missions, enemy, troops and terrain were highlighted earlier. Time analysis perspectives also differ. For light infantry, time analysis focuses on positioning forces, rehearsing and conducting reconnaissance. The execution phase of an operation is short in duration because of the limited sustainment and protection available to light forces.⁵⁶ Finally, light infantry

time lines vary if the method of movement changes. Footmobile, vehicle and airmobile variations are so diverse that multiple timelines are normal.⁵⁷ Heavy forces conduct continuous operations because they have the sustainment capability. This capability allows the heavy units to focus on the time required to complete multiple moves and to sequence subtasks.⁵⁸ Currently, a cleverly coordinated plan requires a cross reference from different doctrinal manuals to ensure heavy and light factors are incorporated into the analysis.

Planners need to assign tasks to protect the force or regain the initiative. Analysis must identify how to adapt to change, unhinge enemy attempts to accomplish their tasks and overcome mobility differences due to organizational constraints or enemy actions. A criteria that focuses on these types of requirements can broaden the brigade staff's perspective during METT-T analysis. Carl von Clausewitz's "forms of action", General Edwin H. Burba's "combat functions" and Brigadier Richard E. Simpkin's concept of "tempo" create a broader perspective to apply when heavy-light forces are task organized together.⁵⁹

FORMS OF ACTION

The components of battle can be joined in a limitless array of complex combinations. Within every offense, there are elements of a defense; within every defense an offense.⁶⁰

Clausewitz coins the phrase "forms of action"

when he addresses the aspect of the attack and defend tasks within the execution of all operations.⁶¹ If a staff conducts a mission analysis, numerous tasks are identified. Some of the tasks are essential and others support the mission by executing attack or defend forms of action.⁶² Assigning supporting tasks enable the main effort to focus on an essential task. Analysis also identifies transitions that require resources to maintain freedom of action.⁶³ The heavy-light task organization provides the planner with a versatile economy of force unit that has diverse resources to transfer from one form of action to another.⁶⁴ Forms of action analysis aids in identifying the optimum heavy-light tasks.

In the attack form of action, Clausewitz identifies the causes for attaining or loosing strength. Attack tasks gain strength by increasing an opponent's losses, destroying combat service support, breaking cohesion or seizing terrain and key resources that sustain the enemy's operation.⁶⁵ Light forces contribute to gaining strength by locating enemy weaknesses, conducting covert breaches and executing dispersed attack tasks. Heavy force attack tasks develop momentum by moving through covert breaches. Heavy forces also destroy key resources that light forces identify and counterattack enemy reactions to light infantry dispersed actions.⁶⁶ Attackers loose strength when forces become exhausted,

lines of communication need security and combat power is dissipated to fix or neutralize pockets of resistance.⁶⁷ Heavy-light combinations provide an economy of force team that can conduct tasks so the main effort can maintain strength. Light forces locate the enemy using search and attack. Once located, heavy forces gain contact, fix and destroy pockets of resistance or enemy attempts to sever lines of communication.⁶⁸ The heavy-light, foot-mechanized-airmobile capability, provides the unit with an option to rapidly position forces on any terrain to sustain an attack or relieve exhausted forces.

Clausewitz says that waiting for the enemy to attack followed by an action to go into the attack are the two components of the defend form of action. He states that success in the defense requires plans that protect throughout the defense, reposition forces based on enemy actions, avoid unfavorable engagements and establish a strong backbone to hinge the defense.⁶⁹

Heavy-light task forces can counter infiltrations and delay enemy supporting attacks to protect the force and prevent unfavorable engagements.⁷⁰ Light infantry secures forested areas, mountain passes and key terrain in depth to facilitate the repositioning of heavy units.⁷¹ To gain the initiative, units disrupt enemy lines of communications (LOC) or logistics bases and conduct raids or diversions that dissipate enemy strengths. Counterattacks on identified or developed

enemy weaknesses also gain initiative.⁷² The light forces can locate enemy lines of communications while producing a relatively small signature that the enemy cannot detect. The heavy force focuses on destroying targets the light forces identify and returns before the enemy can react. Heavy-light task forces execute these same tasks for feints and counterattacks.

The forms of action provide planners with a means to identify tasks that require versatility to shift from attack tasks to defend and back again. The ability to transition is acquired from the diverse capabilities that heavy-light forces provide. The staff's understanding of the tasks that both forces conduct to complement each other's strengths and protect weaknesses can broaden its ability to look at the "mission" portion of METT-T analysis.

COMBAT FUNCTIONS

General Edwin H. Burba, Jr., Commander in Chief for Forces Command, uses "combat functions" to identify tasks that combat forces execute to support an operation. Combat functions are reconnaissance, counterreconnaissance, fixing, creating weakness and maneuver.⁷³ The functions broaden a staff's perspective when they conduct the "enemy" and "troops available" portion of METT-T analysis.

Using visual observation or other means, reconnaissance obtains information about the enemy's

actions or intentions and the terrain that supports operations. Reconnaissance is conducted by patrol, by fire or in force.⁷⁴ Reconnaissance fundamentals emphasize maximum reconnaissance forces forward, orientation on an objective and gaining and maintaining contact with the enemy.⁷⁵ Due to their design, light forces prefer reconnaissance by patrol and heavy forces are the best organized to conduct reconnaissance in force.⁷⁶ The optimum tasks for heavy forces use systems that provide long range observation, firepower and protection. Heavy reconnaissance locates obstacles, anti-armor systems and potential counterattack locations that disrupt momentum.⁷⁷ Heavy forces also provide protected, mobile observation posts and overwatch for dismounted reconnaissance.⁷⁸ Light force reconnaissance identifies shortcomings in enemy tactics by observing their actions. Light units also identify organizational weaknesses that require minimum combat power to defeat.⁷⁹ The best use of light forces will establish close observation posts, provide guides to facilitate heavy movement and conduct airmobiles to assess the value of specified areas for future operations.⁸⁰ The protected capability of heavy units and covert efforts of light, combine to provide a diverse means to penetrate enemy attempts to deny information.

Counterreconnaissance is defined as passive, active and reactive measures to stop or deceive enemy

reconnaissance efforts.⁸¹ Heavy-light forces establish normal passive measures of camouflage and local security to confuse enemy attempts to find the main effort.⁸²

The small signature of the light force allows it to move undetected and establish numerous positions that deny enemy attempts to infiltrate.⁸³ Heavy and light forces

provide the proactive measures of patrols, electronic countermeasures, search and attack and ambushes.⁸⁴

These measures keep enemy heavy and dismounted forces from understanding the defensive scheme. They also prevent the enemy from establishing positions to disrupt the defense with calls for fire. Highly mobile heavy forces provide reactive measures against enemy heavy reconnaissance forces by designating no movement areas tied to planned targets, attack by fire positions and harassing obstacles.⁸⁵ The staff contributes to counterreconnaissance by establishing a heavy-light task force that is too complex for the enemy to overcome.

Fixing is action to prevent enemy movement or withdrawal from a specific place or for a specific period of time.⁸⁶ This is achieved by using firepower, countermobility, psychological effects or any means that slows, alters, stops or prevents the enemy from displacing during his defense or attack.⁸⁷ Heavy units use stand-off capabilities to fix while light units absorb enemy actions through distributed engagements. The heavy force direct fire capability and light force

close engagements from undetected locations provide a diverse fixing force that the enemy cannot concentrate against.⁸⁸ Flank counter mobility is attained by using light forces, engineer support and heavy force overwatching fire to fix enemy counterattacks or spoiling attacks.⁸⁹ The psychological aspect of fixing is attained initially by conducting light infantry infiltrations to seize an axis for heavy force surprise attacks. After these successful surprise attacks, light infantry attacks and heavy force demonstrations are a psychological means to fix enemy efforts.⁹⁰

Actions that disrupt an enemy's plan, organization, control apparatus or moral fiber will create weakness.⁹¹ This is attained by exposing the enemy's vital elements or positions, denying mutual support, delaying, creating gaps or isolating.⁹² "In attacks on anti-tank belts and zones of works, method must go hand in hand with surprise, and cunning must reinforce brute force."⁹³ Light forces identify enemy vital elements of command and control, counterattack and artillery positions. Heavy force attacks disrupt, delay or destroy the vital elements. This heavy and light combination uses concentrated shock effect to create weakness in enemy offensive or defensive operations. Coordinated with a main attack or counterattack, this force causes enemy to create weakness by shifting units from other areas to counter the threat.⁹⁴

Maneuver is the movement of forces, supported by fire, to achieve positional advantage for destruction or threat of destruction of enemy forces.⁹⁵ Heavy-light units establish the conditions to maneuver by providing a protected base to fire from or a secure area to rapidly move forces through. An economy of force operation facilitates positional advantage for the main effort. Heavy-light skirmishes gain time and space to allow main forces to switch direction.⁹⁶ Seizure of unoccupied enemy territory also facilitates maneuver by controlling an alternate axis. Light infantry infiltration provides a covert means to occupy terrain or air assault enables rapid occupation. Reinforcement by heavy forces establishes a heavy-light unit. Heavy-light units have the diversity to link up and guide a heavy or light unit. These units also have the combat power to retain terrain until the main effort shifts its axis to gain a positional advantage over the enemy.⁹⁷

Planning requires an understanding of the troops and equipment that are suited for each task and the type of enemy the heavy or light force is designed to counter. Heavy forces key on maneuver, fire support and engineers because these assets provide the capability for mobility and firepower.⁹⁸ Light forces analyze support relationships, locations of other units and successful tactical techniques because of their orientation to conduct short and violent actions.⁹⁹ The combat

functions enable the staff to broaden its perspective on the aspects of enemy and troops available for heavy-light operations. Properly tasking the heavy-light task force to conduct any of these functions will provide depth to the commander's plan and enable freedom of action while degrading the enemy's ability to act.¹⁰⁰

TEMPO

Brigadier Richard E. Simpkin, during an analysis of maneuver theory, introduces tempo as a function of mobility, rate of advance and responsiveness to change.¹⁰¹ This concept identifies "terrain" and "time" analysis differences in heavy and light forces. The concept provides the staff with a method to bridge the gap between two forces by using the capability of one unit to overcome constraints that the organization, terrain or enemy place on the other unit.

The relative mobility of a unit is based on its ability to move over specific types of terrain.

...Mechanized and quasi-guerrilla forces are essentially complementary. The one uses good ground, the other bad. The delay, disruption and weakening achieved by either one are prerequisites for the other to get into business.¹⁰²

The ability to maximize mobility will increase the options for the units by expanding the amount of terrain the force can move around and through. Light forces can precede other forces into a restricted mobility area and secure a forward base, identify routes around or through

the area and fix or destroy enemy forces attempting to delay heavy force movement. Heavy forces can do the same for light forces in relatively open terrain. Alternating the heavy or light unit's method to attain mobility based on terrain or enemy effects sustains a high tempo.

The rate of advance is the average number of miles the force can travel during a period of time.¹⁰³ The heavy-light task force uses mobility advantages and the capabilities to move on foot, in tracked vehicles and in airmobile operations to obtain a rate of advance greater than a pure force. Successful air assault insertions can stun and fix enemy forces to increase the relative rate of advance of a heavy force. Heavy-light forces can follow and support to destroy pockets of resistance. This allows the main effort to bypass pockets of resistance and continue at a high rate of advance.¹⁰⁴

Responsiveness to change is based on physical factors. The factors are patterns of logistical support, patterns of combat support, time it takes to complete a move, command and control, security, effects of deception and quantity and quality of information.¹⁰⁵ An integrating staff increases the options a task force has available to adapt to change by understanding each unit's needs and methods of operation.¹⁰⁶ Light infantry logistical support orients on aerial resupply, limited support needs and preconfigured loads. Heavy

forces have self contained capability with emphasis on fuel, ammunition and recovery.¹⁰⁷ Light infantry combat support provides close protection for dispersed operations. Heavy force firepower and mobility supports concentrated maneuver.¹⁰⁸ Mobile communications of heavy forces and decentralized command and control of light provides a wide spectrum of options. The diverse reconnaissance and counterreconnaissance capabilities from the task force fill the requirements for security and minimize the effects of deception. Airmobile and mechanized means reduce the time it takes to complete moves and gives the unit flexibility to change.

Use of mobility, rate of advance and responsiveness to change provides a means to identify limitations that time and terrain place on the heavy and light forces. Proper use of tempo enables the unit to act faster than the enemy, anticipate change and reduce the effect of friction by using diverse heavy-light capabilities.¹⁰⁹

HISTORICAL PERSPECTIVE WORLD WAR I

The first modern heavy-light task organizations occurred with the introduction of the tank at the Somme in 1916. Inexperienced tank units, poor terrain and limited numbers of armored vehicles made this operation uneventful.¹¹⁰ The battle of Cambrai, in November 1917, was the first successful heavy-light operation. Limited success came from larger concentrations of heavy forces, better understanding of terrain effects on tanks and the

integration of artillery and infantry.¹¹¹ This operation gave future leaders of World War II a glimmer of hope for the integration of heavy and light forces.

The doctrine for World War I oriented on infantry with support obtained from the artillery and cavalry. Commanders viewed the tank as an auxiliary arm for infantry or horse cavalry.¹¹² However, tanks employed in unit formations as large as brigades.¹¹³ This affiliation should have caused the heavy-light team to flourish. There were many reasons why the heavy-light concept was not effectively adopted. The major problems were lack of doctrine for the integration of heavy and light forces, little training between the two formations and tanks were in the developmental stages.¹¹⁴

A METT-T analysis of the operation provides some insights into disconnects that occurred when the British used a single unit perspective. From an infantry perspective, the unit's mission focused on softening the first German defensive system, capturing the town of Cambrai with cavalry and cutting off the German supply lines.¹¹⁵ An armor perspective was not allowed to influence the course of action. Due to the lack of armored forces to reinforce or exploit success, armored personnel viewed the mission as a raid.¹¹⁶ The enemy, commanded by Crown Prince Rupprecht, developed a triple trench system with three belts of wire, machine gun nests and strong anti-tank defenses oriented around the

town of Flesquieres. The infantry oriented the attack on the defenses and conducted a piecemeal attack against the unconsidered anti-tank defenses. The unit also assessed the terrain incorrectly. The infantry's intent was to break through to the enemy's rear, but rolling hills and woods would not support this type operation.¹¹⁷ Fog helped the attackers surprise the enemy by hiding the movement of troops.¹¹⁸ The friendly troops consisted of six infantry divisions, 474 tanks, a mobile reserve of five cavalry divisions and one-thousand artillery pieces. The unit did not fire a traditional, multiple day artillery bombardment.¹¹⁹ The control measures for the artillery plan tied movement of forces toward phase lines or objectives. Front line troops passed back their location and gained approval before moving troops or artillery fires forward. Cavalry was employed independently and tanks were parceled out to infantry divisions with no tank reserve.¹²⁰

The battle began on 20 November and German counterattacks stabilized the attack by the end of the month. Additional attacks by Germans pushed the British back to their original lines.¹²¹ Use of the forms of action, combat functions and tempo, would have provided the British with an expanded perspective to identify key requirements for success in the battle of Cambrai.

The forms of action could have identified

additional attack and defend tasks to increase the success of the mission. Attack tasks would have shown where and when to commit reinforcements. Task organizing a cavalry, tank and infantry combination would have given the unit a more versatile reserve. A supporting attack task to destroy anti-tank defenses with closely integrated tanks and infantry could have facilitated the infantry main attack. A heavy-light defend task would have helped identify positions for tanks to use for attacks by fire to support infantry operations around towns and against anti-tank defenses.

The combat functions could have identified where the heavy-light combinations needed to conduct counterreconnaissance, fixing and maneuver tasks to improve the operation. Infantry along potential enemy counterattack avenues with tanks conducting spoiling attacks would have provided a counterreconnaissance and fixing force. Tanks and infantry could have secured routes into the enemy rear to allow counterattacks to effect enemy cohesion even with the weak British reserve. Attacks by armor and infantry on command and control or artillery also would have helped unhinge German defenses.¹²²

Identifying methods to maximize the mobility and rate of advance of heavy and light forces would have improved tempo. Tank and infantry combinations could have destroyed pockets of resistance.¹²³ The main

effort would have bypassed and attacked deeper while an economy of force unit followed to destroy pockets of resistance. The assessment also could identify the method to change from offensive to defensive operations. A heavy-light force could have provided a mobile, protected and diverse base to build into a defense.

During World War I there were attempts to combine infantry with tanks. Heavy-light concepts were just starting to develop despite the limited amounts of tanks and the lack of technology to provide the systems with any large amounts of firepower, protection and mobility. The infantry perspective of this period also prevented units from optimizing the tanks' capabilities. Using one of the first modern heavy-light operations of World War I highlights the way that the three criteria could have identified complementary tasks, broadened analysis of capabilities and provided additional precautions for any limitations.

HISTORICAL PERSPECTIVE WORLD WAR II

Heavy-light task organizations during World War II were not as distinct as in World War I. Many of the infantry forces were a prelude to motorized or mechanized infantry. Heavy-light planning requirements were still needed because terrain restrictions forced units to use light infantry methods in parts of North Africa, Italy and France.¹²⁴

At the beginning of World War II, battalion level

manuals and training exercises did not determine whether infantry and armor cooperation or pure formations were correct. Doctrine did not define when large armor counter strokes or parceling out armor to support infantry attacks were appropriate.¹²⁵ In North Africa, armor tended to maneuver on its own and leave infantry exposed to concentrated German firepower.¹²⁶ Doctrine emphasized that the armored division was to exploit and pursue.¹²⁷ The infantry division closed with the enemy to capture, destroy or hold a position and repel hostile attack.¹²⁸ The difference in missions increased the need for more infantry support in armored and infantry divisions.¹²⁹

A review of the operations against the Germans in North Africa using METT-T shows that single perspective analysis cause tactical shortcomings. Independent actions by armor or infantry and lack of additional combined arms support contributed to the initial failure by U.S. forces. After arriving in Africa, the 1st Armored Division was committed to assist the French who were surrounded at the town of Faid in Tunisia. General Sir Kenneth A.N. Anderson gave Major General Lloyd R. Fredendall's II Corps the mission to "restore the situation at Faid". Combat Command A, 1st Armored Division, counterattacked to assist the French in Faid. CCA failed at Faid, and on the Sbeitla plain. German attacks forced II Corps to establish defenses around

Kasserine and Sbiba passes.¹³⁰

The Allied heavy-light forces engaged a combination of armor, infantry, panzer grenadier, anti-tank and artillery forces. Enemy air support also gained local air superiority. Axis forces were able to kill, wound or capture 6300 personnel and destroy 183 tanks, 104 half-tracks, 208 artillery pieces, 512 trucks and large amounts of supplies.¹³¹

The troops available were the elements of the 1st Armored Division, one regiment from the 34th Infantry Division and one regiment from the 1st Infantry Division. II Corps had a mixture of other forces from a British armored-car regiment, several artillery and tank-destroyer battalions and a ranger battalion.¹³²

The terrain in North Africa was undulating countryside. This terrain required a higher ratio of infantry compared to the open desert between Egypt and Tunisia.¹³³ Raging sandstorms were the norm during this period and it effected the troops ability to identify friend or foe. Weather also limited the ability to use close air support.¹³⁴ Daylight operations by II Corps usually failed. Daylight attacks gave the Germans the opportunity to mass direct fire, indirect fire and air support against piecemealed attacks. Night operations by the Germans were successful against the Allied armor forces.¹³⁵

The final defense around Kasserine pass shows that

out of necessity and possibly by accident, a heavy-light task organization can slow and stop Rommel's attacks.¹³⁶ The use of the forms of action, combat functions and tempo can assist planners in organizing a coordinated armor and infantry effort before they reach the last effort defense of Kasserine.

The forms of action provide the perspective to analyze the mission and identify where to optimize the armor-infantry team. The defend form of action provides tasks to accomplish during the initial allied attacks. Placement of anti-aircraft systems with protection from infantry and anti-tank guns can support the tank and infantry thrust into Faid. This task protects the force from flank and aerial attacks. The transition from the offense to the defense identifies the attack task to establish local armor counterattacks around friendly infantry and anti-tank positions. This task stops enemy attempts to go on the offensive.

The use of the combat functions show that a heavy-light force can provide overwatching and attack by fire capabilities to fix enemy counterattacks. This secures the route for the reconnaissance battalion that reinforces the initial attack on Faid. The create weakness function highlights the task to locate enemy observers with infantry and suppress or destroy them with artillery. Execution of this task prior to the armor and infantry attack on Faid reduces the enemy's ability

to concentrate his combined arms. After tanks establish hasty defenses west of Faid, counterreconnaissance tasks to the armor and infantry can prevent German surprise attacks through the sand storms.

Mobility and the rate of advance did not effect either side. Analysis of the requirement to change from the attack to the defense shows that a heavy-light reserve is available. This force consists of an uncommitted battalion of infantry, a battalion of tanks and a company of tank destroyers of Combat Command C. This force fails because it is too close to the front and improperly dug in. This placement provides no additional time for the division to transition to the defense.¹³⁷ The use of the heavy-light organization influences the enemy's physical factors of tempo. Raids on logistics lines at night upset support systems and security. Use of multiple and diverse target arrays by conducting a feint or demonstration during the main attack dissipates the effects of fire or air support. Heavy-light deception also causes the Germans to divert ground assets away from their main effort. II Corps has the forces to conduct all of these tasks. Lack of planning and experience prevent their development.

HISTORICAL PERSPECTIVE- SWA AND NTC

Operations in Southwest Asia in 1991 were successful. Success made it difficult to find fault with any coalition operations. However, a broader analysis

could have provided leaders with additional options to achieve success. Critical analysis of the ground campaign identified additional methods that optimized Army capabilities. A look at the operations with heavy and light forces showed that similar patterns occurred in World War I and in World War II. An example was that VII Corps did not integrate heavy and light force combinations into their operation. Task organizing heavy and light forces together could have increased the tempo and versatility of VII Corps.¹³⁸

A heavy-light task organization was available to VII Corps by obtaining forces from XVIII Corps or uncommitted stateside units. The METT-T conditions showed the perspective that VII Corps used to accomplish their mission. Based on analysis, the mission was to attack as far west in zone as possible to envelop the enemy, penetrate through the thin Iraqi defenses and quickly close with and destroy the Republican Guard Forces Command. The enemy consisted of the Iraqi VII Corps defending forward. Opposing the U.S. VII Corps were four infantry divisions with the Iraqi 52d Armored Division as the tactical reserve. In greater depth was the 12th Armored Division acting as the theater reserve to block penetrations. At even greater depth was the Tawakalna Mechanized Division, the Medina Armored Division and the Hammurabi Armored Division from the Republican Guard Forces Command. The troops available

to VII Corps were the 2d Armored Cavalry Regiment, 1st Infantry Division, 1st Armored Division, 3d Armored Division, 1st Cavalry Division, 1st British Armored Division, 11th Aviation Brigade and the 4-229th Attack Helicopter Regiment.¹³⁹ The area covered by VII Corps was 260 kilometers of open desert with limited road networks.¹⁴⁰ The time to conduct the operation was open ended and depended on mission accomplishment. The actual time was 89 hours from commencement of the attack until the cease-fire.¹⁴¹ The operation continued after the cease-fire for another 46 days of restoration operations.¹⁴²

The defend form of action could have provided additional heavy forces for exploitation missions. The British 1st Armored Division established flank security to protect the VII Corps lines of communication.¹⁴³ A heavy-light force could have established itself along the flank or around the logistics bases to protect against enemy counterattacks. This force oriented defense would allow VII Corps to use the British for tasks that required more mobile forms of action. Heavy-light forces with aviation and close air support could provide an economy of force to locate and defeat enemy counterattacks.

A review of the operation showed opportunities for heavy-light forces to provide combat functions that could increase the capability of the corps attack.

Heavy-light forces with artillery counterbattery protection could have conducted tasks to create weakness by executing initial VII Corps breaches. This course of action would have allowed the majority of the 1st Mechanized Division to continue through the gap to support the main attack. The maneuver function identified air assault and mechanized reinforcements could secure blocking positions to close off the Basra pocket. This maneuver would have prevented 50 to 60% of the Republican Guards from escaping. Finally, the maneuver function would have identified the requirement for heavy-light to conduct a demonstration. The 1st Cavalry Division directed high mobility combat forces to conduct this economy of force operation suited for a less mobile heavy-light force.¹⁴⁴

The ability to facilitate tempo was an ideal task for heavy-light forces during this operation. The acceleration of the initial attack by 15 hours caused problems for the VII Corps when it ran short of fuel and had to wait 18 hours for tankers to arrive.¹⁴⁵ A corps plan to establish a refuel base similar to the 101st Air Assault Division could have reduced the effects of the physical factors on VII Corps tempo. A light force task organized to air assault and link up with heavy forces could assist in providing refuel and logistics security. Additional heavy-light combinations would have increased rate of advance of the armored units by taking over the

requirement to stop and take care of prisoners of war or refugees.¹⁴⁶

The National Training Center has conducted heavy-light training rotations since the certification of light infantry in 1985. Many lessons learned have been documented by the Center for Army Lessons Learned. The most common shortcoming was units did not cross attach heavy or light forces to gain agility and depth. Most units executed parallel missions with the heavy and light forces executing independent tasks. Opposing forces attacked or defended against one type of threat and shifted their effort to defeat the second threat.¹⁴⁷ When forces were mixed, it presented the enemy with a diverse threat and caused the enemy to fragment their ability to create overwhelming combat power.¹⁴⁸

APPLICATION OF THE THREE CRITERIA

Brigade planners can apply the three criteria to broaden their perspective of METT-T analysis when they conduct heavy-light operations. The staff analyzes the mission to identify the specified and implied tasks. Forms of action will identify additional heavy-light tasks that provide an economy of force measure to protect the force in offensive operations or facilitate regaining the initiative in the defense. METT-T analysis also identifies the friendly forces available and enemy capabilities and limitations. The combat functions will identify additional diverse heavy-light

combinations to confuse or defeat a variety of enemy situations. Analysis of time and terrain shows where a single unit limitation can occur. Use of the heavy-light mobility, rates of advance and ability to change permits the unit to adapt to potential terrain and time constraints. A properly organized heavy-light force provides a variety of combat support, combat service support, command and control, security and deceptive measures to increase the capabilities of the organization.

CONCLUSION

Light and heavy forces have utility fighting together on future battlefields. Combining two diverse organizations provides a more versatile force. METT-T analysis is a method to assess the heavy-light situation if planners understand each unit's capabilities, limitations and preferred methods of employment. Lack of experience can cause a staff to conduct a METT-T analysis using the capabilities framework of only one unit. To broaden the perspective of METT-T analysis, planners can use forms of action, combat functions and tempo criteria. This additional analysis considers the methods that heavy and light units use to generate combat power. Identifying forms of action tasks that focus combat power will improve unit versatility and initiative. The combat functions provide a more thorough comparison of capabilities for friendly and enemy units.

Efficient distribution of combat functions to both organizations, ensures that both units' strengths are complementary. Assessment of tempo identifies the limitations that terrain and time can place on the unit. Diverse methods of mobility and rates of advance in a heavy-light force, permit the unit to overcome the limitations and maintain its agility.

Stationing heavy and light forces together at the same post or permanently assigning light infantry round out brigades to heavy divisions can increase mutual understanding. Habitual relationships between divisions and exchange of operations, fire support and logistics liaison officers enable forces to rapidly mix forces for contingency operations. Units also need longer integrated training programs prior to Combat Training Center (CTC) and Battle Command Training Program (BCTP) rotations. These training programs need to develop closer working relationships between units by establishing integrated standard operating procedures. Divisions should document techniques based on training results and professional development exchange programs between heavy and light units. Locating branch schools at the CTCs and integrating heavy-light task organizations into tactical problems will bring the documentation of lessons learned closer to doctrine. Schools should send institutional training teams to divisions to document the methods that need to go into

doctrine. Finally, the armor and infantry schools need to produce a heavy-light manual that is similar to FM 71-2J. Production of this manual will force the Army to integrate the tactics, techniques and procedures that make heavy-light operations successful. Once experience levels for integration have improved, the field manual should progress to a doctrinal manual like FM 71-2.

The Army continues to improve the capability to deploy rapidly with the proper mix of forces to defend national interests. Until doctrine and training can develop a better understanding of heavy-light capabilities and limitations, planners need a means to broaden their perspective. The three criteria provide a means to synthesize diverse doctrine and METT-T analysis into the application of combat power. Synthesis helps synchronize forces to obtain agility, versatility, and depth in heavy-light operations. Increased understanding between heavy and light forces fosters initiative, which is key to maneuver warfare.

ENDNOTES

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