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BATTLE SPACE — THE COMMANDER'S TOOL ON THE BATTLEFIELD OF THE FUTURE

by

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(The ideas and examples I have chosen to express the doctrinal notion of battle space reflect the professional opinions and analyses of numerous leaders at the Armor Center and throughout the Army. In hopes of generating thought and discussion on the matter, I asked Major James D. Brewer to work as editor for this article, but I will answer for its veracity and applicability.)

Introduction

Some of the greatest battles in heavyweight boxing history took place between Muhammed Ali and "Smokin' Joe" Frazier. Their pugilistic struggles of the 1970s, which forever claimed a place in boxing history and legend, featured two warriors with very different, yet effective, fighting styles. Ali was a true boxer who preferred to use his jab to keep Frazier at long range, only moving in close when he could do so safely. He would "float like a butterfly and sting like a bee," keeping in constant movement and using the entire ring to his advantage. Frazier, on the other hand, was an in-close fighter who sought to move inside Ali's jab, cut off the ring so Ali could not escape, work the body, and slug it out where he had an advantage in punching power. Victory in each Ali-Frazier fight depended upon which fighter could impress his own style and his own strengths on the other, i.e., the warrior who could control the fight.

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With combat, as with boxing, victory may not go to the side with the biggest weapons, the fastest vehicles, or the most troops. Victory goes to the force that can control the battle. Like the heavyweight boxer, the commander who can impress his vision of the battle upon his opponent, best use his own strengths and nullify his opponent's strengths, and control the ring, will be victorious. The new FM 100-5, *Operations*, offers a concept the commanders can use as a planning and execution tool to help them impress their will upon the enemy and control the fight. This new way of thinking about combat is called battle space, and is defined as:

... a physical volume that expands or contracts in relation to the ability to acquire and engage the enemy. It includes the breadth, depth, and height in which the commander positions and moves assets over time. Battle space is not assigned by a higher commander and extends beyond the commander's area of operation. It is based on the notion that commanders expand their thinking to develop a vision for dominating the enemy and protecting the force before any mental constraints are emplaced, such as overlays depicting phase lines, boundaries, and arrows.¹

Battle space provides a framework for commanders to view potential missions, forcing their thoughts from physical restrictions and allowing them to consider the mission, enemy, terrain, time and tactics (METT-T) uninhibited by externally imposed graphics. A tool for all levels of command, from squad leader to corps commander, battle space offers a holistic look at fighting an effective fight. It is a way to think about fighting — a visualization by commanders at every level of the entire battlefield and all phases of the campaign and operation. As battle space becomes a part of our doctrine, it also becomes what TRADOC Commander General Frederick M. Franks, Jr. calls a “statement of how we intend to fight and win our nation's wars, as part of a joint, and often coalition, team.” It becomes a prime element in that “body of ideas that conditions how we think about operations, the conduct of war.”²

Historical Considerations

While the term “battle space” is a new and important label for a critical aspect of command, the concept is as old as military history. Throughout history, seasoned leaders have experienced a heightened awareness or increased sensitivity to the nuances of battle after only a few months in combat. Hannibal at Carthage developed an ability to visualize success and, more importantly, recognize critical points where he might fail, i.e., crossing the mountains to attack the Romans. Wellington at Waterloo understood when, where, how and why he should meet Napoleon and defeat him.

On 21 December 1944, Major General Hugh J. Gaffey was commanding the 4th Armored Division in III Corps just north of Arlon, Belgium. With the 101st Airborne Division surrounded some 130 miles to its north at Bastogne, the 4th Armored Division, along with the 80th and 26th Infantry Divisions, received the mission to rescue the encircled 101st. General Gaffey was a veteran officer whose name was associated with feats of speed and daring in mechanized warfare. His tactics and techniques were simple: “If the ground and the enemy combined to thwart the tanks in the areas originally selected, then {immediately} find another spot where the enemy might be less well situated to face a mechanized threat.”³

A subordinate of Gaffey's, LTC Creighton Abrams, was commander of the 37th Tank Battalion. It was said by Brigadier General Roberts that "Abrams, when he got into combat knew everything that was going on. How he knew it, nobody knew, but he did. He knew where every tank was. He knew where every piece of equipment was, and he could command and move his outfit and always defeat the enemy in front of him. It was just that simple."⁴

These two leaders blended their understanding of battle space to lead their magnificent soldiers on a bold and daring rescue of the 101st Airborne Division; and the history of the 37th Tank Battalion {Task Force} provides an excellent example of what happens when a commander's vision of the battlefield incorporates agility, initiative, versatility, depth and synchronization. Within 72 hours, the 37th Tank Battalion {Task Force} executed these varied missions:

- trailed in reserve;
- attacked on axis;
- guarded the division flank;
- moved to the rear;
- attacked on the opposite flank.

Such maneuvers in the face of enemy opposition call for a special touch, what the Germans call a "Fingerspitzengefühl," or fingertip sensitivity for the right action at the right moment. Napoleon had his *coup d'oeil*, a glance at terrain that brought into focus all of his knowledge and experience, and set into motion a series of quick decisions concerning how and where to deploy. Major John Buford understood such a nuance of command, applying the notion of battle space when he selected terrain to oppose Confederate General Henry Heth's initial movement toward the town of Gettysburg in July of 1862. The pluck his cavalry demonstrated in forcing Heth to deploy and fight, coupled with the advantage of the terrain Buford selected, is what many historians credit for the salvation of the Federal Army and their ultimate stemming of the high tide of the Confederacy.

In his book *The Desert Generals*, Correlli Barnett indicates how British General Sir Claude Auchinleck, acting Eighth Army Commander (June-August 1942), used a fingertip sense of stroke and counterstroke to thwart Rommel's effort at double envelopment of Allied forces at El Alamein. Anticipating that Rommel would try something "hasty, reckless {and} unrealistic," Auchinleck refused to allow himself or his men to be either surprised or intimidated into fighting the Germans' fight. By synchronizing weapons systems throughout the reach of his battle space — keeping artillery and tactical air pressure on Rommel's attacking units — the British commander forced the Desert Fox to change his plan. He created new decision points for the enemy commander and interposed himself within Rommel's decision cycle. Suddenly, the Afrika Korps, which was used to having its way with Allied troops in North Africa, was producing "tear-jerking" diary entries describing their "battle fatigue, the incessant British air attacks, and the universally powerful British defenses."⁵ Even Rommel realized he had been unable to dominate the battle space as he was accustomed to doing.

General Auchinleck ... was handling his forces with very considerable skill. ... He seemed to view the situation with decided coolness, for he was not allowing himself to be rushed into accepting a "second best" solution by any moves we made.⁶

The refusal to be bested is applying the principles of battle space to their fullest. Auchinleck not only anticipated Rommel, but he was ready with his own plan as the situation changed. By coming to a decision and acting faster than his enemy, this British commander took the initiative away from his adversary.

While not a sixth sense, understanding battle space requires experience, training and conditioning to the stimuli of combat, which teaches leaders to match terrain with doctrine and weaponry. Battle space is both an art and a science, both power and finesse. While our intellect, curiosity and experience guide our artistic sense, our service schools, instructors and doctrine teach us to apply the scientific principles of war. This combination of the artistic and the analytical allows us to recognize the precise moment for exploiting opportunities the enemy may present, and prevents our combat, combat support and combat service support units from becoming surprised or paralyzed by unexpected enemy actions.

In the mid-1980s, LTC K.E. Hamburger headed a United States Military Academy study of leadership in combat. Using a historical appraisal of outstanding commanders, the Hamburger group identified five characteristics of successful combat leaders:

- terrain sense;
- single-minded tenacity;
- ferocious audacity;
- physical confidence;
- practical, practiced judgment.⁷

Each of these characteristics is also a critical requirement for understanding and applying the notion of battle space. You must comprehend terrain — almost have a feel for it — to know your options as a commander. Your tenacity to accomplish your mission will compel you to assemble and synchronize the combat power necessary to overwhelm your opponent. Because you are audacious, you will take reasoned risks to exploit any enemy weakness that presents itself. You will meet the demanding physical requirements of command because you keep yourself well-contained; thus, your body will not fail you at the most critical moment of decision. Your common sense, or practiced judgment, will allow you to prioritize tasks, separate the critical from the noncritical, and keep you from being overwhelmed, particularly in the information-flooded battlefield of the future.

Modern Requirements

Over the past fifty years, warfare has evolved into a faster, more lethal affair than ever before. Just as improved ballistics prior to the Civil War forced changes in the way commanders viewed tactics (e.g., conducting a frontal attack in the face of more accurate, longer-range small arms proved lethal), today's smart weapons, increased pace of maneuver, faster communication systems and navigational enhancements (e.g., ground positioning systems, Global Positioning System), have compelled us to view the dynamic battlefield in a new way. As battle tempo and physical space have expanded, so must our method of evaluating that battle space so that we remain anticipatory and proactive in our operations. The Red Army discovered this in the latter stages of World War II (1944-45). Whereas

early in the war “a front would be tasked with the defeat of between six and 12 enemy divisions and an advance of 60-120 kilometers,” by the last year of the war “a front took on 16-18 divisions and advanced 250-300 and, on occasions, up to 500-600 km.”⁸ As warfare changes, so must a nation’s perspective on how to wage war.

Pondering over the lessons of 1914-18 and the Russian Civil War, Red Army theorists decided that the old division of war into strategy and tactics had become inadequate. The growth in size, combat power, and substitutability of the armies of the major powers meant that it was no longer possible through superior strategic deployment and maneuver to crush the enemy in one or two decisive battles and thus win the war in the course of a single campaign. ... A strategic decision ... could be achieved only through success in a series of inter-related operations, each of which represented a step towards the ultimate strategic goal.⁹

Battle space offers us a way of viewing that series of successive operations.

Emerging technologies dictate a leaner command (and staff) apparatus, so we can plan and act more quickly than the enemy. New communications technologies will reduce time required for troop-leading procedures, so we can execute the mission faster. We can disseminate critical information, issue fragmentary orders (FRAGOs), and exploit opportunities faster than our enemy; thus, we can impress our will upon him. We can, as does a talented heavyweight, fight our own fight and make our opponent react instead of act. Our reliable, secure, long-range communications and enhanced geographical locating devices allow us to disperse our forces and reduce our vulnerability without sacrificing the ability to mass quickly and seize the advantage where our intelligence uncovers a weakness.

But, with the increased speed, range, lethality and real-time communication capabilities of the modern battlefield comes a directly proportional increase in the chaos on that battlefield. No longer does the commander’s definition of chaos amount to sorting out the regimental flags of the 20th Maine and the 115th Pennsylvania Volunteers intermingled on some two-dimensional plain. Now the commander must control friendly fires that range well beyond what can be reasonably seen and identified on sea, land and air. As William S. Lind says in his *Maneuver Warfare Handbook*:

Maneuver warfare means you will not only accept confusion and disorder and operate successfully within it, through decentralization, you will also generate confusion and disorder. The “reconnaissance pull” tactics of the German blitzkrieg were inherently disorderly. Higher headquarters could neither direct nor predict the exact path of the advance. But the multitude of German reconnaissance thrusts generated confusion among the French in 1940. ... The Germans seemed to be everywhere.”¹⁰

As the commander evaluates and constantly reevaluates his battle space in light of frequently changing, chaotic conditions, simplicity must be the key element of his approach. Amid the chaos and confusion, the leader must expose as few troops as possible and rapidly concentrate his forces without intricate, complicated plans that require intense manpower and time to enact.

The British in North America, with their “excessive love of complexity and detail,” found out the hard way that their command and control mechanisms must be simplified. The historian of the 5th Indian Division wrote of First Alamein:

There were moments of terrible anxiety when units in action went out of touch by wireless. Failures and casualties, minor successes and more casualties, confusion and frustration were the order of one day after another. At times the commanders were gripped with the sense of helplessness and uncertainty.¹¹

The key to understanding and applying the notion of battle space is to recognize that battle space is a way of thinking that serves as a commander's tool. It is a dynamic, fluid way of looking at combat. It is a scheme, if you will, that you can overlay on any situation to help you coordinate assets to best defeat the enemy. Recall for a moment our boxing example. What must a good fighter consider when facing a heavyweight challenger? He must consider his reach, mobility, speed, punching power, and use of ring space. He must also observe his opponent for signs of fatigue, stay out of range of his opponent's best weapon, listen to instructions from his own corner, and recognize the precise moment to go for the knockout.

Many of these considerations of the boxer are the same as those of a maneuver commander. What's my reach (best engagement range)? When our M1s used their enhanced night vision devices in Desert Storm, we were able to acquire Iraqi armored vehicles and engage them far beyond the range that they could see or offer any counterfire. The record is replete with stories of Iraqi tank commanders who reported their vehicles being hit "out of nowhere," just exploding from some unseen coalition attacker taking advantage of stand-off range. How mobile am I (influence of vehicle capability, terrain and weather)? What about speed and punching power (can I get there "first with the most")? What is my opponent up to? How does my commander want me to fight this battle? How will I know it's time to go in for the kill? Based upon the commander's intent, how long do I stand off and pound him before I close upon his position and occupy it? How will I sustain the fight? Can I supply forward once we start to move, can I preposition, or will my M1s and Bradleys outdistance and outmaneuver my support vehicles? And perhaps most important of all, the commander must recognize his innate responsibility to protect his force. How can I accomplish my mission while reducing the exposure of my troops to lethal enemy fire? Five minutes of exposure on today's battlefield is more dangerous than 15 minutes against the Germans at Cambrai or a half-hour against the Mexicans at Palo Alto.

You may recognize that many of the above questions are addressed in decision matrixes, decision support template, or a half-dozen other planning tools. Although these remain key components, battle space seeks to integrate all of them into an overall concept for controlling the fight — for imposing your will upon your opponent. The vision created by the battle space view of warfare eventually becomes the framework from which the commander derives his intent and his concept of the operation. One such tool that is contained within the notion of battle space is outlined by Lind, where he explains the Boyd Theory of maneuver warfare.

Each party to a conflict begins by observing. He observes himself, his physical surroundings and his enemy. On the basis of his observation, he orients, that is to say, he makes a mental image or "snapshot" of his situation. On the basis of this orientation, he makes a decision. He puts the decision into effect, i.e., he acts.¹²

Practical Application

For a tool of command to be useful, it must be applicable throughout the chain of command, e.g., it must be of value to the squad leader and platoon leader as certainly as it is to the division commander. Battle space is this valuable tool. It takes into consideration weather, terrain, mobility and agility, weapon systems and support requirements, which have ramifications for leaders throughout the chain of command. While the breadth or scope of application may differ at each level, their importance remains constant. Battle space considerations frequently overlap between levels of command, yet each level has certain aspects that are unique to that strata. A look at some specific examples will illustrate how battle space is integrated into the commander's toolbox of skills.

It's eastern Europe in the fall of 1994. U.S. Army ground forces have been committed on a limited basis to halt fighting between warring factions of a divided nation. Acting in concert with a multinational force, let's consider a maneuver brigade (two mechanized battalions and one tank battalion) operating along a relatively narrow front (eight kilometers), with a mission of sweeping through a sector to remove a company-size force of belligerents, comprised of irregular troops and former national army forces. This enemy is not particularly anti-American; they are just anti-anyone who happens to interfering with their bloody little war. The United Nations wants to clear the area, which includes a small town, to restore an acting civilian government.

Consider the infantry squad leader, the tank platoon leader who is cross-attached to a mechanized infantry company, the infantry company commander, and the task force commander. They know their unit will receive the mission of moving into the built-up area. While they have received only a warning order, each leader begins to apply the commander's tool of battle space to his upcoming operation. While he has no graphics, no axis of advance, no specific objective as yet, he can still visualize operations in depth, synchronization factors to disrupt the enemy, and coordination requirements with higher and adjacent units. Here is what they might be thinking:

Infantry Squad Leader: From the platoon leader's warning order, it looks like we'll be working through that built-up area. Building-to-building means fire teams conducting clearing operations. I'd better review procedures and make sure we're tight on hand and arm signals. Remind the men about booby-traps, delayed explosives. Looks like I'll be lucky to control more than a building or two at a time. Ducking in and out these alleys and around these buildings makes this thing ripe for friendly fire casualties. We may have some engineers attached, so I've got to think about where and how I'll use them. Since we've got tanks with us, I'd better warn the men about positioning themselves too close to the vehicles in case they become engaged with antitank {AT} weapons. The Bradleys can be dangerous, too, with the 25mm armor-piercing rounds kicking out that plastic shroud from the sabot. Remind them of the 400-meter safety fan. I've got to be thinking fire control also. There may be civilians, maybe even guerrillas. Better check with the platoon leader about rules of engagement. Some of those buildings look three to five stories high. Once they're clear they should provide pretty good overwatch locations. I'd better check with the platoon sergeant about basic load of ammunition. We'll probably need more grenades and M60 machine gun ammunition. What if we hit a strongpoint? Should I remain engaged? Will the CO let us bypass it and bring the tanks up to punch it out?

Tank Platoon Leader: The company commander told us in yesterday's briefing that we could expect clear weather for the next three days, so while I'm going to have good visibility, the enemy will also be able to see me. The order to move is likely to come before EENT {dusk}, so I'll have a thermal sight advantage at least initially in my operation. Our sector will likely include the main street running north and south and adjacent streets in the town, so we'll be facing several corridors that could be kill zones for my tanks. I've got some four- and five-story buildings to think about, so I'll have to keep an eye out for snipers or infantry firing down on us with AT weapons. My best role, and what I'll recommend to the company commander, is overwatch for the dismounted infantry clearing the buildings and securing the road ahead. Buried mines won't be as much a problem as will booby traps or remote-activated explosives. Side streets offer ambush threats if not properly cleared. My M1s can get 20 degrees' elevation of the main gun, that's all. So if I'm called upon to support with direct fire, I've got to have stand-off range. I'd better change the basic load, too. I'll drop some armor-piercing sabot rounds in favor of 105-mm HEAT {high-explosive antitank}. It should penetrate a building, or give me plenty of spall on the inside. I've got to warn the infantry to keep clear of the 60-degree frontal arc if I'm ordered to fire in support. Maybe I want a dozer tank in the lead, just in case I've got to bust up some barricades. The last thing I want to do is get my vehicles in the middle of town and get them caught should the enemy counterattack. Getting into a 200-meter slugfest isn't using my weapons to their best advantage. Once through the town, I should probably occupy positions on the north side so I can maximize the range of my weapons.

Company Commander: I know from the warning order that my company will have to clear the built-up area. It's going to be a building-to-building operation, no doubt about it. I've got to keep the Bradleys and the tanks close enough to support, but far enough behind to avoid AT fire. The platoon leaders have got to clear routes and provide security for the vehicles. Between the exhaust heat from the M1s and the chances of fragmentation should a tank take an AT round, I've got to remind the platoon leaders to keep the dismounted troops at a safe, but supportable distance. I'll have each platoon vary its basic load and add more LAW {light antitank weapons} and AT4s {lightweight multipurpose weapons} on top the buildings just in case they try to counter with armor or hide something in a building to surprise us. I've got to remind these guys about backblast inside these buildings. The clear weather will allow me to request helicopter support for reconnaissance, or maybe they are best used guarding the perimeter of the town where they can maneuver better. If I'm going building-to-building to clear the areas, I'm bound to fall behind the adjacent units on my right and left, so I'll need control measures for friendly fires to allow B and C Companies to bypass the town and secure their objectives. (What about refugees? Who's going to collect them and transport them to the rear? If they counterattack, how critical is the town? Should we hold at all cost, even if they should bypass us? By observing the situation, orienting himself and his unit, he decides on a course of action and then acts. He runs through his decision cycle in anticipation of rapidly developing events.)

Task Force Commander: That town in the middle of my sector has the potential to cause me trouble. If A Company can't clear it within a reasonable time, I'll have to divert another company to assist. A CEV {combat engineer vehicle} would make a good addition to A Company, and I'd better get some engineers to assist clearing obstacles to complete the operation as quickly as possible. That 165mm gun the CEV carries ought to root out any stubborn resistance from inside the buildings. Since the battalion on my right is moving through mostly open to slightly-wooded terrain, I've got to keep my right-most company (B Company) roughly on line with their advance. That means B Company could

encounter refugees or hostile forces retreating from the town. I'll need to check with higher for military police support and evacuation capability. The mortars are my best indirect fire weapons, given the angle of fire, but I'm going to need at least 107s to penetrate most of those rooftops. If we can't get to them with direct fire, we can lob a little something on them. While the air threat isn't great, my Stinger teams can operate in overwatch from a couple of rooftops. What if it goes too easy? What if it falls without much of a fight? Am I walking into something? Have they rigged the place to blow? Are they waiting for us to concentrate so they can bring in artillery on the town? I need to have the brigade ready to call up counter-battery fire.

As you can see from the example, each level of command demands its own view of battle space — its own set of concerns and contingencies. These are but only a few of the hundreds of considerations each commander faces within his own battle space. But battle space is more than just planning for contingencies or anticipating requirements. It is reacting to developments and responding effectively to a changing situation. Our example is science-driven in that the factors each leader considered are to some extent school-driven, i.e., they may well have been learned from some service school instructor. Good training and thorough preparation breeds confidence — the underpinning of all great commanders. While there may be a very few commanders who are born with innate skills for leading soldiers in combat, many more are grown and groomed in the orchards of tactical training.

The art of battle space finds its greatest expression in the leader's ability to respond creatively to a changing situation, unexpected variables — to improvise upon a rapidly developing engagement. That is where the terrain sense and ferocious audacity identified in the Hamburger study begins to evidence itself. What if that squad leader gets halfway through the town and the streets start blowing up beneath him, the result of preset charges? What if the company commander's entire unit begins to take fire from enemy helicopters that were supposed to be nowhere near his sector? What if the task force commander's right-most unit meets stiff resistance and perhaps is stalled, or even worse is turned in upon the town itself? What if refugees become unmanageable and begin to clog up the operation?

It is the fingertip response, the "Fingerspitzengefuehl" or feel for the battle, that will determine the leader's success or failure. If the squad leader loses two men in a rigged explosion in one of those so-called vacant buildings, does he smoke the area and regroup or press on to eliminate nearby forces? If the infantry is pinned down by sniper fire or heavy machine-gun fire from a strongpoint, does the tank platoon leader fire high explosive rounds in proximity to the dismounts, putting them at risk of shrapnel and debris? Does the company commander move a platoon out of its assigned sector to help a pinned down platoon? Does he risk weakening his flank and leaving part of the town uncovered? Will the task force commander bypass resistance or will he invest another unit to overcome stronger than anticipated resistance in the town? If his right flank is turned in on the town, will he center his defense on the built-up area? What will that do to adjacent units' security? What is more important, holding the town once it is secured or sending forces to support an adjacent unit that is being counterattacked? Thinking these things out prior to executing the mission — defining the 'whats' and wargaming the 'what ifs' well in advance — is critical to success.

Some of the questions noted above will be answered by a clear understanding of the higher commander's intent, but the higher commander cannot fully understand his own intent, much less communicate that intent clearly to subordinates, without a firm grasp of battle space. By understanding his own capabilities and limitations, knowing the reach and restrictions of his weapon systems, his mobility and his support mechanisms, and by deciding and acting faster than his enemy, the effective maneuver commander forces the opponent into a reactive mode.

Conclusion

Perhaps more so than ever before in history, the skill of one leader or the range and capability of a single, skillfully-employed weapon system can make the difference in the outcome of a battle. The modern commander must think battle space. He must view himself as part of a larger force, or as part of an independent force, and not only evaluate what he can do within his immediate area of influence, but also consider what can and will occur outside his sphere of influence. The presence of boundaries cannot and should not keep the commander from thinking two or three jumps ahead of his opponent. The experienced commander contemplates the ramifications of not only his next, but the third or fourth move in a series. He is forward-looking, but not to the degree that he allows himself to be defeated in the near-term fight. The bunker-to-bunker, hill-to-hill, near-term battle is but an element of his total battle space, and the effective commander never loses sight of the broad view of his unit in relation to others, all working to carry out the commander's intent.

This micro/macro view of battle command is not the fare of small minds. It demands officers and noncommissioned officers who are intellectually aggressive and constantly willing to learn and adapt. History and realistic training unite to form our best teachers of battle space. It is only through constant study of our profession, constant application of technique and evaluation of outcomes, that the modern military leader can remain current and effective. There is no day off from the heavy responsibility to be better than any potential opponent. For those who are willing to study, to spend years in preparation, to accept no substitute for command and leadership positions among real soldiers, battle space will become an extension of daily thought — a daily way of viewing the profession of arms.

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ENDNOTES

1. Field Manual 100-5, *Operations* (Washington, D.C.: Headquarters, Department of the Army, 1993), pp. 6-12.
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3. Martin Blumenson and James L. Stokesbury, *Masters of the Art of Command* (Boston: Houghton-Mifflin, 1975), p. 603.
4. Lewis Sorley, *Thunderbolt: General Creighton Abrams and the Army of His Times* (New York: Simon Schuster, 1992), p. 81.
5. Correlli Barnett, *The Desert Generals* (New York: Viking Press, 1961), p. 196.
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11. *Armoured Warfare*, p. 85.
12. *Maneuver Warfare Handbook*, p. 5.

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