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A machine gun crew with the 82nd Airborne Division's 2nd Battalion, 504th Parachute Infantry Regiment, sets up an overwatch position during a foot patrol, 8 May 2012, Ghazni Province, Afghanistan. (U.S. Army, SGT Michael J. MacLeod)

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Front Cover: SSG Brian Boyt, a squad leader with the 82nd Airborne Division's 1st Brigade Combat Team, signals to his soldiers during a foot patrol, 8 May 2012, Ghazni Province, Afghanistan. (U.S. Army, SGT Michael J. MacLeod)



Military Review is a refereed journal that provides a forum for original thought and debate on the art and science of land warfare and other issues of current interest to the U.S. Army and the Department of Defense. *Military Review* also supports the education, training, doctrine development, and integration missions of the Combined Arms Center, Fort Leavenworth, Kansas.

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These articles have been collected from recent issues of *Military Review* for this special edition to provide information concerning the development of the concept of Mission Command. Researchers are asked to refer to the original issues from which these articles were taken for documentation purposes. Though these articles address U. S. Army doctrine, the views expressed are those of the authors and should not be construed as official policy.

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The Infantry Squad: Decisive Force Now and in the Future

Major General Robert B. Brown, U.S. Army

*Originally published in the
Nov-Dec 2011 issue of MR.*

Major General Robert B. Brown is the commander of the U.S. Army Maneuver Center of Excellence, Fort Benning, GA.

PHOTO: U.S. soldiers search for weapon caches and intelligence outside Joint Security Station Basra, Iraq, 23 July 2010. (U.S. Army photo by SPC Joshua E. Powell)

THE U.S. ARMY dismounted infantry squad is today's most decisive force on the battlefield, yet it lacks access to capabilities it could use to truly synchronize the total fight. Despite new soldier equipment and technological advances we deployed in Afghanistan and Iraq, squads operate in the same manner their predecessors did in Vietnam and Korea and during World War II. The infantry squad has been excluded from the technological development that provided combat overmatch for the remainder of our forces. The future infantry squad needs—

- Access to a complete mission-command and intelligence network.
- Organic and external on-demand feeds for situational awareness.
- Reduced soldier load and robotic improvements.
- A design that includes the human dimension as a foundation.

In the Near Future

The vignette that follows describes how the infantry squad ought to operate in the battle space.

The 1st Squad, 3rd Platoon, is conducting a movement to contact in mountainous terrain as part of a platoon and company team mission. The squad's task is to destroy insurgent forces near a local village. Recent intelligence indicates the insurgents are using the village as a staging area for attacks on coalition forces. The terrain surrounding the village is unforgiving, forcing the squad to operate for long periods at high altitudes in varying temperatures. The steep terrain, moderate vegetation, and numerous villages nearby provide the insurgents valuable cover and concealment as well as significant standoff, enabling them to conduct effective ambushes.

Here is 1st Squad's context: an infantry squad, a tactical small unit, that the Army developed in a concerted effort to examine every aspect of squad dynamics and the missions and tasks it must be able to accomplish. These improvements went beyond enhancements in individual weapon, personal protection, optics, and basic communication platforms. The improvements were based on the combat-proven reality that *we must treat the infantry squad as the foundation of the decisive force*.

First, before this squad leaves the line of departure, the squad leader does what good squad leaders have always done: he conducts a rehearsal. However, this rehearsal is different from those in the past. This squad leader has tools at his disposal that previous generations did not.

This squad leader carries his battle command hand-held device, the centerpiece for situational awareness for the infantry squad. The device integrates soldiers into the network and provides connectivity laterally and vertically. The squad leader is able to pull the most recent satellite images and 3-D mapping programs from the network and download the most relevant human and signals intelligence from the company intelligence support team to develop a better picture of the terrain and environment. He accesses recent historical records of enemy activities for pattern analysis and to determine probable hot spots. From this, he develops a detailed plan, and because of improvements in surveillance and detection, he can analyze his mission and its probable contingencies thoroughly and execute detailed rehearsals.

Members of 1st Squad are all on the network. They see what he sees. Their input is much more informed and informative in the planning phase and more valuable. The squad leader shows team leaders and squad members the terrain's complexity and primary and alternate routes through it by conducting a map reconnaissance and rehearsal along with the standard rehearsal of concept, the "ROC drill." On-demand network access enables the squad leader and his soldiers to fly the mission from various perspectives during the rehearsal.

The platoon leader coordinates with the company commander to obtain combat engineer terrain analysis to confirm the squad's planning. The platoon leader takes the refined squad planning

and refines his platoon order so the company commander can approve the best bottom-up plans.

The ability to visualize the battle space before movement enables the squad leader to plan logistics and determine the squad's tactical load. He instructs his team leaders on the load plan and designates equipment to carry or load into the squad's semi-autonomous load-carrying system, which reduces mobility constraints and increases agility.

The squad leader conducts his precombat checks and rehearsals, back-briefs the platoon leader, and then receives the order to step off on the mission. He coordinates with the platoon to deconflict the squad's suite of ground and air sensors, and integrates the squad's organic sensors with those of the company, battalion, brigade, and theater to create an unblinking eye that enables the squad to observe the battle space beyond small arms contact range. This "unblinking eye" is not a new concept, but it now provides company, battalion, brigade, and division live feeds on demand to the soldiers at the tip of the spear.

Several kilometers into the movement, a sensor alerts the squad leader of movement ahead. Previously, the squad leader ordered soldiers to investigate such alerts; today, he has several other options. He chooses to launch his own short-term, quick-look airborne sensor. Unfortunately, due to the thick vegetation and hilly terrain, he is unable to get the fidelity he needs, so he directs the Bravo Team leader to retrieve an unmanned ground combat vehicle from the squad's semi-autonomous, load-carrying system.

A squad member moves the vehicle toward the suspected enemy position and confirms that a four-man enemy force is waiting in ambush along a ridge overlooking the squad's direction of movement. Armed with this new intelligence, the squad leader develops a plan for a hasty attack and distributes it to his team leaders over the network. Meanwhile, the information is transmitted to the platoon and quickly converted into an indirect fire request.

The company command post receives the request and issues a call for fire request. Equipped with the exact location of 1st Squad and the enemy forces, the company commander requests precision mortar system fire from the battalion. The battalion forwards the data to troops in contact and to the brigade and re-tasks a supporting air weapons team to support the platoon.

While this coordination is ongoing at echelons above the squad, the squad leader maneuvers to a position where he can place direct fire on the enemy. Once the squad is in place, he coordinates with the platoon leader who initiates the precision-guided mortar fire mission, allowing the squad to place controlled, effective direct fires onto the enemy position.

The network provides the squad leader the ability to refine graphic control measures and distribute the updates efficiently throughout the formation.

As the surviving insurgents withdraw from the position, target handoff is conducted to allow the air weapons team to complete the destruction of the enemy. The network simplifies and expedites the deconfliction of fires by allowing the air weapons team to “see” friendly unit locations.

With the enemy forces now killed or captured, the squad leader conducts sensitive site exploitation and uses the network to transmit images and biometrics through his platoon leader to the company intelligence support teams for further analysis. In the end, we have turned the tables on what most likely would have been an effective enemy ambush requiring the commitment of additional squads from the platoon.

First Squad regroups and continues its mission, maneuvering over the ridge to within visual range of its final objective, the village. The squad leader continues using his suite of sensors to assess the situation in the village, and communicates with the platoon leader to update situational awareness throughout the entire company team. The recent firefight has alerted the enemy to the squad’s presence, and soon the unblinking eye detects enemy activity on the rooftops of several buildings near the entrance into the village.

The squad leader uses his handheld device to see the enemy preparing to defend the safe haven. The platoon leader tasks the squad to seize a foothold

in the village. The company commander tasks adjacent platoons to establish blocking positions isolating the village.

The network provides the squad leader the ability to refine graphic control measures and distribute the updates efficiently throughout the formation. The squad’s access to the network enables efficient fires planning, mitigates risk at all levels, and provides faster access to precision fires and fires clearance. The integrated network capability ensures situational awareness for 1st Squad, the rest of the platoon, and mounted elements maneuvering into their blocking positions.

The movement to contact has changed to a deliberate attack in a matter of minutes based on network connectivity and the ability to pull intelligence from sources once only available to battalions and brigades.

The squad leader maintains overwatch as teams rotate to the squad’s semi-autonomous load-carrying system to pick up urban breaching equipment and reconfigure their loads for an urban attack.

The squad leader then dispatches several unmanned ground vehicles to reconnoiter possible routes into the village. Meanwhile, members of his squad nominate targets as they observe them.

A close air support aircraft outfitted to send and receive ground-based data checks in overhead and is immediately fed the current location of friendly and enemy forces. The aircraft is prepared to assist if the joint fires observer requests it to do so. It also feeds reports from its sensors to the squad leader to support the reconnaissance effort. The company fire support officer receives all the nominated targets and updates the fire support plan.

We have seized the initiative through the integrated use of technology, training, and information. Because of surveillance domination, the unit has begun the attack instead of reacting to enemy contact.

This scenario may seem futuristic, but it is the key to the success of the dismounted infantry squad, as the foundation of the decisive force on the battlefield. The technology exists today, yet dismounted soldiers in the fight cannot fulfill this potential because they do not have access to what they need to make the critical decisions described here.

The Squad as the Foundation of the Decisive Force of the Future

Despite technological developments and millions of procurement dollars spent to increase soldier lethality and protection, today's infantry squad is still limited in its capabilities as a formation in close combat. It still fights with a line-of-sight voice radio link to the outside world and with paper maps and global positioning systems.

Once a squad moves dismounted from its base or platform, its information and situational awareness decays at a rapid pace. Current capabilities and training do not allow the squad to maintain a cognitive presence to maneuver to a position of advantage and use indirect, rotary wing, or fixed wing fires on the enemy.

On the other hand, if the squad has network linkages to brigade combat team-level assets, it

becomes the dominant force on the decentralized battlefield and improves decisiveness throughout the hierarchy of command. The squad needs to share situational awareness with mounted elements, fires elements, supporting air elements, and higher headquarters. The squad is integral to developing the situation and can close with and destroy the enemy.

Network the Dismounts!

To truly become the dominant ground force, we must provide the same capabilities to dismounted elements at the lowest levels that we provide to our mounted forces, headquarters, and supporting organizations.

Over the last 60 years, technological advances, doctrine, and training have given U.S. forces unprecedented dominance in the air and on the sea. Our capabilities overmatch in land-based

high intensity conflict has helped produce lopsided victories such as Operation Desert Storm and the initial phases of Operation Iraqi Freedom. Our networked joint force has demonstrated unmatched capabilities. Dominance in all fights is what we want; in decentralized operations, we never want to place our squads in a fair fight. Squads should have the same advantages that our mounted forces use to achieve overmatch.

Operations in Iraq and Afghanistan have revealed seams in our high intensity conflict capabilities. Non-state actors blending in with the civilian populace have had some success in exploiting these seams to negate advantages that have made us the world's preeminent military force.

Counterinsurgency operations place dismounted forces in a com-



(U.S. Air Force photo by SrA Sean Martin, Kandahar Provincial Reconstruction Team)

A soldier scans his area at the Dahla Dam, Kandahar Province, Afghanistan, 20 September 2011.

(Photo: SGT Giancarlo Casem)



Robots such as TALON allow warfighters to clear routes quickly without having to wait for explosive ordnance disposal teams. Here a TALON robot inspects a suspected improvised explosive device.

plex environment to find, fix, and finish the enemy, but due to a lack of connectivity, squads cannot take advantage of our advances in reconnaissance and surveillance platforms, aviation support, precision fires (such as the Excalibur munitions), and intelligence collaboration. Unless we bring dismounted infantry squads into the network and provide them on-demand access to the same tools that air, sea, and mounted warriors have, we deprive ourselves of combat overmatch at the tip of the spear.

How far down do we push the network capability? Some would say to the company commander level; others say to the platoon leader or squad leader level. However, the truth is, the network needs to be available at the individual soldier level.

Some worry that a tactical squad radio full of chatter will drown out leaders or overwhelm soldiers with information, but today's soldiers do not view the information coming to them over the network as overload. Soldiers are comfortable with digital connectivity in a way an earlier generation of soldiers were comfortable fighting shoulder-to-shoulder with their buddies. This generation of soldiers stays connected socially via Facebook, Twitter, and text messages and is more comfortable with a smart phone than a radio. Some young soldiers have smart phones with hundreds of applications on them. They do not run all the applications simultaneously; they filter and prioritize them. Realistic training using the blended training model (incorporating repetition and live, virtual, constructive gaming) can easily train soldiers to deal with information on the network.

Seizing the Initiative

Ten years of conflict have taught us the need to initiate contact with the enemy. Most of our hostile fire engagements in Iraq and Afghanistan have been responses to enemy attacks (direct fire, improvised explosive device [IED] fires, and suicide attacks). This puts us at a tactical disadvantage.

Our squads must fight to regain the initiative. This paradigm has been an accepted way of life for our soldiers, dating from the "search and destroy" doctrine of Vietnam. We have done a good job of protecting soldiers and modifying our tactics, techniques, and procedures to help them better survive initial contact with the enemy. However, we have failed to provide units with sensor systems that can detect the enemy presence before they engage. A networked squad with a robust sensor capability can detect a pending ambush, save lives, and greatly increase combat effectiveness.

The Army has made great advances in equipping units with tools to provide a common operating picture, but unfortunately, these are limited to ground-vehicle-centric platforms, static command and control facilities, and airframes. Once a leader dismounts from these platforms, he loses Blue Force Tracker, common ground viewers, access to unit databases, updated situation reports, and time-sensitive information. Once on the ground, the squad essentially unplugs from the network and reverts to paper map and voice radio mode. Once the squad leader unplugs from the network, he has degraded his squad's situational understanding and that of all units supporting it.

We have equipped soldiers in an ad hoc manner too many times in our history, creating challenges in interoperability, soldier load, and overlapping capabilities. Fortunately, the Program Executive Office-Soldier process currently looks at the individual soldier as a system to equip him in a holistic fashion. The Army is moving in the right direction in updating soldier equipment, but the institution needs to do more. We need to view the

...the truth is, the network needs to be available at the individual soldier level.

small unit as the foundation of the decisive force and the soldier as a component of that system. We must realize there is no single silver bullet that will propel us forward, only a series of small developments conceived from holistic solutions.

Company commanders are now in charge of a battle space that battalion commanders were responsible for 10 years ago. In Iraq recently, a single company operated as the sole ground force in Najaf Province (population 1.6 million). Approximately 100 U.S. soldiers conducted daily operations in an area that once required multiple battalions. It follows that squad and section leaders need the tools for combat overmatch on such battlefields. This reasoning is not to imply that a company will control the field with the same level of effectiveness as a battalion, but by infusing information rapidly down to the lowest maneuver force (the infantry squad), we empower the company to orient combat power at the right time and place to achieve overmatch in the larger battle space.

Resourcing Squads as the Foundation of the Decisive Force

Currently, less than 10 percent of the Army's Fiscal Year (FY) 2012 equipping budget is dedicated to maneuver. Funding for soldier programs, as a percentage of total Army budget resources, grew from under 1 percent in FY 2003 to approximately 2.5 percent in FY 2007. By FY 2009, it had dropped to under 1.5 percent, and the FY 2011 budget requests reflect this same level. Our Army must recognize the continued strategic contribution of soldiers and improve their resource allocation. We need to dedicate more resources to the development of the squad, to include organizational changes, leader development frameworks, training facility upgrades, and training methodologies. The process of enabling squads must remain competitive for resources with the Joint Strike Fighter, unmanned combat air vehicles, the fifth generation fighter, the Ford-class aircraft carrier, and the littoral combat ship.

The Army should treat the squad as a system during the acquisition process and synchronize the methods it uses to develop equipment for it. Under the Army's current system, over 466 programs deal with some aspect of improving the squad, but they are disjointed. Some of them lack the proper

champion due to vague application goals or a lesser-known Program Executive Office. A holistic view of the squad and the ability to prioritize weapons programs for it would remedy these issues.

The squad may be more strategic than any other system in the overall force today. When we position an aircraft carrier off the coast, we are employing an aspect of national power to achieve a desired end state, but the decision to put boots on the ground is a much more strategically fraught decision than the positioning or even use of air and sea power. Air and sea power remain vital to achieving our national objectives, but ground forces are seen as exercising our Nation's commitment to force change and limit the enemy's freedom of maneuver. Employing ground forces is a strategically binding decision in a way air and sea power is not.

The Maneuver Center of Excellence is currently in the process of developing capabilities requirements

The Army should treat the squad as a system during the acquisition process...

for the squad as a formation. This should not simply be a Maneuver Center of Excellence project to develop the squad, but instead, a collaborative effort involving other centers of excellence, the operating force, industry, and academia. In the end, the issue is bigger than the squad.

Capability Requirements

Some of the themes we need to explore and develop further follow.

Surveillance domination. The squad needs access to what retired Major General Robert Scales describes as an "unblinking eye"—a *squad-organic or enabled reconnaissance and surveillance capability*. In the current fight, a squad leader may have situational awareness of events in his area of operations. Surveillance domination goes beyond that to access a vast network of sensors at all levels that provide critical information about areas the squad has yet to patrol—sensors that detect movement, allow soldiers to see into



U.S. soldiers and Afghan border police stand guard outside the Wesh Boys High School, Spin Boldak District, Kandahar Province, Afghanistan, 12 June 2011.

buildings, and amplify sound (by active and passive means). We then need to tie all these feeds into a comprehensive network that we can synchronize to create the truly “unblinking eye.” The squad leader alone cannot do this; he has near-term stimuli to answer to. Enhancing the abilities of the company intelligence support team to make it capable of analysis, and feeding it down to the squad, provides that information most crucial to the squad.

Close combat supremacy. Squads must maintain their ability to close with and destroy the enemy. This means using lightweight, durable, and easy to use equipment. Maintaining the ability to defeat the enemy becomes complex only when restrictions apply to the fight and put the squad in a bind. A network link provides intelligence on the enemy and the capability to make quick decisions and apply combat power at the right place and time. The network is the materiel solution, but leader development at all levels is necessary to truly enable the squad to be a decisive force against the enemy. In an asymmetric fight, squad decisiveness could mean placing lethal effects into an enemy strongpoint—or could include coordinating humanitarian assistance quickly to gain a civil victory.

Cognitive presence. Providing a link to Tier 2 and 3 facilities in an austere environment will give small unit leaders a better understanding of the environment. Creating the ability to turn the company intelligence support team into a knowledge center for all company assets allows leaders to understand all facets of the zone. Acting alone, a leader cannot maintain spheres

of influence, locations of significant enemy activity, key infrastructure support operations, and the status of local security forces on his map. A knowledge center available at his command can increase his ability to see changes in his environment quickly.

Company, platoon, and squad interaction with the company intelligence support team can produce rapid information dissemination and rapid decision making. We need to create an immersive training environment so that our junior leaders can experience decision making challenges when lives are not at stake.

Sustained unit proficiency through training; squad combat training center. As we equip the squad, we need to focus on developing and refining its members’ skills using a blended training model of live, virtual, constructive, gaming, and immersive training. The squad must be able to use all the equipment it will use in wartime during simulations and training. Immersion in various environments and the integration of a live opposing force along with simulations will help create the complex environment squads will face. We should test all levels of command simultaneously to sustain the use of all enablers at the point of the spear. This training model needs to be available anywhere, not just for predeployment but also during deployment.

Mobility (soldier’s load). Rather than adding more equipment to the squad, the Army should add capabilities while finding efficiencies through multiple-use devices, innovative power generation, robotic load-carrying vehicles, and exoskeletons that allow soldiers to carry more equipment.

We must also place more emphasis on breaching mine and wire obstacles, IED detection, and complex urban breaching capabilities. Maintaining mobility in the fight involves more than the ability to cross a danger area quickly. The speed and the distance that a squad can send and receive information enables it to maintain the initiative in its area.

We need to continue to reduce the load we burden the squad with; we must examine everything from

protection to ammunition, weapons, and equipment. Initially, we may make the most progress in the continued development of battery technology and alternate energy solutions.

Survivability and countermobility. Defense is a tactical unit core competency. We need to reexamine the dismounted infantry squad's capability to set up obstacles, dig fighting positions, and establish engagement areas. Today, the entrenching tool (e-tool) is still the primary means a soldier has to dig fighting positions and emplace obstacles. In 1959, the U.S. Army envisioned that the "soldier of tomorrow" would be equipped with explosive "fox-hole diggers" instead of e-tools to rapidly establish a fighting position. Now, 52 years later, the soldier of today is no better prepared to build a survivability position than his predecessors were in 1959, or his great-grandfathers were in 1918. There has to be a better way for our squads to increase their survivability in a defense.

The human dimension (soldier's touch). Human beings are essentially social animals who are more comfortable in groups. Human connections comfort us in times of stress and strengthen us in times of danger. How do we replicate that "human touch" over a network to reduce feelings of isolation on the battlefield? The simple answer is to maintain voice communication while integrating the network, but this can be a complex problem. It may even involve augmented reality icons showing other members of the squad when necessary, for example, if someone is behind a wall, building, or other obstacle. Greater understanding of the human dimension suggests training our leaders and organizations in how to think instead of what to think. This will increase the units' abilities to accomplish the mission through mission command and will reduce the risk of micro-management. Immersive training capabilities at the infantry squad level require repeated rehearsals and simulations using the same systems in garrison as when deployed.

We must also prepare our leaders of the future with the best institutional training before they join their units by increasing our student load capability in Ranger School and providing more opportunities for Infantry, Armor, Engineer, and Field Artillery leaders to attend the best leader development training our Army has to offer.

Lethality. The ability to find, fix, and finish the enemy is paramount to any tactical formation. We must maintain it and improve upon it. The squad's weapons must complement each other and give the squad the capability to use both precision direct fires and devastating area fires. Ammunition should kill or incapacitate an armored enemy as well as an insurgent without body armor. We must also maintain and improve the squad's capability to deliver high-explosive counter-defilade fires against an entrenched enemy.

Protection. Although the goal of the unblinking eye is to allow the squad to make first contact, it must maintain the ability to survive first contact and maneuver in a hostile environment. This includes the capability to defeat chemical, biological, radiological, and nuclear threats without degrading mobility and lethality. The squad must also be able to defend against small-arms fire and shrapnel. Protection must complement mobility, not hinder it.

Power and energy. Batteries are and will be an obstacle to overcome. Each component of the squad comes with its own type of battery, its own power draw, and its own logistical requirement. We should use a holistic approach to solve these power and energy challenges. Battery commonality is a start. We might focus on kinetic energy converters, the use of isotopes, and other innovative power generation means to provide the energy for the squad's technology in an austere environment. When we connect the infantry squad to the network, we must provide it with the power to stay connected without overloading it with batteries.

Shape the Future

We are at a critical point in our history. It would be easy to maintain our status quo and recover after 10 years of conflict as we look to gain efficiencies and draw down overseas commitments. We cannot afford to do this. If current events are any indication of future conflicts, the future will be turbulent. Dwight D. Eisenhower said, "Neither a wise nor a brave man lies down on the tracks of history to wait for the train of the future to run over him." Now is our time to shape the future. Our infantry squads are decisive now. We will have failed them unless they are decisive and dominant in the future! **MR**

Change 1 to Field Manual 3-0

The Way the Army Fights Today

Lieutenant General Robert L. Caslen, Jr., U.S. Army

We know how to fight today, and we are living the principles of mission command in Iraq and Afghanistan. Yet, these principles are not yet institutionalized in our doctrine and in our training. They do not “pervade the force.” Until they do, until they drive our leader development, our organizational design, and our materiel acquisitions we cannot consider ourselves ready, and we should not consider ourselves sufficiently adaptable.

— General Martin E. Dempsey, Commanding General, U.S. Army Training and Doctrine Command.

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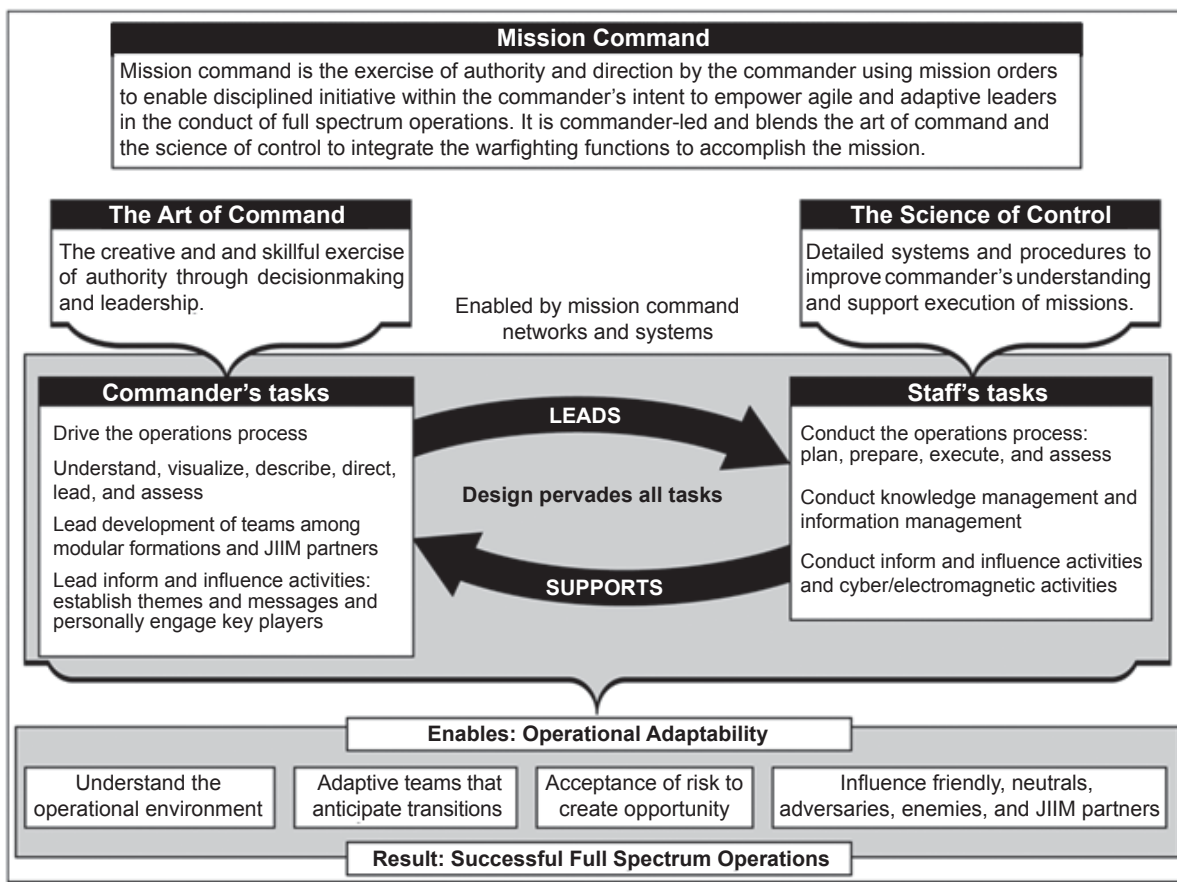
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IMAGE: Campagne de France, Jean-Louis-Ernest Meissonier, 1864, Oil on Canvas.

THE 2008 VERSION of Field Manual (FM) 3-0 initiated a comprehensive change in Army doctrine by capturing the Army’s experience of over seven years of combat and using it to change the way the Army conceptualized operations. It established full spectrum operations—simultaneous offensive, defensive, and stability or civil support operations—as the central concept of Army capabilities. Over the next two years the Army’s full spectrum operations approach was validated in the crucible of operations in Iraq and Afghanistan. Change 1 to FM 3-0 builds on the tenets of this approach to increase the Army’s operational adaptability by having the concept of mission command (MC) replace “battle command” as an activity and replace “command and control” as a warfighting function. During nearly a decade of war, both the operational environment and how the Army operates in it have changed. This article highlights MC and other major changes in Change 1 to FM 3-0 to account for the changes in the operational environment and how we operate in it. This is the critical first step in institutionalizing these changes so they can pervade the force.

Operational Environment and Hybrid Threats

Combat experience and intelligence assessments often focus on hybrid threats that combine in a decentralized manner the characteristics of conventional and unconventional forces, terrorists, and criminals. Although the 2008 version of FM 3-0 did not discuss hybrid threats by that name, it included their characteristics, and these characteristics have now become the norm.



JIIM- Joint Interagency Intergovernmental Multinational

Figure 1. Mission command as an activity.

To combat this threat, the Army is decentralizing its capabilities and conducting operations in a more distributed fashion. The operations take place in a complex and fluid environment and require leaders who not only accept but also seek adaptability and embrace it as an imperative. To enable leaders at all levels to succeed in this environment, the Army has determined that the term “mission command” is a better description of how we must approach the art of command and the science of control on the 21st century battlefield.

Mission Command

Mission command emphasizes the importance of context and using disciplined initiative within the commander’s intent to manage transitions among offensive, defensive, and stability operations and between centralized and decentralized operations. Mission command emphasizes that the leader must understand, visualize, decide, direct, lead, and assess.

In previous versions of FM 3-0, the term “battle command” recognized the need to apply leadership to “translate decisions into actions—by synchronizing forces and warfighting functions in time, space, and purpose—to accomplish missions.” However, the terms “battle command” and “command and control” do not adequately address the increasing need for the commander to frequently frame and reframe an environment of ill-structured problems. The terms “battle command” and “command and control” also do not adequately address the commander’s role in team building with Joint, interagency, intergovernmental, and multinational partners. However, *mission command* suggests the critical role leaders at every echelon play in contributing to a shared understanding of the operational context.

By emphasizing mission command as an activity, Change 1 to FM 3-0 reinforces the central role of commanders, at all levels. Whereas the 2008 edition of FM 3-0 referred to mission command as the “preferred method for executing command and

control.” Change 1 defines mission command as the exercise of authority and direction by the commander using mission orders to enable disciplined initiative within the commander’s intent to empower agile and adaptive leaders in the conduct of full spectrum operations. Commander led, and blending the art of command and the science of control to integrate the warfighting functions to accomplish the mission, mission command focuses on the human dimension of operations instead of processes and technological solutions.

Figure 1 shows commander’s tasks that must be accomplished while executing the art of command to develop an adaptable force. Commanders must understand their higher commander’s intent, the authority to act, and the technical systems needed to support their actions. Commanders must also be able to form high-performing teams with a broad range of Joint, interagency, intergovernmental, and multinational partners.

Figure 1 also highlights staff tasks that integrate previously stove-piped capabilities. Change 1 of FM 3-0 increases the use of knowledge management and information management. It introduces the evolved concepts of “inform and influence activities” and “cyber/electromagnetic activities.”

Operational Art and Design

Leaders and forces base their adaptability on critical thinking, their comfort with ambiguity, their willingness to accept prudent risk, and their ability to adjust rapidly to a continuously evolving environment. The 2010 edition of FM 5-0 introduced “Design” into Army doctrine. Design is a methodology for applying critical and creative thinking to understand, visualize, and describe complex, ill-structured problems and foster innovative approaches. Design underpins the commander’s role in leading innovative, adaptive efforts throughout the operations process. Understanding the operational environment enables

Change 1 to FM 3-0 incorporates Design as a critical part of mission command.

commanders to anticipate and manage transitions and accept risks to create opportunities. Change 1 to FM 3-0 incorporates design as a critical part of mission command.

Inform and Influence and Cyber/Electromagnetic Activities

Change 1 to FM 3-0 replaces the five Army information tasks with *inform and influence activities* (IIA) and *cyber/electromagnetic* (C/EM) activities. This represents an evolutionary change in how the Army views information with roots in Joint and Army doctrine. The Joint construct of information operations focuses on adversaries and is organized around capabilities. Earlier versions of FM 3-0 and FM 3-13, *Information Operations*, used this Joint construct. The 2008 FM 3-0 revised how the Army viewed information operations by describing five information tasks—information engagement, command and control warfare, information protection, operations security, and military deception. Change 1 to FM 3-0 has adopted the IIA and C/EM activities frameworks because Army forces today operate in and among the population, and such operations are significantly different from land operations and those in other domains.

The Army IIA construct emphasizes the commander’s personal involvement in developing themes and messages as an essential part of the operations process. Commanders directly involve themselves in developing themes and messages that inform and influence actors and audiences in a dynamic environment. Inform and influence activities employ cooperative, persuasive, and coercive means to assist and support Joint, interagency, intergovernmental, and multinational partners to protect and reassure populations and isolate and defeat enemies. Cyber/Electromagnetics activities exert technical influence to protect friendly information and communications while disrupting the enemy’s ability to manipulate and move information.

Mission command uses IIA and C/EM to shape the operational environment.

Mission Command as a Warfighting Function

As aforementioned, Change 1 to FM 3-0 supplants “command and control” with mission command as a warfighting function (Figure 2). Over time,

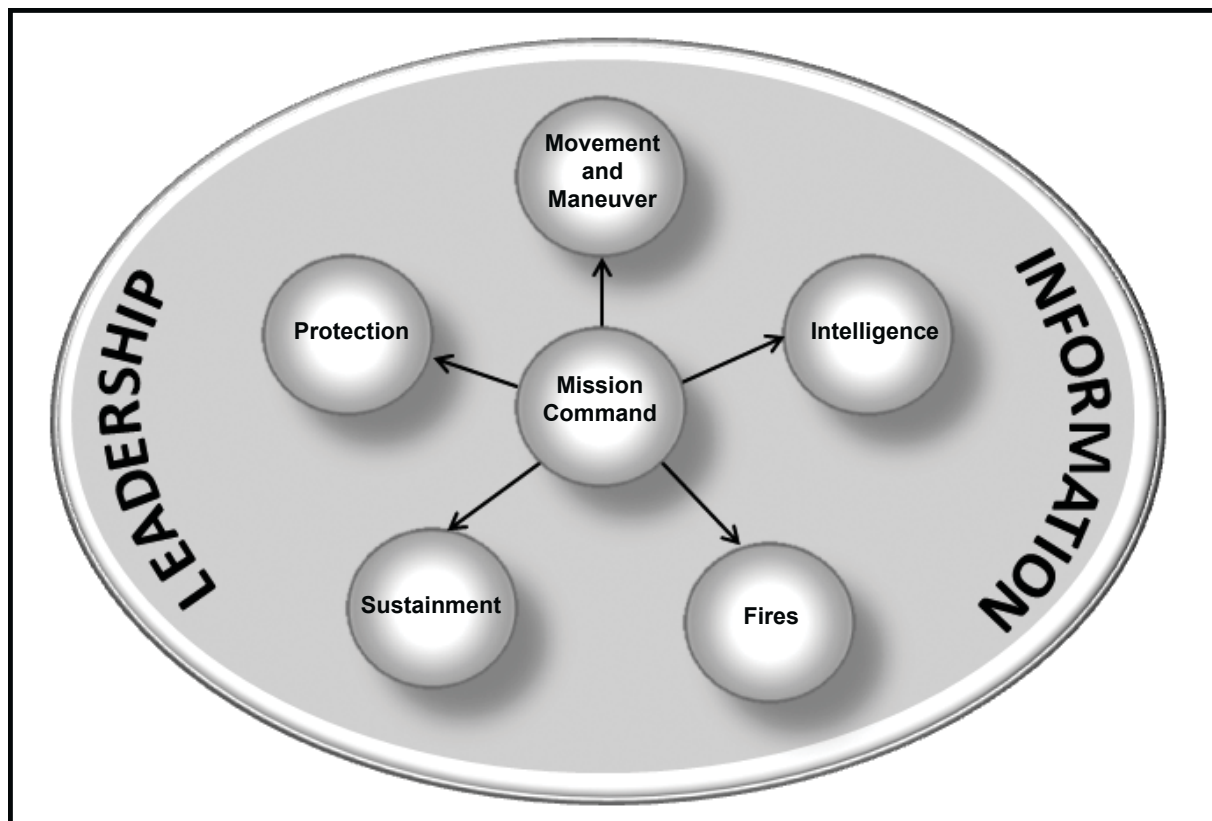


Figure 2. Mission command as a warfighting function.

command and control became nearly synonymous with the technical aspects of the network, often at the expense of the human dimension. In addition, the term “command and control” is inadequate to describe the role of the commander and staff in today’s fight. Mission command, as both the activity and the warfighting function, more accurately captures the commander’s role in warfighting.

Other Changes

Two other revisions of note in Change 1 to FM 3-0 include new characterizations of the spectrum of conflict and security force assistance. These are described below.

Spectrum of conflict. While it retains the spectrum of conflict with levels of violence ranging from “stable peace” to “general war,” Change 1 to FM 3-0 drops the intermediate points on the spectrum “unstable peace” and “insurgency”; however, it retains the five operational themes and includes Joint “types of operations and related activities” within the discussion of operational themes. Change 1 further develops the discussion of major combat operations.

Security force assistance. Change 1 to FM 3-0 emphasizes the increasing importance of security force assistance (SFA) missions. Both the 2010 *Quadrennial Defense Review* (QDR) and the *Army Capstone Concept* identify security force assistance as a critical requirement for the foreseeable future. The *Quadrennial Defense Review* states, “Within the range of security cooperation activities, the most dynamic in the coming years will be SFA missions: ‘hands on’ efforts conducted primarily in host countries to train, equip, advise, and assist those countries’ forces”

The *Army Capstone Concept* states, “Security force assistance is essential to stability operations, countering irregular threats, preventing conflicts, and facilitating security transitions.” Recent experience reinforces the findings in the QDR. The Iraq and Afghanistan conflicts require a substantial commitment of conventional forces for SFA, and it is forecast that Army forces will remain heavily committed to SFA missions in the emerging security environment.

Implications for the Force

Change 1 to FM 3-0 requires educating both the generating and operating force on how mission command affects the execution of full spectrum operations. The biggest impact may be on how commanders and staffs interact daily. Mission command requires collaboration and dialog within an environment of mutual trust in which subordinates at all levels are empowered to make decisions. Establishing such an environment is challenging owing to the realities of force packaging and the ARFORGEN cycle, as well as the operational tempo of today's units.

Nonetheless, we must focus on training the force to operate in a mission environment rather than a detailed command environment, and we must encourage disciplined initiative and a willingness to accept risk among both commanders and their staffs. Although some units have already moved toward mission command, a future force culturally

adapted to the concept and its tasks may best realize its benefits.


Summary

As demands on leaders have expanded dramatically so has the need to empower them with skills, knowledge, resources, and freedom of action. Change 1 to FM 3-0 provides an opportunity to advance the concept of mission command beyond mere philosophy and let it serve as a catalyst for change in the Army. Change 1 to FM 3-0 is a critical step to drive changes in leader development, organizational design, training, and materiel acquisition to develop operational adaptability across the force.

The publication and dissemination of Change 1 to FM 3-0 enables mission command to pervade the force and have an immediate impact across the Army through leader development venues such as the Command and General Staff College and training venues such as Battle Command Training Program seminars. **MR**

Change 1 to Army Capstone
FM 3-0 Operations

U.S. Army
Combined
Arms Center
Intellectual
Center of the Army




Change 1 to FM 3-0 incorporates lessons from continued operations and maturing discussions on Army doctrine. Key changes include replacing Command and Control with Mission Command as both an activity and a warfighting function, and replacing the 5 Army Information Tasks with Inform and Influence and Cyber/Electromagnetic activities.

Several other changes are also readily apparent: Hybrid Threats, Security Force Assistance is described within stability operations, CBRNE Consequence Management becomes an additional task within Civil Support, Chapter 7 is updated to include design.

Refer to the CAC web site for other changes and a more in depth overview of the changes to US Army Operational Doctrine.

The proponent for FM 3-0, Change 1 is the Combined Arms Center:
<http://usacac.army.mil/cac2/FM3-0/index.asp>





Integrated Planning

The Operations Process, Design, and the Military Decision Making Process

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PHOTO: U.S. Army soldiers from 1st Battalion, 327th Infantry Regiment, 101st Airborne Division, kneel outside the town of Badmuk, Kunar Province, Afghanistan, after a night assault on suspected Taliban positions as part of Operation Azmaray Fury, 2 August 2010. (DOD photo by SPC Anthony Jackson, U.S. Army).

FOR THE PAST several years, the School of Advanced Military Studies (SAMS) has been pursuing two objectives regarding design. First, under the exemplary leadership of Colonel Steve Banach, the school served as one of the Army's champions for the concept of design, and played a significant role in getting the idea into the Army lexicon. Simultaneously, but less visibly, the school has been aggressively experimenting with the concept of design from its initial form all the way through the establishment of the methodology defined in Field Manual (FM) 5-0, *The Operations Process*, last spring. We now believe we are in a position to offer some insight into the role of the design methodology within the Army's operations process, along the way dispelling a number of myths about the methodology that we, SAMS, may have unintentionally played a role in propagating.

We now recognize that the most important contribution of the March 2010 edition of FM 5-0 is not the introduction of the design methodology but the recognition that effective planning has both a conceptual and a detailed component. Unfortunately, this recognition can be missed if one skips directly to Chapter 3 of the manual, and the resulting confusion is only compounded by a number of common myths about the design methodology that ignore the distinction altogether. The mythology of design arose largely because of well-intentioned efforts to advertise the potential of the concept. The unintended result has been that the field's experiments with the design methodology have not always lived up to the billing. Consequently, the debate in military journals has somehow encouraged two equally unlikely propositions about using the design methodology: either it will eliminate error from military decision making, or it is useless. The truth lies between these extremes.

Because of our extensive experimentation with the design methodology, we believe SAMS is uniquely placed to offer an honest assessment of the methodology's applicability, strengths, and weaknesses. We have already stated our most central lesson: effective planning requires *both* conceptual and

detailed thinking, and we separate the two at our peril. We have found that the design methodology offers commanders and staffs useful tools for conceptual thinking but is not a panacea for the problems that face the force today. Unfortunately, the advantages that the design methodology does offer will go largely unrealized unless the force is convinced of its value, and the common tendency to discuss its methodology with zealous propagandizing is far from helpful. We hope to start a more open discussion, admitting that we may have oversold design in the past, and we offer the following thoughts.

Demythologizing Design

Unhelpful myths surrounding design militate against its widespread acceptance by the force. Here we want to put these canards to rest so discussion of the doctrinal design methodology can proceed constructively.

Myth #1: The design methodology and planning are two mutually exclusive options for military decision making. Actually, the design methodology is a subcomponent of planning. As FM 5-0 makes clear, “planning consists of two separate, but closely related components: a conceptual component and a detailed component.”¹ Planning encompasses the design methodology, the Military Decision Making Process (MDMP), and Troop Leading Procedures. All components of planning fit within the larger “operations process.” Language that attempts to split the world into “planners” and “designers” is inherently wrong and dangerous.

The design methodology is not a stand-alone methodology. FM 5-0 accurately asserts that the design methodology allows a planner to “develop approaches to solve” problems.² Put more bluntly, the design methodology does not produce solutions on its own. Why not? Because design is a tool for conceptual thinking, and effective solutions require both a conceptual component and a detailed component. A conceptual plan removed from the detailed considerations of the problem will quickly

Myth #1: The design methodology and planning are two mutually exclusive options for military decision making.

assume a “daydream on acetate” quality, far removed from reality.

In a similar fashion, imagining detailed planning without a conceptual underpinning is equally wrongheaded. Such planning quickly devolves into a road to nowhere even if executed exactly. Such plans appear as intricate and sometimes appealing, but they will not produce desired results *because* they are not tied to the overarching purpose. Most proponents of the design methodology point to this error in planning as the explanation for why we need the design methodology in the first place. In reality, they are arguing for a *conceptual* component in planning; the design methodology is not the only tool that fills the bill, but currently it is the best option as an organized heuristic. In fact, the MDMP itself (as a heuristic) has both a conceptual and a detailed component.³ When planners ignore the conceptual component of the MDMP, that process loses much of its value.

Myth #2: The design methodology is for complex, ill-structured problems, and the MDMP is for other types of problems. Although our doctrine, unfortunately, gives some credence to the idea that the design methodology is for complex, ill-structured problems while the MDMP is for others, this notion is false. This myth does not stand up under scrutiny. Perhaps there are some military problems that are not complex and ill-structured, but they do not draw the attention of leaders. Even problems often held as “complicated, but not complex” by those who adhere to Myth #2 only appear so in the abstract. Once one moves from an abstract, theoretical problem (such as “seize an airfield”) to a real-world version of the same problem (“seize *this* airfield in *this* real location in order to create *these* conditions”), complexity immediately rears its head. Any problem that involves predicting the behavior of human beings is inherently complex. This myth is much easier to sustain in the classroom than in the field; in the real world, the *only* problems worth thinking about are the complex, ill-structured ones, and these problems require both conceptual and detailed thinking.

Myth #3: The design methodology is for the talented few; the MDMP is for the rest of us. A common image of the design methodology involves a small group of talented staffers who do conceptual thinking for the commander preparing a product

they then hand off to their less talented friends in the plans section for detailed planning. Field Manual 5-0's assertion that effective planning requires both conceptual and detailed thinking ought to make such an image suspect. The clear linkage between concepts and details makes it problematic to use designing and planning in sequence rather than in parallel.

This is not to suggest that the commander would not want to start his planning for an unfamiliar problem with a relatively small group of advisors; our doctrine recommends this technique as a proven practice. That small group begins as a *subset* of the larger group of planners rather than as a unique entity charged with conceptual thinking. They maintain a responsibility for the detailed thinking that must accompany the design methodology's conceptual thinking. The old practice among tactical commanders of having an "Orders Group A"—a select few among the staff who assist the commander in thinking about a problem at the macro level—may be a more useful model for the design methodology than the image of a sheltered group of "designers" who are not to be burdened with details. An effective planner must have his eyes constantly on both the conceptual and detailed components of planning.

Myth #4: We plan for certainty; we design for uncertainty. Aside from the fact that no military commander or planner has ever faced anything that looked even remotely like certainty, this myth rests on the idea that planning and the design methodology are two different things. They are not. We plan, almost exclusively, in an environment of uncertainty, and, as aforementioned, planning requires both a conceptual and a detailed component.

Myth #5: Using the design methodology will make sure we solve the right problem correctly. One of the reasons frequently cited for the development of design methodology is that a straightforward, unthinking, and unimaginative approach to the MDMP can produce catastrophic results. This is certainly true. However, a straightforward, unthinking, and unimaginative approach to the design methodology will produce the exact same results. The ability of a commander or staff to correctly identify their problem and the quality of the solution they produce reflect the quality of their thinking, not the methodology they use. While there is undoubtedly truth in the idea that some methods

Myth #4: We plan for certainty; we design for uncertainty.

are more restrictive than others, the impact of the methodology fades in comparison to the impact of the minds applied to the problem. *Who* is thinking about the problem is much more important than *what* instrument they use to organize their thinking. There simply is no substitute for clear and concise thinking, whether one is using the design methodology or the MDMP.

Beyond the Hype

Recognizing that the design methodology is fraught with mythology is not the same as saying it has no utility. Our experience indicates the design methodology is, in fact, useful to planners for conceptual thinking, an essential component in effective planning. In light of that experience, we offer four observations to help supplant the current mythology.

The design methodology provides a means of approximating complex problems that allows for meaningful action. When Army officers reflected on their First World War experiences in *Infantry in Battle*, they concluded that the most essential element in the "practice of the art of war" is the ability to "cut to the heart of a situation, recognize its decisive elements, and base . . . [a] course of action on these." The ability to do this, they concluded, requires "training in solving problems of all types, long practice in making clear, unequivocal decisions, the habit of concentrating on the question at hand, and an elasticity of mind."⁴

The design methodology is largely focused on helping commanders and planners exercise the "elasticity of mind" that has always been a prerequisite for effective military action. It is a useful tool when the commander and staff face an unfamiliar problem, assisting them in recognizing the decisive elements in an environment in which their past experience does not immediately suffice. Our doctrine labels such problems "ill-structured," which is further defined as "complex, nonlinear, and dynamic."⁵ Any military problem that includes an adversary, however, is "complex, nonlinear,

and dynamic” by nature, so this distinction is of little utility to military planners. The doctrine gets to a much more useful distinction when it admits that whether one sees a problem as ill-structured, medium-structured, or well-structured largely depends on “the knowledge, skills, and ability” of the person looking at the problem.⁶ “Ill-structured” is in the eye of the beholder.

When a commander faces a novel and unfamiliar problem, he may feel overwhelmed by the uncertainty. It is here that the design methodology can help. The conceptual framework of an environmental frame, a problem frame, and an operational approach allows the commander and his staff to think about the situation without focusing them immediately on developing or refining a mission statement. It provides some intellectual breathing space to “cut to the heart of a situation.” It allows them to better understand the complexity of the problem by becoming familiar with the critical elements in the environment and then approximating the problem to a level of simplicity that allows for meaningful action. It helps, in other words, with the very same intellectual challenges that have faced commanders throughout the history of the Army.

The design methodology does not produce an executable solution, however. Its role is to assist the commander in “getting his arms around” a new and unfamiliar problem or an old problem that has changed in some new and unexpected way. Having achieved that, the design methodology must be integrated with a more detailed approach to planning, and usually the earlier this happens the better for all concerned.

The design methodology enables commanders to meld analytic and intuitive decision making in a way that takes advantage of both. FM 6-0, *Mission Command: Command and Control of Army Forces*, delineates two types of decision making: analytic and intuitive. The former, which is associated with the MDMP in the manual, is described as “structured” and “methodical,” while the latter “substitutes application of the art of command for missing information.” Although conceding that “in practice, the two approaches rarely exclude each other,” the doctrine states explicitly that “intuitive decision-making does not work well when the situation includes inexperienced commanders, complex or unfamiliar situations.”⁷

In contrast, the design methodology offers a third type of decision making: *synthetic*. It asks the commander to put his full intuition to work in even the most unfamiliar situation, but to temper and inform that intuition with input from selected members of “the planning staff, red team members, and subject matter experts internal and external to the headquarters.”⁸ The design methodology is intentionally less structured than our other planning methodologies in order to get every brain, and not just every weapon, into the fight. Faced with a new and unfamiliar problem, the design methodology asks commanders to increase the elasticity of their own minds by considering input from sources that would be of questionable usefulness if the situation were more familiar. It seeks to provide by proxy the experience the commander lacks in a specific environment.

Underpinning the design methodology are useful tools for conceptual thinking, even when that thinking is done within the framework of the MDMP. Conceptual thinking has been around a long time, and is not synonymous with the design methodology. Indeed, the overwhelming majority of conceptual thinking done within the history of our Army was done without any reference to the design methodology whatsoever. Why, then, should we spend time and energy training the force for a new methodology that appears to be applicable in what some will argue will prove to be only a relatively small number of situations (those that are new or novel enough to be outside the experience of the commander and staff)?

The answer lies in the first claim of this article: the most important contribution of FM 5-0 is the recognition that effective planning requires both conceptual and detailed thinking. All effective planning requires a conceptual component, and many of the ideas underlying the design methodology (such as reflection, iteration, systems thinking, learning theory, narrative, cultural lenses, and more) are useful to the commander and staff even when there is insufficient time to explicitly employ the design methodology as described in FM 5-0. An effective planner will find himself using these tools even when faced with problems that are relatively familiar to him because they allow him to move quickly to the more detailed planning that is necessary for action.



Photo by Prudence Siebert/Fort Leavenworth Lamp

School of Advanced Military Studies students use a model with broad categories, ranging from culture to security, potentially affecting their exercise issue during the Operational Command Workshop, part of the yearlong Future Warfare Study Plan Unified Quest, 28 January 2008.

Unfamiliarity with a problem, rather than its structure or complexity, is the best indicator of design's utility. Although our doctrine invests several pages in delineating varied structures a problem may display (and the various levels of complexity it may contain), the best predictor of how valuable the design methodology will prove is the level of familiarity the commander and staff have with the problem. The design methodology is most useful when the commander and staff are least familiar with the problem. Either the problem is itself novel, the command and staff is new to the problem, or the problem has changed in some unforeseen way. Under these conditions, a structured approach to conceptual thinking is most useful, and design methodology provides that structure.

This observation allows a more broadly defined rule of thumb for applying the design methodology. The closer a commander is to an assigned, well-defined task and purpose, the less valuable the design methodology is likely be. In the absence of an assigned mission—or with one that is broad and obscure (“Fix Ramadi” being a

contemporary example)—the commander is likely to find the design methodology useful.

Recognizing that the rule of thumb we propose applies to the design methodology, not to conceptual thinking itself, is important. The SAMS experience indicates, in fact, that the most effective planners do not compartmentalize their thinking into conceptual and detailed components. Instead, they integrate the two to such an extent that an outside observer would find it difficult to determine when the planner was engaged in one rather than the other. The question of when one uses conceptual thinking and when one uses detailed thinking, as opposed to when one uses the design methodology or the MDMP, is valid only in the laboratory. In the real world, effective commanders and staffs integrate them seamlessly.

A Case Study in Conceptual and Detailed Thinking

Operation Overlord presents material for a case study in the integration of conceptual and detailed planning for a problem of staggering complexity. The planning effort—undertaken by American and British officers between 1943 and 1944—blended

conceptual and detailed planning for complex problems to enable meaningful action. Although this group of military planning professionals, known collectively as the “COSSAC staff,” knew nothing of today’s design methodology, their example of conceptual and detailed thinking is instructive nonetheless.⁹

Retroactively labeling the COSSAC planning effort as an example of the design methodology would be inappropriate and perhaps confusing. That is not the suggestion here. With the possible exception of some overlapping word choice, the COSSAC staff was conducting a process much more akin to the MDMP, or its precursor, the “Estimate of the Situation.”¹⁰ However, this vignette does provide an excellent example of the necessary mixture of conceptual and detailed planning inherent in any worthwhile military operations process.

In the early spring of 1943, the American and British Combined Chiefs of Staff (CCS) ordered the establishment of a headquarters to begin the formal planning for the eventual “full scale assault against the continent in 1944 (Operation Overlord).”¹¹ Additionally, the CCS directed that this staff develop a credible deception plan and determine what would be required if the German government collapsed without an invasion.

Although the headquarters would eventually transform into the staff of the Supreme Allied Commander, at the outset the CCS declined to appoint a commander and elected instead to have Lieutenant General Frederick Morgan serve as the chief of staff. Over the next nine months, Morgan and his staff conducted half a dozen distinct iterations of cyclic planning refinement, moving from a general concept to a specific planning directive, while simultaneously generating movement tables, detailed topographic and oceanographic surveys, and refined statements of operational requirements. As Morgan himself identified early on, the efforts of the COSSAC staff would transcend any previous definition of planning.¹² In its final form, Operation Overlord was a military undertaking of a “magnitude undreamt of before,” eventually involving over 130,000 soldiers, sailors, airmen, and marines from seven different countries.

To enable the COSSAC planners to approach a problem of the size and scale envisioned, they needed a means for approximating their complex

problem at a level of simplicity that was useful. One example of how Morgan and his staff accomplished this happened at the beginning of the planning effort in 1943. Although the COSSAC staff was instructed to build three supporting campaign plans (deception, assault, and stability), and their initial analysis suggested where and when to cross the channel and with how much, they quickly realized that the heart of their problem was landing craft. The conceptual notion of assaulting with Allied forces across the English Channel led the planning team into a detailed effort to determine how many boats and of what size and configuration would be needed. In other words, the complex problem of a multi-Army, multi-division assault from the sea with supporting airborne invasion and accompanying naval and air-delivered operational fires was reduced to an effort to determine the number of boats needed. The COSSAC planners’ efforts to approximate their problem in simple terms are akin to the conceptual notion of framing the environment and framing the problem, both of which are inherent in the design methodology.

In a similar manner, the experience of the COSSAC staff provides an example of the benefits of mixing analytic and intuitive decision making. As noted above, the benefit of this blending in the execution of the design methodology is the reduction of uncertainty by testing and supplementing the commander’s intuition. In this example, the purpose of the COSSAC effort was to confirm or deny the intuition of CCS leaders, such as General George Marshall, who instinctively sensed the pressure the invasion of Europe would have on the Nazis. What the CCS needed were details regarding the size of the force and the time and space it would take to train and assemble. As Morgan put it, the COSSAC staff needed to figure out what tools they needed, and answer these questions: “can the job be done with these tools, or not? If so, how, and if not, why not?”¹³ Additionally, the COSSAC staff’s deliberate effort to examine in detail every military crossing of the English Channel from the 11th century to the 1942 raid on Dieppe used detailed analysis to replace uncertainty with a set of known facts. Furthermore, Morgan’s insistence on employing subject matter experts in a variety of supplementary planning efforts helped the COSSAC staff get every brain into the fight.

Would Morgan and his team have benefited from the the design methodology of our doctrine? Two indicators suggest that they would have. First, Morgan’s problem seems to fit easily into our proposed “rule of thumb.” He lacked an assigned mission with a clear task and purpose, and the guidance he did have was vague in the extreme. Furthermore, his familiarity with the problem was limited by the lack of experience in operations of this magnitude and operational scale. The SAMS experience over the past several years indicates that this is exactly the situation when the design methodology is most beneficial. Secondly, although the design methodology did not exist in 1943, Morgan and his staff used many of the tools that underlie its methods, “iteration” being only the most obvious example. The COSSAC staff’s overall effort to reduce the unfamiliarity of the CCS (and military professionals everywhere) with the requirements for a multi-army seaborne invasion and the simultaneous development of specific missions for the land, air, and sea forces involved are a perfect example of the integration of conceptual and detailed planning. They highlight the type of situation in which the design methodology is most useful to commanders and staffs.

The Future of Design Methodology

To get the most utility out of design, our doctrine must recognize the need for integrated planning that incorporates the best of the conceptual tools of the design methodology with the best of the detailed planning tools of the MDMP. The mental image of a group of “designers” aiding a commander’s conceptual thinking and then passing off a product to the less talented “planners” who then turn it into a plan is not a viable model. As our doctrine already states, “conceptual planning must respond to detailed constraints.”¹⁴

Instead, planners must be able to master conceptual thinking *and* detailed thinking, with the design methodology serving as one of several available tools. The ability of a commander or a planner to recognize the decisive elements of a problem and develop a course of action based on these rests on his ability to think in both conceptual terms and in detail. At the School of Advanced Military Studies, we remain dedicated to producing operational planners who excel at doing both.



Photo by Prudence Siebert/Fort Leavenworth Lamp

School of Advanced Military Studies students and instructor during the Operational Command Workshop, part of the year-long Future Warfare Study Plan Unified Quest 2008.

NOTES

1. Field Manual (FM) 5-0, *The Operations Process* (Washington, DC: U.S. Government Printing Office [GPO]) para. 3-2.

2. FM 5-0, para. 3-1.

3. FM 5-0, para. 2-43.

4. The Infantry Journal, Incorporated, *Infantry in Battle, Third Edition* (Richmond, Virginia: Marine Corps Association Press, 1986), 1. Originally published in 1934, this collection of observations based on U.S. experiences in the Great War was developed at Fort Benning under the direction of George C. Marshall.

5. FM 5-0, para. 2-23.

6. FM 5-0, para. 2-20. It is worth noting that the historical examples of structured and ill-structured problems used in FM 5-0 are found in paragraph 3-16, and in both cases the sole factor in determining structure is the familiarity of the commander with the problem. It seems likely that the phrase "the world is increasingly complex" may be more accurately worded as "we are increasingly asked to perform unfamiliar tasks."

7. FM 6-0, *Mission Command: Command and Control of Army Forces*,

(Washington, DC: GPO), para. 2-12 through 2-15.

8. FM 5-0, para. 3-32.

9. Frederick Morgan, *Overture to Overlord* (Garden City, NY: Doubleday and Company, Inc. 1950), 2. The name is taken from the initials of the senior officer appointed—the Chief of Staff, Supreme Allied Command, or COSSAC.

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Adaptive Leadership in the Military Decision Making Process

Lieutenant Colonel William J. Cojocar, Ph.D., U.S. Army, Retired

Army leaders in this century need to be pentathletes, multi-skilled leaders who can thrive in uncertain and complex operating environments . . . innovative and adaptive leaders who are expert in the art and science of the profession of arms. The Army needs leaders who are decisive, innovative, adaptive, culturally astute, effective communicators, and dedicated to life-long learning.

— Francis J. Harvey, Secretary of the Army, speech for U.S. Army Command and General Staff College graduation¹

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PHOTO: 3rd Armored Cavalry Regiment soldiers identify targets for Iraqi Army field artillery training, Wasit, Iraq, 20 October 2010. (U.S. Army, SPC Charles M. Willingham)

TODAY'S ARMY LEADERS have accepted adaptive leadership as a practice and a methodology, integrating it into the way we train leaders to meet the challenges of the contemporary operating environment. Adaptive leadership is an accepted leadership practice that facilitates leading in a difficult and changing environment, as we encounter threats that change and evolve their tactics, techniques, and procedures on a weekly to monthly basis. Much has evolved in this practice in the last eight years, including leadership and operational doctrine and new training venues to train tomorrow's leaders. This article examines current U.S. Army doctrine on adaptive leadership, reviews current adaptive leadership theory and practice, and recommends ways to incorporate adaptive leadership practices into the military decision making process (MDMP).

Chairman of the Joint Chiefs of Staff General Martin Dempsey recently commented on new leadership and operational doctrine, stating, "The recent release of FM 5-0, *The Operations Process*, represents a major shift in how we develop adaptive leaders through its introduction of the Design process. The goal here is to develop leaders who do not think linearly, but who instead seek to understand the complexity of problems before seeking to solve them. Design gives leaders the cognitive tool to *understand* complex problems as part of the Visualize, Understand, Decide, Direct responsibilities of the commander."²

General Dempsey added, "We're trying to decide how to build in new skill sets for our leaders to meet the hybrid threats that exist in these uncertain times. The pace of change adds to the increasing complexity . . . We're seeking creative thinking skills and trying to replicate those complexities in our

training scenarios. We want to build on the ability to adapt. The 2015 learners will be able to easily create and adapt virtual training environments to meet their individual or collective training needs.”³

Our current doctrine addresses what adaptive leadership is and provides some tools for being adaptive, but fails to address how to implement it in the MDMP process. This is important because the MDMP is the genesis of operations. In order to develop and execute adaptive plans and operations, and lead adaptively, today’s leaders must understand where and how in the MDMP they can integrate, apply, and master adaptive leadership to meet adaptive threats and changing situations.

Adapting to the “Hybrid” Threat Environment

The U.S. Army Combined Arms Center Threats Division defines the hybrid threat as a diverse, dynamic combination of regular forces, irregular forces, and criminal elements unified to achieve mutually benefitting effects.⁴ The term “hybrid” is used to capture the essence of the complexity of war, the multiplicity of actors involved, and the blurring between traditional categories of conflict. Hybrid threats are innovative, adaptive, globally connected, networked, and embedded in local populations. They can possess a wide range of old, adapted, and advanced technologies—possibly including weapons of mass destruction. U.S. forces must prepare for a range of conflicts. New threat doctrine includes an operational Design component called *adaptive operations* or actions to preserve the threat’s power and apply it in adaptive ways against overmatching opponents.⁵ The hybrid threat’s immediate goal is survival, but its long-term goal is the expansion of its influence. The hybrid threat’s operational goal is to adapt temporarily, using patience, adapting tactics, techniques, procedures, and even operational and strategic goals, to live and fight another day.

In the article “Beyond the ‘Hybrid’ Threat: Asserting the Essential Unity of Warfare,” the authors reinforce the notion that adaptive leadership is essential to counter present and future adversaries. They note, “Those [threats] that have not adapted have faced rapid extinction in the jungle of the global strategic order. Those that do are *entities or movements that, based on a*

*continuous scanning of their operational environment, maneuver with speed and agility through material and cognitive capabilities to affect the will and psyche of others, in order to attain their political objectives.”*⁶

The ability to shift approaches with agility and speed is the essence of the future threat, as well as of former Secretary of Defense Robert M. Gates’ vision for our armed forces (adaptive in organizational and campaign Design, capabilities development, and execution). Future threats will adapt specific mixes of cognitive and material capabilities based on a continual assessment and reassessment of the other’s strengths and weaknesses, requiring constant adaptation, experimentation, and learning. This adaptability is a measure of one’s ability to change in order to fit altered circumstances and provides commanders an added measure of resiliency in the face of the unknown. This need for adaptability and adaptive leadership points to a potential gap in our doctrinal system.⁷

Adaptive Leadership Reviewed

The Army’s current leadership doctrine, Field Manual (FM) 6-22, provides a solid definition for adaptive leadership, exploring the practice of creative thinking that uses adaptive approaches drawn from previous circumstances or lessons learned, along with creating innovative approaches.⁸ It says that when tasks are difficult, adaptive leaders identify and account for the capabilities of the team, noting that while some tasks are routine, others require leader clarification, and still others present new challenges.⁹ FM 6-22 provides some new tools for adaptability and defines what it is to be an adaptable leader.

Adaptability is the ability to recognize changes in the environment, identify the critical elements of a new situation, and trigger changes to meet new requirements. Adaptability is an effective change in behavior in response to an altered situation.

Adaptable leaders scan the environment, determine the key characteristics of the situation, and are aware of what it will take to perform in the changed environment. Highly adaptable leaders are comfortable entering unfamiliar environments, have the proper frame of mind for operating under mission command orders in any

organization (FM 6-0), and seek to apply new or modified skills and competencies.

Adaptive leadership includes being a change agent. This means helping other members of the organization, especially key leaders, recognize that an environment is changing and building consensus as change is occurring. As a consensus builds, adaptive leaders work to influence the course of the organization. They use several different methods for influencing their organization depending on the immediacy of the problem.¹⁰

Deciding when to adapt is as important as determining how to do it. Deciding not to adapt in a new environment may result in poor performance or outright failure. On the other hand, adapting does not guarantee the change will improve matters.

Field Manual 6-22 describes adaptable leaders as leaders who are comfortable with ambiguity and are flexible and innovative. They are ready to face the challenges at hand with the resources available. They are passionate learners, able to handle multiple demands, shift priorities, and change rapidly and smoothly. They view change as an opportunity.

Adaptability has two key components:

- The ability of a leader to identify the essential elements critical for performance in each new situation.

- The ability of a leader to change his practices or his unit by quickly capitalizing on strengths and minimizing weaknesses.¹¹

Adaptive leaders are open-minded. They do not jump to conclusions, are willing to take risks, and are resilient to setbacks. Our new leadership doctrine informs leaders how to become more adaptable. They must learn to lead across cultures, seek challenges, and leverage their cognitive abilities to counteract the challenges of the operational environment through logical problem solving.¹²

Adaptive Thinking, Design, and FM 5-0

The Army's new FM 5-0, *The Operations Process*, addresses adaptation by focusing on creative thinking, a process that involves creating something new or original when facing old or unfamiliar problems that require new solutions. Creative thinking



(U.S. Army)

Chief of Staff of the Army GEN Martin E. Dempsey speaks with U.S. soldiers from United States Division-Center during a visit to Camp Liberty, Iraq, 19 April 2011.

produces new insights, novel approaches, fresh perspectives, and new ways of understanding and conceiving things. Leaders look at the options to solve problems using adaptive approaches (drawn from previous similar circumstances) or innovative approaches (completely new ideas).¹³ Today's full spectrum operations demand planning that can be integrated and addressed in the operational Design process, the MDMP, and troop-leading procedures.¹⁴

...adaptive leadership is the framework required to effectively close the gap and make aspirations a reality.

Innovation, adaptation, and continuous learning are all central tenets of Design. Innovation involves taking a new approach to a familiar or known situation. Adaptation involves taking a known solution and modifying it to a particular situation or responding effectively to changes in the operational environment. Design helps commanders lead; guides planning, preparing, executing, and assessing operations; and requires agile, versatile leaders who foster continuous organizational learning while actively engaging in iterative collaboration and dialog that enhances decision-making at all levels.¹⁵ Design provides a model for problem framing and cognitive tools to understand problems and appreciate their complexities before trying to solve them. The tools help leaders recognize and manage transitions, educating and training them to identify adaptive, innovative solutions, create and exploit opportunities, and leverage risks to their advantage.¹⁶ Leaders must lead organizational learning, develop methods to determine if reframing is necessary during the course of an operation and continuously assess, evaluate, and reflect on the problem at hand.¹⁷

Adaptive Leadership Practice

The pioneer of adaptive leadership theory, Ronald Heifetz of Harvard University, states that adaptive leadership is the practice of mobilizing

people to tackle tough challenges and thrive. It's about changes that enable the capacity to thrive. Such changes build on the past rather than jettisoning it. Organizational adaptation occurs through experimentation.¹⁸

Heifetz, Alexander Grashow, and Marty Linsky state that adaptive leadership is an iterative process involving three key activities:

- Observing events and patterns.
- Interpreting them.
- Designing interventions based on the observations.¹⁹

Adaptive leadership has three parts: observation, interpretation, and intervention. Adaptive leaders must adopt an experimental mind-set that commits to an intervention but does not become wedded to it. Adaptive leadership is about will and skill. "The single most important skill and most undervalued capacity for exercising adaptive leadership is diagnosis," which in military terms translates to "mission analysis" and "running estimate analysis."

Heifetz, Grashow, Linsky provide the following recommendations for practicing adaptive leadership:

- Don't do it alone.
- Live life as a leadership laboratory.
- Resist the leap to action.
- Discover the joy of making hard choices.²⁰

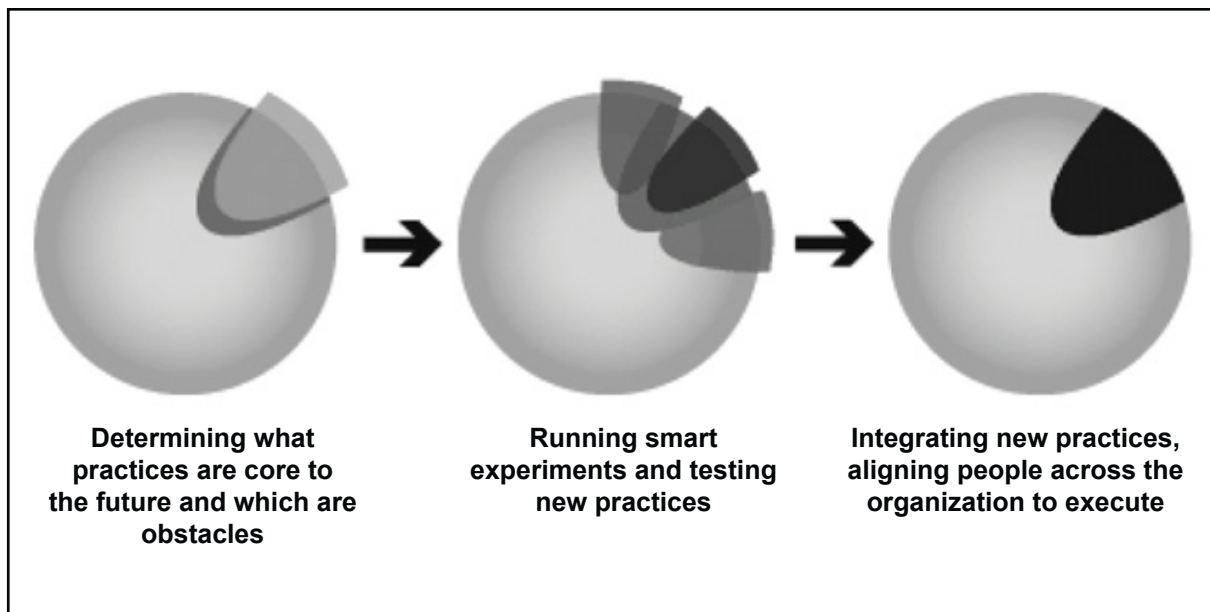
Adaptive challenges are difficult because their solutions require people to change their ways. Adaptive work demands three tough human tasks:

- Figure out what to conserve from past practices (lessons learned).
- Figure out what to discard from past practices.
- Invent new ways that build from the best of the past.²¹

When leaders realize their organization's aspirations—the innovations and progress they want to see—demand responses outside the current capacities, adaptive leadership is the framework required to effectively close the gap and make aspirations a reality.²² It provides a disciplined approach to do more for what you care about most.²³

Adaptive Leadership and the MDMP

Understanding adaptive leadership is important, but integrating it into the military decision making process is a challenge. Not many have written about



Introduction to Organizational Adaption.

it. The following are some recommendations worth considering during the MDMP:

Step 1. Receipt of mission. Receiving higher headquarters' order of a new mission is receipt of mission. Commanders are responsible for providing initial guidance and time allocation. Depending on the complexity of the situation, they may initiate Design activities before or in parallel with the MDMP. As specified by FM 5-0, commanders may choose to conduct Design to help them understand the operational environment, frame the problem, and consider operational approaches to manage it or solve it.

Why are leaders reluctant to “Design”? Is it because they don’t understand what Design is? Is it because it takes too much time? Or is it because they feel they have a firm grasp of what the real problem is and do not need to waste time validating the problem?

Whichever the case, Design provides an ideal platform to begin adaptive thinking by modeling innovative, adaptive problem framing. Design provides leaders with the tools to understand problems and appreciate their complexities before trying to solve them. Taking and making time for this valuable exercise helps build adaptive leadership skills by educating and training leaders to identify and employ adaptive, innovative solutions, create and exploit opportunities, and leverage risks to their

advantage. Time invested in the Design process is a valuable step in understanding the threat, the environment, and how to meet both with adaptive plans and operations.

Step 2. Mission analysis. The commander and staff conduct mission analysis to better understand the situation and problem and identify *what* the command must accomplish, *when* and *where* to do it, and most important, *why*—the purpose of the operation. Mission analysis is the most important step in the MDMP because no amount of subsequent planning can solve a problem if the commander and staff do not understand it. Mission analysis allows commanders to visualize the operation and describe how it may unfold in the commander’s intent and planning guidance.²⁴ Mission analysis is one of the most important steps for integrating adaptive leadership. How adaptable, flexible, and agile are we? Are we lock-stepped into our tactics, techniques, and procedures, continually reacting to the threat, or are we preemptive, proactive, and agile? Although not specified in Army doctrine, two valuable tools that can facilitate adaptability are the strengths, weaknesses, opportunities, and threats analysis and the force field analysis. The staff should also observe, analyze, understand, and interpret patterns (pattern analysis).

Step 3: Course of action (COA) development. This step generates options for follow-on analysis

and comparison to satisfy the commander's intent and planning guidance. Planners use the problem statement, mission statement, commander's intent, planning guidance, and knowledge products developed during mission analysis to develop COAs. Staffs often develop one to two courses of action that are diametrically different in their approaches to solving the problem. Many times, staffs are directed to develop a third COA that often serves as a throw-away option, with the staff not investing much time on it. Staffs should instead develop a proactive, preemptive COA as a way to inject adaptability into the MDMP. They may also use "adaptive" as a screening criterion to screen for validity in COA analysis. Of course, we must train our staffs to understand what the screening criterion is and how to apply it in quantifiable terms.

Step 4: COA analysis (wargame). This step allows commanders and staffs to identify difficulties or problems in coordination as well as the probable consequences of actions they are planning or considering.²⁵ Threat-focused decision making, proactive or reactive, and adaptive actions, reactions, and counteractions make for a dynamic COA analysis. Risk assessment is another consideration. Are we

pushing the risk envelope? Are we hinging on a low- to moderate-, or moderate- to high-risk level during wargaming? COA analysis (wargaming) can become an extremely adaptive exercise if the staff develops an adaptive COA, war games it, integrates the results, and assesses them. This MDMP step is the experimental stage, during which the staff tests interventions.

Step 5: COA comparison. This is an objective process to independently evaluate COAs against set evaluation criteria approved by the commander and staff to identify their strengths and weaknesses and allow the commander and staff to select one with the highest probability of success and develop it in an operations plan or order.²⁶ Using adaptive screening and evaluation criteria for COA comparison injects adaptability into the MDMP process.

Conclusion

Adaptive leadership is an accepted leadership practice that facilitates leading in a difficult and changing environment in which we encounter adaptive and "hybrid" threats that change and evolve tactics, techniques, and procedures across the conflict spectrum. **MR**

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UNLEASHING DESIGN

Planning and the Art of Battle Command

Brigadier General (P) Edward C. Cardon, U.S. Army,
and Lieutenant Colonel Steve Leonard, U.S. Army

Design is neither a process nor a checklist. It is a critical and creative thinking methodology to help commanders understand the environment, analyze problems, and consider potential approaches so they can exploit opportunities, identify vulnerabilities, and anticipate transitions during a campaign.

—FM 5-0, *The Operations Process*

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PRINT: Mongol army at the Indus River in today's Pakistan, 1221. The Mongols were naturals at operational design. They drove the Khwarezmian Turks out of the Amu Darya region into India and Iraq, destroying that Muslim empire.



WITH THE PUBLICATION of the most recent edition of Field Manual (FM) 5-0, *The Operations Process*, our doctrine is on the cusp of what is arguably the most significant change to our planning methodology in more than a generation. While our proven methods for conducting deliberate planning have changed little since being introduced, the world around us has experienced fundamental paradigm shifts that threaten to invalidate those traditional methods. Although our Military Decision Making Process (MDMP) remains an indispensable model for the problems posed by a bipolar security environment, it fails to provide the advanced cognitive tools necessary to solve the complex, ill-structured problems common to contemporary operations. The introduction of *design* in FM 5-0 addresses that gap in our doctrine, while providing a sound approach to address the challenges inherent to 21st-century conflict.

FM 5-0 defines design as “a methodology for applying critical and creative thinking to understand, visualize, and describe complex, ill-structured problems and develop approaches to solve them.”¹ Unlike formal, detailed planning, design is not a process but an approach to organizing the higher-order, more conceptual activities of battle command. It is an iterative activity occurring throughout the operations process “before and during detailed planning, through preparation, and during execution and assessment.”²

Why Design?

Design is not a function to be accomplished, but rather a living process. It should reflect ongoing learning and adaptation . . . It is dynamic, even as the environment and . . . understanding of the environment is dynamic.

—FM 3-24, *Counterinsurgency*

Army doctrine draws a fine distinction in planning, recognizing that it consists of two separate, but closely related, components: design, which

represents the conceptual component of planning, and detailed planning, conducted through formal processes such as the MDMP or the Joint Operations Planning Process (JOPP).³ Design is not a replacement for such processes, nor is it intended to replicate any of the established detailed planning steps. Instead, design complements traditional planning processes (see Figure 1). In an era when operations are typically affected by far more factors than at any time in our history, design offers the *thinking tools* necessary to develop a deeper understanding of the context of the situation, identify the underlying causes of conflict, and formulate flexible approaches to solve them.⁴

Many of the concepts underpinning design are not new. For years, intuitive senior commanders have used the fundamentals of design to improve their understanding of the operational environment, form teams of select individuals to assist in providing analysis and advice, and leverage dialog and assessment to build learning organizations. The introduction of a doctrinal approach in FM 5-0 marks the codification of a design methodology that complements and reinforces the successful articulation of battle command.

Other models emerged in the past decade that promised to optimize our ability to formulate solutions to the complex, ill-structured problems becoming increasingly common. Effects-based operations (EBO) drew on complexity theory and closed-systems analysis to offer a holistic view of the operational environment in its constituent, interrelated parts. While the Air Force successfully implemented a model of EBO based on structural complexity, it was not well suited to the interactive nature of operations among the people. Systemic operational design (SOD) shares many of the

Systemic operational design (SOD) shares many of the same characteristics of design, but in application proved too complicated...

same characteristics of design, but in application proved too complicated and staff-centric for most operational commanders. Though both EBO and SOD initially appeared to hold great promise, they were ultimately rejected. Building on the lessons from these earlier models, design offers a relatively simple methodology that can be applied at any level, in any situation.

The Goals of Design

*The commander's thinking, foresight, instinct, experience, and visualization are particularly important during the early design effort, when identifying the true nature of a complex problem and designing an approach to the solution will drive subsequent planning and execution.*⁵

—General James N. Mattis, U.S. Joint Forces Command

Broadly, design seeks to accomplish four distinct goals that are essential to transforming the conditions of the operational environment. These goals underpin the cognitive logic of the activities of battle command and are reflected in the reasoning that ultimately guides detailed planning. Individually, the goals of design are vital components to the effective application of operational art. Collectively, they are essential to mitigating the effects of complexity—uncertainty, chance, and friction—on operations in an era of *persistent conflict*.⁶

Army Planning		
	Design	MDMP
Battle Command Role	Understand/Visualize/Describe	Direct
Planning Component	Conceptual	Detailed
Problem Approach	Framing	Solving
Critical Reasoning	Inductive	Deductive
Output	Design Concept	Plan or Order

Figure 1. The Army Planning Construct.

Understand ill-structured problems. Persistent conflict underpins our view of the operational environment and presents a broad array of problems to commanders and their staffs in 21st century operations.⁷ Understanding these problems within the context of the operational environment—both their nature and their central characteristics—is fundamental to design and essential to success in an era of persistent conflict. In general terms, these range from simple, well-structured problems to complex, ill-structured problems.⁸

Understanding complex, ill-structured problems is essential to mitigating the effects of complexity on full spectrum operations. This understanding, achieved through collaborative dialog and analysis, facilitates learning and allows commanders to better appreciate numerous factors that influence and interact with operations. Assessing the complex interrelationships among these factors and their influence on operations is fundamental to understanding and enables the commander to make qualitatively better decisions.

Anticipate change. Rather than responding to events as they unfold, commanders and staffs use design to anticipate change in the problem and operational environment and manage transitions before they occur. Through the application of design, commanders and staffs consider potential decisions and actions, and assess possible operational approaches to determine how they contribute to achieving the desired end state. Design alone does not assure success in anticipating change, nor does it guarantee that friendly actions will improve the situation. However, design does provide an invaluable set of thinking tools to help commanders and staffs anticipate change and develop, innovate, and adapt approaches. Iterative, collaborative, and focused design offers the means to effectively anticipate change, increasing both the adaptability and agility of the force.

Create opportunities. The design methodology helps commanders set in motion the actions that allow friendly forces to act decisively and purposefully, shaping the situation as events unfold. The exercise of design is inherently continuous and proactive; it creates opportunities for success by setting

Design alone does not assure success in anticipating change...

the conditions for success before the onset of operations. It also facilitates mission command, ensuring that forces are postured to seize the initiative and, through detailed planning, consistently able to seek opportunities to exploit that initiative while concurrently safeguarding potential vulnerabilities. This ensures commanders act promptly as opportunities arise or leverage risk to create opportunities in the absence of clear direction.

Recognize and Manage Transitions. In an era of persistent conflict, our Army requires versatile leaders, critical and creative thinkers capable of recognizing and managing the myriad transitions necessary to achieve success. In a dynamic and complex situation, these include not just friendly transitions but those of adversaries as well as the operational environment. Commanders and staffs must possess the versatility to operate anywhere along the spectrum of conflict and the vision to anticipate and adapt to transitions that will occur over the course of an operation. Design provides the cognitive tools to recognize and manage transitions, identify and employ adaptive, innovative solutions, create and exploit opportunities, protect potential vulnerabilities, and leverage risk to advantage during these transitions.

Design and Battle Command

Given the inherently uncertain nature of war, the object of planning is not to eliminate or minimize uncertainty but to foster decisive and effective action in the midst of such uncertainty.

—FM 3-07, *Stability Operations*

The commander is the central figure in leading design. Utilizing both experience and understanding, his presence is essential for wise direction, sound judgment, and decision making throughout the operations process. His leadership and interaction with the staff is enriched with experience, knowledge, character, and intuition. Design supports his execution of battle command, providing a methodology that fosters the development of understanding in uniquely dynamic situations (Figure 2). Design underpins the cognitive expression of battle command, enhancing the commander's ability to understand, visualize, and

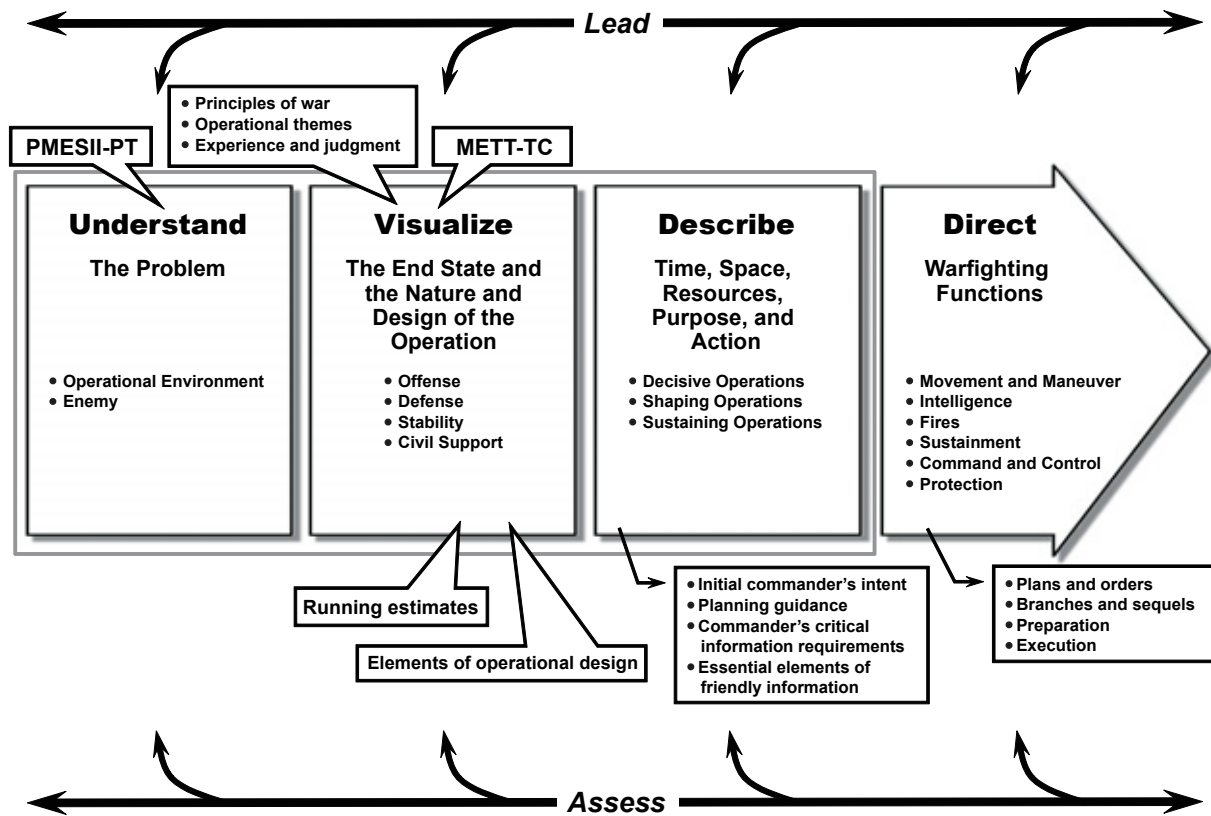


Figure 2. Design and Battle Command.

describe.⁹ It helps commanders and staffs develop a thorough understanding of the operational environment, frame the context of the situation, and formulate effective solutions to complex, ill-structured problems. It provides the thinking tools to generate change, shaping an existing situation into a desired objective or condition.

Successful exercise of design relies on effective and decisive leadership built on a foundation of active engagement and continuous dialog and collaboration. This facilitates parallel and collaborative planning and assessment, and supports the development of the shared understanding and visualization essential to leveraging the full potential of a learning organization. Through the design methodology, the commander and staff convert raw intellectual power into effective combat power.

Innovation and adaptation are vital to battle command and among the central tenets of design. FM 5-0 states that “innovation involves taking a new approach to a familiar or known situation, whereas adaptation involves taking a known solution and modifying it to a particular situation or responding

effectively to changes in the operational environment.”¹⁰ Articulating battle command through design helps the commander lead innovative and adaptive work and guides the operations process. Design fosters continuous learning while facilitating the active dialog and collaboration critical to understanding and decision making throughout battle command.

Fundamentals of Design

Today's operational environment presents situations so complex that understanding them—let alone attempting to change them—is beyond the ability of a single individual.

—FM 5-0, *The Operations Process*

At its essence, design provides the thinking tools to better understand and mitigate the adverse effects of complexity on full spectrum operations. According to research psychologist Gary A. Klein, in persistent conflict, where operations among the people are the norm, complexity is ubiquitous; uncertainty, chance, and friction are common to every operational environment.¹¹ Simplicity is a key

to building a shared understanding of the situation, the problem, and the solution. Simplicity begins with a common frame of reference derived through continuous dialog and collaboration—central tenets of design. As with any activity, these tenets reflect the fundamentals upon which success depends. In design, the fundamentals help to counter the effects of complexity by encouraging commanders to exercise initiative, embrace risk, and seize opportunities.

Apply critical thinking. The effective exercise of design is deeply rooted in the fundamentals of critical and creative thought. Critical thinking derives from purposeful, reflective judgment and reasoning, and drives the continuous learning essential to adaptation in design. Creative thinking fosters innovation by capitalizing on imagination, insight, and novel ideas. In applying critical and creative thinking, continuous dialog and collaboration help to develop a shared understanding of the situation and the operational environment while improving upon the often-flawed nature of individual thought. Critical thinking involves asking appropriate questions, gathering relevant information, deriving sound conclusions, and effectively communicating the essence of those conclusions to others.

Critical thinking also helps distill the immense amounts of information and determine those elements of information that are most relevant to the situation. This is an important step in mitigating the risk associated with guidance that does not fully account for the complexities of the operational environment. Critical thinking helps to clarify guidance and enables commanders to achieve a mutual understanding of the current situation and the desired end state.

Understand the operational environment. Understanding is fundamental to design. It allows leaders to gain an appreciation for the dynamic nature of the operational environment to better visualize the effects of their decisions and actions on the operational environment. This fosters more effective decision making and better integration of military operations with the other instruments of national and international power. In an operational environment characterized by the

presence of joint, interagency, intergovernmental, and multinational partners, such understanding is essential to success.

Developing understanding is a continuous process, facilitated through dialog, collaboration, and circulation. Understanding will never be perfect, but developing an appreciation for its incomplete nature helps identify both intended and unintended consequences that may result from, and undermine, well-intentioned efforts. This appreciation reveals the dynamic nature of human interactions and the importance of analyzing those factors that contribute to understanding. Leaders can gain this understanding by leveraging multiple sources and perspectives and consulting with varied sources of knowledge. Understanding allows the commander and staff to seek and address complexity before attempting to impose simplicity.

Solve the right problem. In recent years, our traditional, detailed planning processes have proven to be especially effective at problem solving, but not always *the right problem*. The effective application of design is often the difference between solving the problem right and solving the right problem. Design is essential to identifying and solving the right problem. Commanders and staffs use design to closely examine the symptoms, the underlying tensions, and the root causes of conflict in the operational environment. From this perspective, they can identify the underlying problem with greater clarity and determine how best to solve it with feasible plans and orders.

Adapt to dynamic conditions. Innovation and adaptation provide the flexibility that allows the commander and staff to adjust to the dynamic nature of the operational environment. In doing so, they capitalize on fleeting opportunities by quickly recognizing and exploiting decisions and actions that produce favorable results while dismissing those that do not. Leaders do not rely on being able to anticipate every challenge or opportunity; instead, they use continuous assessment, innovation, and adaptation to cognitively maneuver the complex, dynamic conditions of the operational environment. Assessment fuels innovation and adaptation and is crucial to the design methodology.

Adaptation demands clearly articulated measures of effectiveness, which in turn provide a means of gauging success and failure while revealing opportunities for innovation. Typically, this involves reframing the situation to align with new information and experi-

Critical thinking involves asking appropriate questions...

ences that challenge existing understanding. Through framing and reframing, design provides a foundation for learning and contributes to the improved clarity of vision vital to successful commanders.

Achieve the designated goals. The articulation of battle command through design is vital to success across the levels of war: As Klein states, “If the link between strategy and tactics is clear, the likelihood that tactical actions will translate into strategic success increases significantly.”¹² Integrating and synchronizing sequences of tactical actions to achieve a strategic aim often proves elusive, and even more so with complex, ill-structured problems. Through design, commanders set in motion the cognitive activities that cement the link between tactical actions and strategic objectives. As understanding of the operational environment and problem improves, the design methodology helps to strengthen this link between tactics and strategy, promoting operational coherence, unity of effort, and strategic success.

The Design Methodology

Designing focuses on learning about an unfamiliar problem and exploits that understanding to create a broad approach to problem solving... Designers learn about the problem through discourse with the client in which the designer is constantly questioning his assumptions and probing the limits of his knowledge.

—TP 525-5-500, *Commander's Appreciation and Campaign Design*

In application, design consists of three distinct activities or *spaces*: framing the operational environment, which corresponds to the *environmental space*; framing the problem, which accounts for the *problem space*; and considering operational approaches, which determines the *solution space* (see Figure 3). These spaces represent the iterative, continuous activities that collectively produce an actionable design concept to guide detailed planning. Together, they represent an organizational learning paradigm that seeks to answer three basic questions:

- What is the context in which design will be implemented (the environmental space)?
- What problems should be addressed and what must be acted upon (the problem space)?
- How will the problem be solved or managed (the solution space)?

With the exercise of design, the commander and staff consider the conditions, circumstances, and factors that affect the use of capabilities and resources as well as those variables that bear on decision making. When initial efforts do not achieve the necessary understanding of behavior or events, commanders reframe their understanding of the operational environment and problem. This cycle of logical inquiry, contextual analysis, transformational learning, and synthesis is rooted in continuous dialog and collaboration. Dialog and collaboration are fundamental to design, providing opportunities to revise understanding or approaches

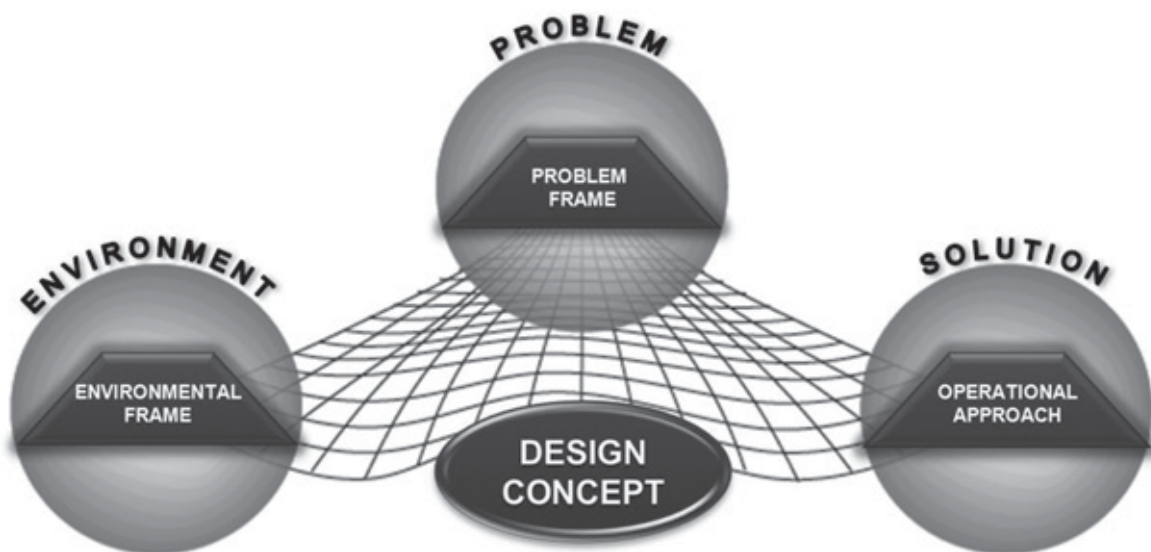


Figure 3. The design activities.

as the problem and the dynamic conditions of the operational environment continue to evolve.

Design is a nonlinear methodology, flowing freely between environmental framing and problem framing while concurrently considering operational approaches. No hard lines delineate individual activities. When an idea or issue is raised, the commander and staff can address it in the appropriate space, even if the idea or issue is outside the current focus. As they gain additional knowledge or begin a new line of questioning, they may shift their focus among the activities, building understanding and refining potential operational approaches to solve the problem.

Framing the Operational Environment

Framing involves selecting, organizing, interpreting, and defining a complex reality to provide boundaries

for analyzing, understanding, and acting. It facilitates hypothesizing, or modeling that scopes the aspect of the operational environment or problem under consideration, providing a perspective from which complex, ill-structured problems can be better understood and acted upon.

To develop a more thorough understanding of the operational environment, the commander and staff focus on defining, analyzing, and synthesizing the characteristics of the operational variables.¹³ This helps to visualize and describe the groupings, relationships, or interactions among relevant actors and operational variables. It is an important learning activity that typically involves an analysis of the operational variables and an examination of the dynamic interaction and relationships among the myriad of other factors in the operational environment.

ENVIRONMENTAL FRAME: WHAT IS THE CONTEXT OF THE SITUATION?

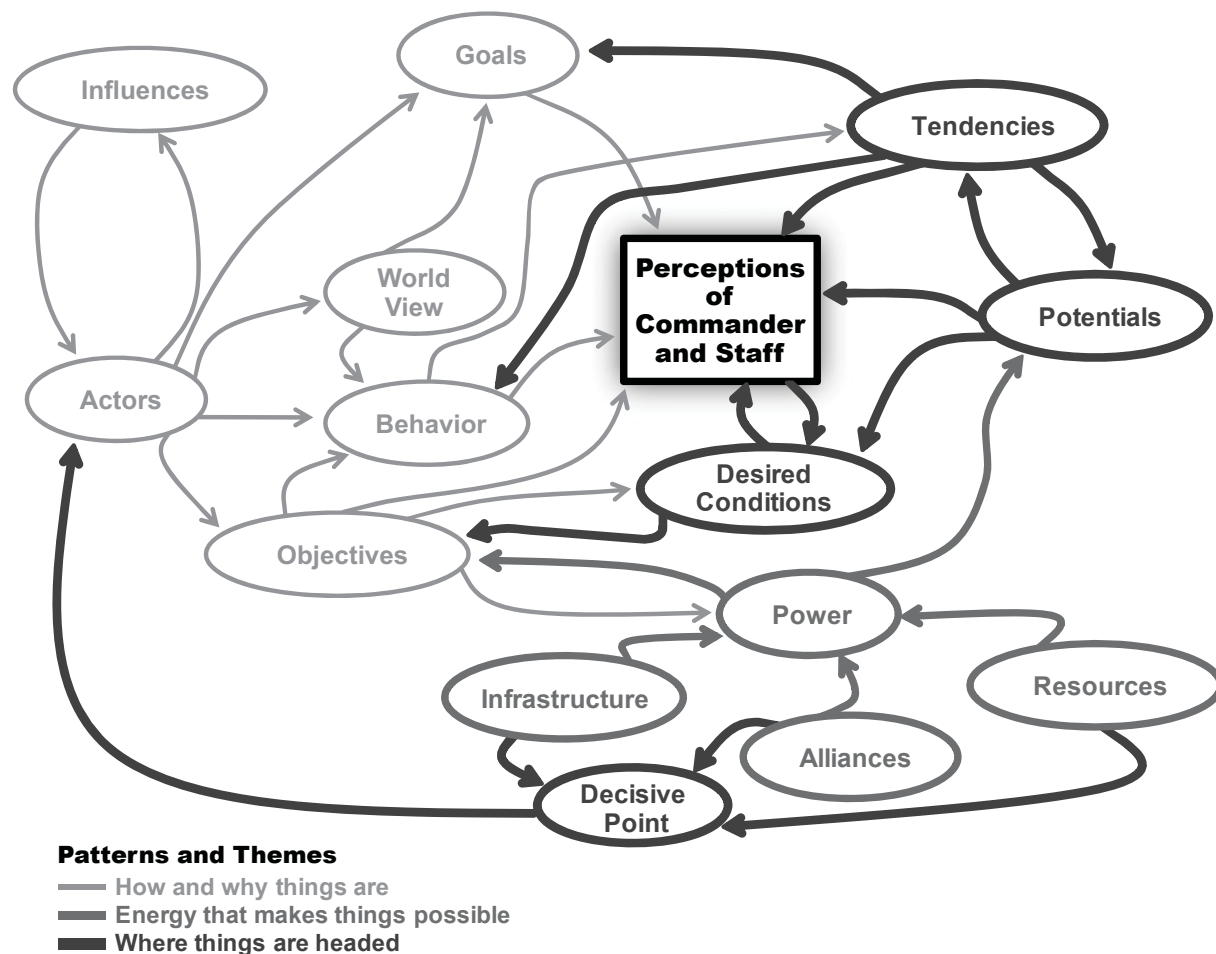


Figure 4. Example environmental frame.

Environmental frame. The commander and staff develop a contextual understanding of the situation by framing the operational environment. The environmental frame underpins understanding within battle command, capturing the history, culture, current state, and future goals of relevant actors in the operational environment. It enables commanders to forecast future events and the effects of potential actions and decisions. The environmental frame explains the actors and relationships within the operational environment and evolves through continuous learning.

Within the environmental frame, commanders and staffs review existing guidance and directives, articulate existing conditions, determine the desired end state and supporting conditions, and identify relationships and interactions among relevant actors and operational variables. They analyze actors that exert significant influence within the operational environment, with the understanding that individual actors rarely share common goals.

End state and conditions. The desired end state consists of those conditions that, if achieved, represent the accomplishment of the mission.¹⁴ Since every operation should focus on a clearly defined, decisive, and attainable end state, success hinges on accurately describing those conditions. These conditions may be tangible or intangible. They may be military or nonmilitary. They may focus on physical or psychological factors. They may describe or relate to perceptions, levels of comprehension, cohesion among groups, or relationships between organizations or individuals. Ultimately, they form the basis for decisions that ensure operations progress consistently toward the desired end state.

Relevant actors. An actor is an individual or group within a social network who acts to advance his personal interests. Relevant actors within such a network may include states and governments; multinational actors such as coalitions, alliances, and regional groupings; and terrorist networks, criminal organizations, and cartels. They may also include multinational and international corporations, non-governmental organizations, and other actors able to influence the situation either through, or in spite of, a legitimate civil, religious, or military authority.

Tendencies and potentials. In developing their understanding of the interactions and relationships among relevant actors, commanders and staffs

consider tendencies and potentials in their analyses. Tendencies reflect the inclination of relevant actors to think or behave in a certain manner. Potential represents the inherent capacity for growth within a specific relationship. Tendencies and potentials are important factors for consideration since not all interactions and relationships support achieving the desired end state.

Framing the Problem

Problem framing involves understanding and isolating the underlying causes of conflict, identifying and defining the fundamental problems to be solved. Problem framing begins with refining the evaluation of tendencies and potentials and identifying tensions between the current and future conditions of the operational environment. Problem framing is used to assess the potential of the operational variables to foster (or resist) transformation and how environmental inertia can be leveraged to achieve the desired conditions.

The problem frame. The problem frame refines the environmental frame that articulates the actions that will achieve the desired end state. It identifies areas of tension and competition—as well as opportunities and vulnerabilities—commanders must address to achieve the desired end state. Tension reflects the resistance among, or friction between, individual actors. The commander and staff identify tension by analyzing and evaluating the tendencies, potentials, and trends within the context of the operational environment. They identify motivations and agendas among the actors, and social, cultural, and ideological factors that may influence them.

During problem framing, commanders and staffs seek to identify the positive, neutral, and negative implications of the natural tensions between existing and desired conditions. These tensions may be exploited to stimulate change and are thus vital to transforming existing conditions. Other tensions may undermine transformation and must be

...tensions may be exploited to stimulate change, and are thus vital to transforming existing conditions.

addressed appropriately. Tensions also arise from differences in perceptions, goals, and capabilities among relevant actors; they are inherently problematic and may foster (or impede) transformation. The analysis of these tensions, and the synthesis of the knowledge gained from such analysis, helps the commander and staff identify the underlying problem to be solved.

Identifying the problem. A concise problem statement clearly and succinctly describes the problem or problem set to solve. It illustrates how tension and competition affect the operational environment and articulates how to transform the current conditions to the desired end state. The problem statement defines the requirements for transformation, forecasting changes in the operational environment while identifying critical transitions.

Considering Operational Approaches

Activities within the solution space provide focus and set boundaries for identifying possible actions to transform the conditions of the operational environment. The staff considers how these actions support achieving the desired end state, and creates a conceptual framework or approach, linking potential actions to conditions. They also consider how to best orchestrate those actions to solve the problem within the context of the environmental frame.

The operational approach is a conceptualization of the actions that will produce the conditions that define the desired end state.¹⁵ In developing the operational approach, commanders and staffs evaluate the direct or indirect nature of interaction and relationships among relevant actors and operational variables within the operational environment. The operational approach helps commanders to visualize and describe broad combinations and sequences of actions to achieve the desired end state. As courses of action are developed and refined during detailed planning, the operational approach provides the logic that underpins the unique combinations of tasks required to transform the conditions of the operational environment.

Operational initiative. The commander and staff also identify specific actions that enable the force to seize and maintain the initiative. They seek opportunities to exploit the initiative and recognize the likelihood of unintended consequences or threats.

The staff explores the risks and opportunities of action by identifying exploitable tensions, including the capabilities and vulnerabilities of the actors who oppose the desired end state. They can then formulate methods to neutralize those capabilities and exploit such vulnerabilities, essentially leveraging uncertainty against an adversary.

Resources and risks. While formulating operational approaches, the commander and staff also consider resources and risks. The staff provides an initial estimate of the resources required for each recommended action in the design concept. Creative and efficient approaches are essential to conserving and optimizing the limited resources directly controlled by the commander. Risks are identified and considered throughout design. The initial planning guidance addresses risk; it explains the acceptable level of risk necessary to seize, retain, or exploit the initiative and broadly outlines risk mitigation measures.

Forging the Design Concept

The design concept is the link between design and detailed planning. It reflects understanding of the operational environment and the problem while describing the commander's visualization of a broad approach for achieving the desired end state. The design concept is the proper output of design, and includes—

- Problem statement.
- Initial commander's intent.
- Commander's initial planning guidance (including the operational approach).
- Mission narrative.
- Other products created during design (graphics, narratives, etc.).

The products created during design include the text and graphics of the operational environment and problem and diagrams that represent relationships between relevant actors and convey understanding to the planning staff. The problem statement generated during problem framing communicates the commander's understanding of the fundamental problem that detailed planning seeks to solve. The initial commander's intent and planning guidance articulate the desired end state, describing the potential actions in time, space, and purpose that link the desired end state to the conduct of full spectrum operations.

The mission narrative is the expression of the operational approach for a specified mission. It describes the intended effects for the mission, including the conditions that define the desired end state.¹⁶ FM 5-0 explains that the mission narrative “represents the articulation, or description, of the commander’s visualization for a specified mission and forms the basis for the concept of the operation developed during detailed planning. An explicit reflection of the commander’s logic, it is used to inform and educate the various relevant actors whose perceptions, attitudes, beliefs, and behaviors are pertinent to the operation.”¹⁷ The mission narrative is also a key step in the development of supporting themes and messages for the operation. As the articulation of the commander’s visualization of the mission, it is a vital tool for integrating information engagement tasks with other activities during execution.

Reframing

Reframing reflects a shift in understanding that leads to a new perspective on the problem or environmental frames. It typically involves significantly refining or discarding the problem statement that formed the basis of the design concept, and can stem from considerable changes in understanding the situation, the conditions of the operational environment, or the desired end state. Generally, reframing is triggered in one of three ways: a major event causes a significant or catastrophic change in the operational environment; a scheduled review reveals a major problem; or assessment challenges understanding of the existing problem and, thus, the relevance of the operational approach. Reframing allows the commander and staff to make adjustments throughout the operations process, ensuring that tactical actions remain fundamentally linked to the desired end state.

The operational environment is in a constant state of flux. Therefore, the problem frame must also evolve. Recognizing when an operation—or planning—is not progressing as envisioned provides the impetus for reframing. During execution,

Design represents the most significant change to our planning methodology in more than a generation.

commanders choose to reframe when the desired conditions have changed, are not achievable, or cannot be attained through the existing operational approach. Conditions will invariably change during the course of an operation; such change is inevitable due to the interaction and relationships among relevant actors within the operational environment. Although organizations are strongly motivated to reflect and reframe following failure, reframing is equally important in the wake of success. Success transforms the operational environment and creates unforeseen opportunities to exploit the initiative. Recognizing and anticipating change is fundamental to design and essential to continuous learning.

Design represents the most significant change to our planning methodology in more than a generation. It provides the thinking tools that support the commander’s ability to understand, visualize, and describe, underpinning the effective exercise of battle command. Design supports this articulation of battle command, helping commanders to develop a thorough understanding of complex, ill-structured problems while providing a logic framework to generate change from an existing situation to a desired objective or condition. It derives success from innovation, adaptation, dialog, and collaboration; it provides the intellectual foundation that facilitates parallel and collaborative planning while supporting shared understanding, visualization, and learning across the echelons of command and among diverse organizations. In an era of persistent conflict, where the operational environment is as fundamentally dynamic as the human element that dominates it, design represents an intellectual paradigm shift that postures leaders for success in the 21st century. **MR**

NOTES

1. U.S. Army Field Manual (FM) 5-0, *The Operations Process* (Washington D.C.: Government printing Office [GPO], 26 Marsh 2010), 3-1.

2. Ibid.

3. FM 3-07, *Stability Operations* (Washington, DC: Government Printing Office [GPO], October 2008), 4-1.

4. Note: Design is closely related to, but not synonymous with operational design. Design sets the broad template for action, the operational approach; the elements of operational design are used to add definition and specificity to that template during detailed planning. While design is not process-oriented, the application of the elements of operational design is a focused process that results in actionable tasks and missions intended to produce the desired end state conditions and objectives.

5. GEN James N. Mattis, "Vision for a Joint Approach to Operational Design." Memorandum to U.S. Joint Forces Command, 6 October 2009.

6. FM 5-0 describes persistent conflict as "protracted confrontation among state, nonstate, and individual actors that are increasingly willing to use violence to achieve their political and ideological ends." Persistent conflict is a central theme in both our Future Force Capstone Concept (TRADOC Pamphlet [TP] 525-3-0, December 2009) and our capstone operational doctrine, FM 3-0. In his white paper, *The Army of the 21st Century*, Army Chief of Staff General George W. Casey Jr., draws on persistent conflict to frame the future operational environment.

7. A problem represents the difference between a current state and a future state. In planning, the problem is reflected in the difference between the conditions of the operational environment at the outset of operations, and the conditions present when the desired end state is achieved. Design is essential to determining the broad approach that will shape those conditions appropriately and thus accomplish the mission.

8. TP 525-5-500, *Commander's Appreciation and Campaign Design* (Fort Monroe,

VA: U.S. Army Training and Doctrine Command, 28 January 2008), 8-11. TP 525-5-500 includes a lengthy discussion of the three types of operational problems (well structured, medium-structured, and ill structured), with a particular emphasis on the complex, ill-structured problems that are central to design.

9. The "describe" activity within battle command lies at the confluence of cognition and action, reflecting the overlap between design and deliberate, formal planning.

10. FM 5-0, 3-1.

11. In his book, *Sources of Power: How People Make Decisions*, research psychologist Gary A. Klein noted that even as we develop advanced technological solutions to close the information gaps that cause uncertainty, other environmental changes will ensure that uncertainty remains central to our experiences. As a result, decisions will never be perfect, and the experience, judgment, character, and intuition of the commander become all the more important.

12. Ibid, 3-6.

13. The operational variables (PMESII-PT) are described in detail in FM 3-0, chap. 1.

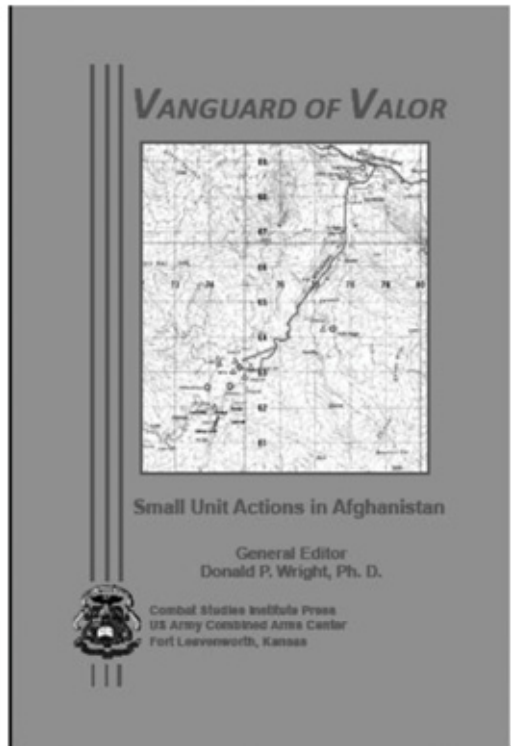
14. FM 3-07, 4-6.

15. FM 3-0 defines *operational approach* as "the manner in which a commander contends with a center of gravity." This singular focus on a center of gravity limits the application of the operational approach in a fashion consistent with operations in an era of persistent conflict. FM 5-0 applies the operational approach in a broader context better suited to the future operational environment, where complex, ill-structured problems are the norm. This description of the operational approach ensures that it is framed by the commander and staff during design and not limited to center of gravity analysis during deliberate planning.

16. FM 5-0, 3-13.

17. Ibid.

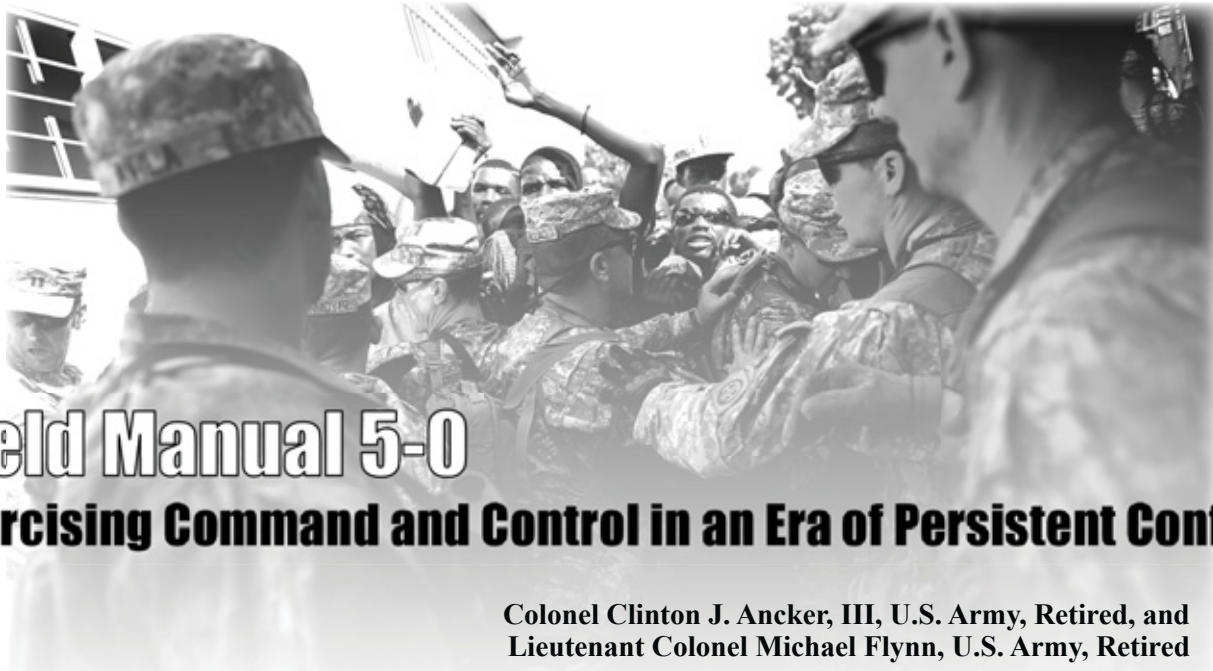
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Field Manual 5-0

Exercising Command and Control in an Era of Persistent Conflict

Colonel Clinton J. Ancker, III, U.S. Army, Retired, and
Lieutenant Colonel Michael Flynn, U.S. Army, Retired

Of the many lessons drawn from over seven years of wartime experience, one that stands out prominently is the critical need to improve our ability to exercise the cognitive aspects of battle command—understanding and visualizing.¹

—Lieutenant General William B. Caldwell

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PHOTO: U.S. Army Soldiers control the crowd of Haitians waiting for food and water during Operation Unified Response in Port-au-Prince, Haiti, 20 January 2010. (U.S. Air Force, MSGT Jeremy Lock)

OUR ARMY, as part of a Joint interdependent force, continues to engage in full spectrum operations around the world. Several global trends—such as failing and failed states, resource demands, and proliferations of weapons of mass destruction—make it likely that future decades will be characterized by *persistent conflict*. Protracted confrontations among state, nonstate, and individual actors that are increasingly willing to use violence to achieve their political and ideological ends appear certain. Whether reacting to natural disasters or confronting armed enemies, Army forces will continue to conduct operations in complex, ever-changing, and uncertain operational environments.

Operational experience and lessons, transformational changes, and recent revisions to Joint and Army doctrine now demand major revisions to Field Manual (FM) 5-0, *The Operations Process*. Of the many lessons learned from wartime experience since 2001, the need to improve our ability to exercise the “thinking” aspects of command and control stands out.² The 2010 edition of FM 5-0 represents a significant evolution in Army doctrine focusing on the cognitive aspects of command and control.

The revised FM 5-0 describes how commanders—supported by their staffs, subordinate commanders, and other partners—exercise command and control during the conduct of full spectrum operations. In operations, commanders face thinking and adaptive enemies, changing civilian perceptions, and differing agendas of various organizations in an operational area. Commanders can never predict with certainty how enemies or civilians will act and react or how events may develop. During execution, leaders must continuously anticipate, learn, and adapt to overcome the dynamics of changing circumstances and adaptive adversaries. The best outcomes require leaders to develop holistic understanding of the environment, frame problems, and

develop approaches to solve or manage those problems. From such understanding, leaders can develop simple, flexible plans that communicate their vision and intent by focusing on the results they expect to achieve. Commanders must encourage continuous collaboration across the force to better understand the situation as they adjust plans or reframe problems throughout the conduct of an operation.

Making the Manual

This revision of FM 5-0 began in parallel with the revision of FM 3-0, *Operations*, in 2006. As part of the development strategy for FM 3-0, the Combined Arms Doctrine Directorate (CADD) staffed a series of issue papers to a broad audience of military and civilian organizations to stimulate debate and gain consensus concerning the Army's direction for its capstone doctrine on operations. Topics ranged from the Army's operational concept of full spectrum operations to the construction of the warfighting functions (intelligence, movement and maneuver, fires, protection, sustainment, and command and control). Feedback from these issue papers revealed gaps to include insufficient doctrine on assessment, a need to better describe how stability operations are integrated into full spectrum operations, guidelines for command post organization and operations, and an Army position on so-called "effects-based" operations.³ These shortfalls led to the development of Field Manual Interim (FMI) 5-0.1, *The Operations Process*, published in 2006. This interim field manual filled a significant gap in doctrine until the ideas in FM 3-0 and FM 5-0 could be fully examined, evaluated, and published. FMI 5-0.1 provided a basis for the command and control chapter of FM 3-0 as well as the foundation for the revision of FM 5-0.

During this period, the Army also examined concepts to assist commanders in understanding complex, ill-structured problems and ways to visualize approaches to solve those problems. Collectively known as "design," several organizations—such as Training and Doctrine Command's (TRADOC) Army Concepts Integration Center, the School of Advanced Military Studies (SAMS), and the Army War College—explored ways to incorporate the theories and philosophy of design into practical application for military operations. In January 2008, TRADOC Pamphlet 525-5-500, *Commander's Appreciation and*

Campaign Design, captured the latest ideas of how design could enhance command and control. Simultaneously, SAMS developed and began teaching its "Art of Design" curriculum that addressed subjects ranging from the theoretical basis of design to practical application in operations through three formal exercises. Both the TRADOC pamphlet and the work from SAMS significantly influenced the incorporation of design into the Army's doctrine on the exercise of command and control.⁴

With significant collaborative effort over the last three years, the Army developed and staffed three drafts of FM 5-0. The manual was also shared with the Joint staff, combatant commands, and selected interagency organizations, including the Department of State and the United States Agency for International Development. CADD hosted three action-officer-level councils of colonels in an effort to synthesize and integrate over 3,000 comments from various organizations over three drafts to coalesce as much expert knowledge, thought, and experience as possible. The meetings provided a separate forum for fostering debate, gaining consensus, and resolving critical and important contributions from reviewing agencies prior to the TRADOC commander's review and approval conference held in December 2009.

What is Changing and Why?

One of the first changes readers will note in the new FM 5-0 is its title. Changed from *Army Planning and Orders Production* to *The Operations Process*, the new title reflects significant modification to the material covered in FM 5-0. While retaining details of planning and planning products, the revised FM 5-0 expands the scope of the manual to include doctrine on the exercise of command and control throughout the operations process. This change is intended to better describe the dynamic relationship among all the activities of the operations process—not just planning.

The operations process is an organizational learning model consisting of the major command and control activities performed during operations: planning, preparing for, executing, and continuously assessing the operation. Commanders drive the operations process through battle command. The activities of the operations process may be sequential—especially at the start of an operation. However, once operations

have begun, a headquarters often conducts parts of each activity simultaneously and cycles through the activities of the operations process continuously as the situation requires.

While simple in concept (plan, prepare, execute, and assess), the operations process is dynamic in execution. Commanders and staffs use the operations process to integrate numerous activities consisting of hundreds of tasks executed throughout the headquarters. Commanders must organize and train their staffs to think critically and creatively as they plan, prepare, and execute operations simultaneously while continually assessing progress.

The Army's model for the exercise of command and control through the operations process is not new. The 2001 edition of FM 3-0 and the 2003 edition of FM 6-0 each addressed battle command and the operations process in detail. The 2005 edition of FM 5-0 described how planning fit within the operations process. What is new, however, is a greater emphasis of the commander's role during the conduct of operations and a more detailed description of the interrelationships among the commander, staff, subordinate commanders, and other partners in the exercise of command and control. FM 5-0 now provides doctrine on the operations process as a whole, a chapter on design, and a chapter for each activity of the operations process. The appendixes describe tactics, techniques, and procedures for organizing the headquarters to conduct the operations process, using the military decision making process (MDMP), conducting troop-leading procedures, and writing operation plans and orders.

Building on Full Spectrum Operations

The 2005 edition of FM 5-0 focused on offensive and defensive operations both in examples and in emphasis. To better account for full spectrum operations, the revised FM 5-0 incorporates the central idea of full spectrum operations throughout the manual. The new manual emphasizes the importance of understanding the civil aspects of the operational environment in relationship to the

mission, enemy, terrain and weather, troops and support available, and time. FM 5-0 now stresses the fundamental that, during operations, commanders continually consider and combine stability tasks focused on the populations with offensive and defensive tasks focused on the enemy during planning and execution. It describes ways to develop plans for full spectrum operations using lines of effort and modifies the Army's operation order to better account for civil considerations and stability or civil support tasks.

The chapter on execution describes how commanders use forces and other resources to mass effects at decisive points and times. It describes how commanders seek to seize and retain the initiative, build and maintain momentum, and exploit success. Additionally, the command and control philosophy of mission command and acceptance of prudent risk is addressed in detail in the execution chapter and throughout the new FM 5-0.

Incorporating Design into Army Doctrine

We often fail not because we fail to solve the problem we face, but because we fail to face the right problem.

—Russell L. Ackoff⁵

Full spectrum operations conducted within a population are effective only when commanders understand the issues within the context of that population. Understanding context and then deciding how, if, and when to act is a product of design and integral to the art of command. The revised FM 5-0 describes the practice of design throughout the operations process.

Design is a methodology for applying critical and creative thinking to understand, visualize, and describe complex, ill-structured problems and develop approaches to solve them. Design underpins the exercise of battle command within the operations process, guiding the iterative and often cyclic application of understanding, visualizing, and describing. Design assists with the conceptual aspects of planning to include understanding

The new manual emphasizes the importance of understanding the civil aspects of the operational environment...

the operational environment and framing the problem, visualizing a desired end state, and conceptualizing a broad operational approach to solve or manage a problem situation. Commanders describe their understanding and visualization in a design concept that drives more detailed planning. Design is practiced continuously throughout the operations process. As commanders learn during execution, they update their understanding, modify their visualization, and describe their visualization to modify plans. In some instances, commanders may go beyond modifying the basic plan. They may decide to reframe the problem and develop a new operational approach resulting in an entirely new plan.

The revised FM 5-0 devotes a chapter to design that describes the fundamentals of design and offers a design methodology. Design is also addressed throughout the manual to include chapters on the fundamentals of the operations process, planning, execution, and assessment. In addition, the revised appendix on the MDMP describes how design interfaces with the MDMP.

Other Changes

In addition to expanding the scope of the manual to include all the activities of the operations process and incorporating the concept of design, other significant changes in the new FM 5-0 include—

- Replacing command and control techniques and products based on the *battlefield operation systems* to the *warfighting functions*. This affects several areas, to include organizing the staff for operations and the formats for operation orders and their annexes.
- Emphasizing and accounting for how commanders use the five *Army information tasks* in shaping the operational environment.
- Describing how commanders organize their staff into command posts, command post cells, working groups, and boards to conduct the operations process.
- Updating the MDMP and operation order format to better account for design, full spectrum



U.S. Air Force, SSGT Dayton Mitchell

U.S. Army MG John A. McDonald, commander of U.S. Forces Afghanistan, speaks with CPT Jason Adams, a physician's assistant, Afghanistan, 20 December 2009.

operations, the warfighting functions, and the five Army information tasks.

Fundamentals of the Operations Process

In addition to the principles of operations found in FM 3-0, the doctrine that FM 5-0 prescribes is built on six fundamentals:

- Commanders drive the operations process through battle command.
- Situational understanding is fundamental to effective command and control.
- Critical and creative thinking aids in understanding and decision making throughout the operations process.
- Commanders continually consider and combine tasks focused on the populations (stability or civil support operations) as well as those tasks focused on enemy forces (offensive and defensive operations).
- Mission command is the preferred method of exercising command and control.
- Continuous assessment enables organizational learning and adaptation throughout the conduct of operations.

Commanders drive the operations process through battle command. A key theme in the new FM 5-0 is the central role of the commander in the

operations process. While staffs perform essential functions that amplify the effectiveness of operations, commanders play the most important role in the operations process through battle command. Battle command is the art and science of understanding, visualizing, describing, directing, leading, and assessing operations to accomplish missions.

The relationships among the activities of battle command and the activities of the operations process are dynamic. All activities of battle command occur in planning, preparation, execution, and assessment, but take on different emphasis throughout the conduct of operations. For example, during planning, commanders focus their activities on understanding, visualizing, and describing. During execution, commanders often focus on directing, leading, and assessing while improving their understanding and modifying their visualization.

One of the major changes to the Army's model for battle command was the addition of the activity of "understanding" in the 2008 edition of FM 3-0.⁶ The new FM 5-0 emphasizes the importance of developing and maintaining understanding throughout the operations process. Commanders collaborate and dialog with superior, adjacent, and subordinate commanders, and other military and civilian organizations within the area of operations to build and maintain their understanding. They also circulate throughout their areas of operations as often as possible, talking to subordinate commanders, Soldiers, and members of other military and civilian organizations as they observe operations for themselves. Commanders continuously update their understanding as the operation progresses and adjust their visualization of the operation as required. Commanders use their running estimate and the running estimates of the staff and subordinate commanders to assist them with understanding and visualization.

Situational understanding is fundamental to effective command and control. Throughout the operations process, commanders (supported by their staffs, subordinate commanders, and other partners) seek to build and maintain their situational understanding—the product of applying analysis and judgment to relevant information and knowledge—to facilitate their decision making. Situational understanding is essential for commanders in establishing the situation's context, developing effective plans, assessing operations, and making

Battle command is the art and science of understanding, visualizing, describing, directing, leading, and assessing operations to accomplish missions.

quality decisions during execution. Commanders and staffs must continually work to maintain their situational understanding and work through periods of reduced understanding as the situation evolves.

As commanders develop their situational understanding, they see patterns emerge, dissipate, and reappear in their operational environment. This helps them direct their own forces' actions with respect to other friendly forces and partners, the enemy, the terrain, and the population. While complete understanding is the ideal for planning and decision making, it rarely exists. Commanders must accept they will often have to act despite significant gaps in their understanding.

Collaboration and dialog assist in building learning organizations and developing a shared understanding of the situation. Throughout operations, commanders, subordinate commanders, staffs, and other partners collaborate and dialog actively, sharing and questioning information, perceptions, and ideas to better understand situations and make decisions. Collaboration is two or more people or organizations working together toward common goals by sharing knowledge and building consensus. Dialogue is a way to collaborate that involves the candid exchange of ideas or opinions among participants that encourages frank discussions in areas of disagreement. Effective collaboration and dialog leads to increased understanding of the situation to include the problem or problems at hand.

Critical and creative thinking aids in understanding and decision making throughout the operations process. To assist commanders in understanding and decision making, commanders and staff apply critical and creative thinking techniques throughout the operations process.

Critical thinking is purposeful, reflective, and self-regulating judgment to determine the meaning and significance of what is observed or expressed. It also involves determining whether adequate

justification exists to accept conclusions as true, based on a given inference or argument. Critical thinking is key to understanding situations, identifying problems, finding causes, arriving at justifiable conclusions, making quality plans, and assessing the progress of operations.

Creative thinking involves creating something new or original. Often, leaders face unfamiliar problems or old problems requiring new solutions. Creative thinking leads to new insights, novel approaches, fresh perspectives, and new ways of understanding and conceiving things. Leaders look at different options to solve problems. Creative thinking includes using adaptive approaches (drawing from previous similar circumstances) or innovative approaches (coming up with completely new ideas).

Critical and creative thinking are fundamental to understanding an operational environment, framing problems, and developing operational approaches to solve or manage those problems.

Commanders continually consider and combine tasks focused on the populations (stability or civil support operations) and tasks focused on enemy forces (offensive and defensive operations). Military operations involve more than combat between armed opponents. Winning battles and engagements is critical but not sufficient for success. Shaping the civil situation is just as important to long-term success. Because of this, commanders continually consider and combine stability tasks focused on the population with offensive and defensive tasks focused on the enemy during planning and execution. For homeland security, commanders focus operations on civil support.

Mission command is the preferred method of exercising command and control. Because of the complex, uncertain, and ever changing nature of operations, mission command—as opposed to detailed command—is the preferred method for exercising command and control. *Mission command* is the conduct of military operations through decentralized execution based on mission orders. Successful mission command

Creative thinking includes using adaptive approaches...

demands that subordinate leaders at all echelons exercise disciplined initiative, acting aggressively and independently within the commander's intent. Prerequisites for effective mission command are the use of mission orders; full familiarity with the mission, commander's intent, and concept of operations; and mutual trust and understanding between commanders and subordinates. FM 5-0 describes the philosophy of mission command as it applies to all activities of the operations process.

Continuous assessment enables organizational learning and adaptation throughout the conduct of operations. Assessment is a continuous activity of the operations process and a primary feedback mechanism that enables the command as a whole to learn and adapt. Assessment is also an activity of battle command. Plans are based on imperfect understanding and assumptions about how the commander expects a situation to evolve. Sometimes results fail to meet expectations or the situation evolves in a manner that was not anticipated, including unanticipated success. In these cases, the commander determines whether the results are due to a failure in implementing the plan (execution) or if the plan and its underlying logic were flawed. Continuous assessment helps commanders recognize shortcomings in the plan and changes in the situation. In those instances when assessment reveals minor variances from the commander's visualization, commanders adjust plans as required. In those instances when assessment reveals a significant variance from the commander's original visualization, commanders reframe the problem and develop an entirely new plan as required.

The Way Ahead

As part of the effort to inculcate the doctrine in FM 5-0 across the Army, the Combined Arms Center established a doctrine, education, and training working group. The purpose of this working group is to reduce the period of time between doctrine production and its use by the generating and operating force. The Command and General Staff College is leading the effort to ensure topics in FM 5-0 are sufficiently addressed in both the officer and noncommissioned officer educations systems. The Combined Arms Center is leading the effort to ensure that training at the combat training centers is updated to include topics addressed in

FM 5-0. The Combined Arms Doctrine Directorate is developing an FM 5-0 interactive media study guide to assist in the self-study of the operations process. In addition, the Combined Arms Center put together a mobile training team to inform and educate units across the Army concerning doctrine on the operations process.

The revised FM 5-0 resulted from a significant intellectual collaborative effort from across the Army. The revised manual provides a starting point for Army leaders in the exercise of command and control during operations. It establishes a common frame of reference and intellectual tools Army leaders use to plan, prepare for, execute, and assess operations. By establishing a common approach and language for conducting command and control, doctrine promotes mutual understanding and enhances effectiveness. The doctrine in this new manual is a guide for action rather than a set of fixed rules. While it provides an authoritative guide for leaders, it requires original applications adapted to circumstances. In operations, effective leaders possess the ability to spot when and where doctrine, training, or even their past experience no longer fit the situation, and then adapt accordingly. **MR**

...effective leaders possess the ability to spot when and where doctrine, training, or even their past experience no longer fit the situation...

NOTES

1. William B. Caldwell, "Design and the Art of Battle Command," reflections from Frontier Six, Combined Arms Center Blog, 6 March 2009 (17 October 2009).
2. United States Joint Forces Command memorandum, subject: "Vision for a Joint Approach to Operational Design," 6 October 2009. In this memo, General Mattis identifies the need to improve Joint doctrine, training, and Joint professional military education in the areas of critical and creative thinking, particularly as they relate to planning.
3. U.S. Army Field Manual-Interim (FMI) 5-0.1, *The Operations Process* and FM 3-0, *Operations*, clearly states that the Army would not adopt the Joint concept of effects based operations (EBO). While aspects of the EBO concept (e.g., assessment techniques and ways to analyze the operational environment) have enhanced Army doctrine, the Army's doctrine on command and control is based on the philosophy of mission command.
4. See Colonel Stefan Banach's article, "Educating by Design: Preparing Leaders for a Complex World," *Military Review* (March-April 2009) and Brigadier General Huba Wass de Czege's article "Systemic Operational Design: Learning and Adapting in Complex Missions," *Military Review* (January-February 2009) for a summary of efforts that influenced the Army's thinking on the application of design for military operations.
5. Jamshid Gharajedaghi, *Systems Thinking: Managing Chaos and Complexity*, 2d ed. (Burlington, MS: Elsevier Inc., 2006), 126. In his discussion of defining problems, Gharajedaghi attributes this quote to Russel Ackoff, a pioneer in systems thinking.
6. The 2001 edition of FM 3-0 and the 2003 edition of FM 6-0 discussed understanding as part of the commander's visualization. The 2008 edition of FM 3-0 added "understanding" as an activity to the Army's battle command model to emphasize this critical activity throughout the conduct of operations.

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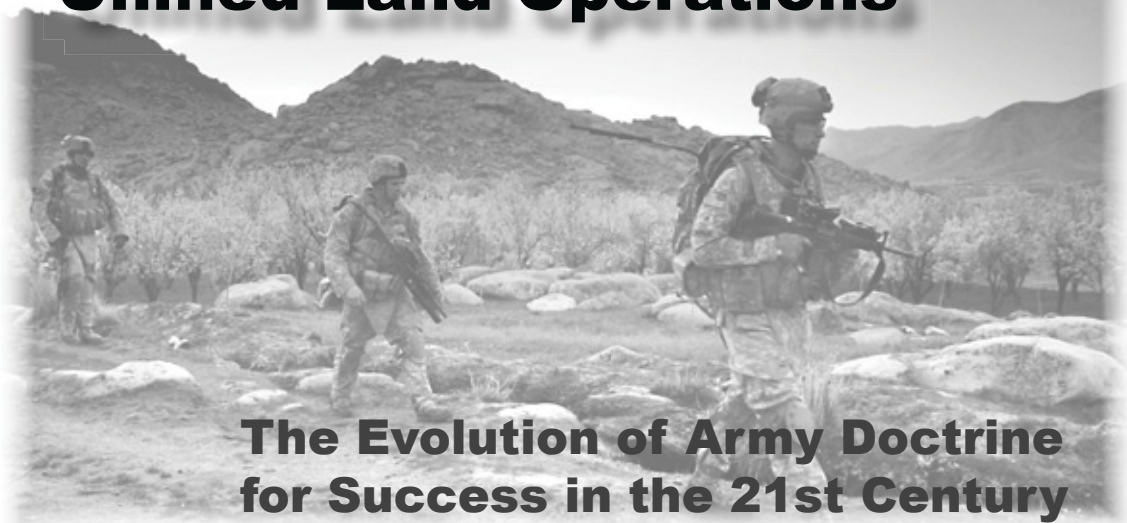
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Unified Land Operations



The Evolution of Army Doctrine for Success in the 21st Century

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PHOTO: U.S. Army SGT Robert Newman, right, 1st Battalion, 4th Infantry Regiment, U.S. Army Europe, leads his fire team on an early-morning dismounted patrol mission near Forward Operating Base Baylough, Zabul, Afghanistan, 19 March 2009. (U.S. Army, SSG Adam Mancini)

UNITED STATES MILITARY FORCES began the second decade of the 21st century decisively engaged in operations around the world, continuing a trend of prolonged military operations other than war that began in the 1990s in Somalia, Haiti, Bosnia, and Kosovo and continued during the first decade of the 21st century in Iraq and Afghanistan. The U.S. Army faces the challenge of long, repeated deployments against enemy formations that do not lend themselves to straightforward doctrinal definitions and constructs.

Army doctrine has evolved to meet the challenges. Doctrine writers have struggled to use clear, concise language that accurately depicts operating concepts. A significant part of this struggle arose after the conflation of doctrinal terms and operational priorities that occurred when the Army made stability operations of equal importance with offensive and defensive operations within *full spectrum operations*. Despite the Army's long history of fighting small wars against irregular forces, the ascendance of stability operations in the late 1990s and early 2000s ran counter to existing Army beliefs about the appropriate roles and missions of the U.S. Army.

The central idea of Army doctrine is to seize, retain, and exploit the initiative to gain and maintain a position of advantage in sustained land operations. A new operating concept, *unified land operations*, returns this central idea to its proper place, applicable to all Army operations. Seizing, retaining, and exploiting the initiative to gain and maintain a position of advantage provides a battlefield framework and logic that nests unified land operations within the joint operational construct of unified action and provides a structure that allows commanders to effectively and accurately describe their intent in time, space, purpose, and priority. The doctrine allows leaders to integrate diverse tactical tasks, battles, and engagements, over time, to achieve strategic objectives.¹

This article introduces the logic behind the new operating concept by presenting a short history of the evolution of Army doctrine from the advent of *AirLand Battle* in 1982 to the introduction of *Unified Land Operations* in 2011. The central idea of unified land operations is rooted in *AirLand Battle* doctrine and retains many of the key full spectrum operations ideas within an overarching concept that emphasizes lethal capabilities as fundamental to successful Army operations.

AirLand Battle (1982-1993)

The Army introduced *AirLand Battle* as its operating concept in 1982 partly as a reaction to the inadequacies of the Army's previous operating concept, *Active Defense*, which had focused on winning a defensive first battle in central Europe against numerically superior forces from the Soviet Union.² More offensively oriented, AirLand Battle introduced the term *operational level of war* to the Army lexicon and made campaign planning—the integration of joint forces in a series of battles and engagements to achieve a strategic purpose—a fundamental requirement.³

When the Army published the 1986 version of FM 100-5, it preserved and strengthened AirLand Battle's central ideas—the importance of the operational level of warfare, its focus on the seizing and retaining the initiative, and its insistence on the requirement for multi-service cooperation.⁴ The lead paragraphs describing AirLand Battle capture these themes explicitly:

AirLand Battle doctrine describes the Army's approach to generating and applying combat power at the operational and tactical levels, securing or retaining the initiative

and exercising it aggressively to accomplish the mission. The object of all operations is to impose our will upon the enemy—to achieve our purposes. To do this we must throw the enemy off balance with a powerful blow from an unexpected direction, follow up rapidly to prevent his recovery, and continue operations aggressively to achieve the higher commander's goals. From the enemy's point of view, these operations must be rapid, unpredictable, violent, and disorienting. The pace must be fast enough to prevent him from taking effective counteraction.

Our operational planning must orient on decisive objectives. It must stress flexibility, the creation of opportunities to fight on favorable terms by capitalizing on enemy vulnerabilities, concentration against enemy centers of gravity, synchronized joint operations, and aggressive exploitation of tactical gains to achieve operational results.⁵

The deserts of Saudi Arabia, Kuwait, and Iraq were the Army's proving grounds for AirLand Battle during Operation Desert Storm in 1991. As part of a joint and coalition force, Army



DOD

M60 tanks and M113 personnel carriers, the backbone weapons platforms of AirLand Battle, being washed after field exercises.

forces completely overwhelmed and destroyed an overmatched enemy. Operation Desert Storm provided a rare opportunity to test Army doctrine and force structure against a threat they were optimized to meet.⁶

However, AirLand Battle doctrine was not a rigid, dogmatic concept suitable to only one kind of fight. Chapter 1 of FM 100-5 clearly identified challenges and threats across a wide spectrum of conflict, from conventional fights against the Warsaw Pact, to mid-intensity fights against Soviet surrogates, and even nonlinear and low-intensity fights against insurgent and terrorist groups:

The Army must be ready to fight enemies whose capabilities vary widely. In high- or mid-intensity conflict, these may be modern tank, motorize, and airborne forces like the Warsaw Pact armies or other similarly organized forces, including Soviet surrogates. Less mechanized but otherwise well-equipped regular and irregular forces and terrorist groups can be expected to operate against Army forces in most parts of the world. In low-intensity conflicts, light forces, insurgent, and terrorists may be the only military threat present.⁷

In discussing how the Army operates in a low intensity conflict (LIC) environment, FM 100-5 describes a “counterinsurgency campaign made in concert with the initiatives of other government agencies involved to ensure a synchronized national effort.” This language intimates a “whole-of-government approach” familiar to contemporary readers of doctrine. Other operations referenced are “Foreign Internal Defense,” “peacetime contingency,” and “peacekeeping” operations. Two paragraphs dedicated to the discussion of terrorism warn that “terrorists pursue strategic objectives through LIC,” and that “terrorism constitutes a threat which must be dealt with within the Army’s daily operations and which will continue to be of concern in high- and mid-intensity conflicts.”⁸

The language describing the threat and operating environment in the 1986 version of FM 100-5 demonstrates a nuanced appreciation of the enemy and of battlefield conditions. The Army successfully applied AirLand Battle’s emphasis on gaining the initiative, on operational art, and on operating as part of a joint environment in combat in 1991.

...AirLand Battle doctrine was not a rigid, dogmatic concept suitable to only one kind of fight.

Unfortunately, while the 1993 edition of FM 100-5 added some important ideas for future doctrine, it diluted the central aspects of AirLand Battle because a changing environment and domestic expectations increased competition for resources among the services.

Doctrine in Transition (1993-2001)

The evaporation of the threat presented by the former Soviet Union and the U.S. Army’s overwhelming success in Operation Desert Storm led to the expectation of a “peace dividend” of decreased military budgets in the early 1990s.⁹ This, in turn, led the Army to embark on a search for new capstone doctrine to describe its role in a new strategic context—one in which that the United States had emerged as the world’s sole remaining superpower.¹⁰ The 1993 version of FM 100-5 reflects this sentiment:

The 1993 doctrine reflects Army thinking in a new, strategic era . . . It causes AirLand Battle to evolve into a variety of choices for a battlefield framework and a wider interservice arena, allows for the increasing incidence of combined operations, and recognizes that Army forces operate across the range of military operations. It is truly doctrine for the full dimensions of the battlefield in a force-projection environment . . . It reflects the lessons learned from recent experiences and the setting of today’s strategic and technological realities.¹¹

AirLand Battle is not referred to again anywhere within the body of the FM. More perplexing, the doctrine writers did not replace AirLand Battle with another operating concept to delineate the central idea or ideas of Army doctrine. The manual still discusses operational art, retaining much of the language from the 1986 version, but subordinates it within the section describing the operational level of war. Initiative remains a tenet of Army operations, and the manual frequently discusses its significance,

but leaves readers to infer its relative importance as opposed to explicitly stating it. Other terms and constructs, like the Army's capacity for force projection and its capability to operate as part of a joint or combined team, appear to take on increased importance through the addition of new chapters or sections. While the 1993 version of FM 100-5 retains much of the verbiage from AirLand Battle describing these terms, it broadens the discussion to include topics such as cultural and language considerations in operations other than war. While these discussions described conditions found in the operating environment at the time, they failed to improve or focus understanding about *how* the Army conducts operations or to what purpose.

The 1993 FM failed to provide the Army with a new operating concept, or perhaps better said, left the operating concept ambiguous. It did, however, sow the seeds of ideas that emerged as central aspects of Army doctrine in the 21st century. These new ideas include the terms *full-dimension operations*, and *combat functions* (including *battle command*) intended to assist commanders in the synchronization of battlefield effects. The 1993 FM also added a section on conflict resolution and replaced the term *low intensity conflict* with *operations other than war (OOTW)*.

The term *full-dimension operations* was the closest the 1993 version of FM 100-5 came to providing the Army with a new operating concept. However, the term appears in the body of the manual only twice: first in the section on strategic context, where it states, "The Army must be capable of full-dimension operations"; and later in the introduction to Chapter 6, "Planning." The Glossary eventually defines full-dimension operations as "the application of all capabilities available to an Army commander to accomplish his mission decisively and at the least cost across the full range of possible operations."¹²

The influence of full-dimension operations on future doctrine is evident in the appearance of a similar term—*full spectrum operations*—as the Army's next explicit operating concept. Full spectrum operations were defined in 2001 as "the range of operations Army forces conduct in war and military operations other than war."¹³ Although the definition has since changed, the operating concept was still in use as of the writing of this article and the components of full spectrum operations—offense, defense, stability, and defense support of civilian authorities—are fully retained within the emerging doctrine of unified land operations.¹⁴

Just as the thinking behind the development of the term full dimension operations influenced the eventual development of the Army's next operating concept—full spectrum operations—the introduction of *combat functions* resonates in the Army today. The combat functions introduced in 1993—intelligence, maneuver, fire support, air defense, mobility and survivability, logistics, and battle command—were the operational level version of the *battlefield operating systems*. The 2001 and later versions of FM 100-5 combine the combat functions and battlefield operating systems, and they later evolve into the Army's *warfighting functions*. The arrangement and grouping of similar battlefield activities into systems or functions to assist commanders and staffs in the "integration, coordination, preparation, and execution of successful combined-arms operations" appears self evident now, but was a significant



A flight deck crewmember on the two Jima class amphibious assault ship, USS *New Orleans* LPH 11, marshals in a U.S. Army UH-1N Huey MEDEVAC helicopter during a joint service mass casualty exercise, 18 November 1993.

contribution to doctrinal thought at the time.¹⁵ The introduction of *battle command* within the combat functions was a powerful addition to the Army's lexicon. The term would later become synonymous with a commander's role in combat.

The Army devoted a section of FM 100-5 to conflict resolution in 1993, reflecting its struggles, including its experiences in Operation Desert Storm, to define when the fighting should end and what the subsequent peace might look like. The section emphasized the commander's need to understand the conditions required to end a conflict and how to best combine military operations to bring about its most favorable resolution.¹⁶ Addressing conflict resolution in Army capstone doctrine represented a significant addition which a future version of FM 3-0 expanded on and captured within unified land operations.

Changing the term *low intensity conflict to operations other than war* was the final significant change in the 1993 version of FM 3-0. At first glance, this may seem like mere wordsmithing, but explicitly delineating the Army's role in combat operations as different from its role in what the 1993 version of FM 3-0 described as "conflict" and "peacetime" proved the harbinger of future debates about Army priorities in *stability operations* (SO) and *major combat operations* (MCO). The 1993 manual failed to articulate an operating concept applicable to all Army operations, reinforcing the idea of separate and competing priorities.

Chapter 13, "Operations Other than War," of the FM even offers separate principles and tenets that apply exclusively in an OOTW environment. The 1993 version of FM 3-0 was a step backwards with respect to providing a unifying operating concept for all Army operations, but it did articulate several new ideas that continue to resonate today, and it proved to be the longest lasting version of the manual until 2001.

Full Spectrum Operations (2001-2011)

The 2001 version of FM 3-0 defines full spectrum operations as "the range of operations Army forces conduct in war and military operations other than war." While not an operating concept, the term described what the Army did and entire chapters were devoted to articulating how to use

full spectrum operations to accomplish Army missions. Indeed, the very purpose of the 2001 version of FM 3-0 was to establish "keystone doctrine for full spectrum operations," making it the *de facto* operational concept.¹⁷ The 2008 version of FM 3-0 then explicitly designated full spectrum operations as the Army's operational concept and expanded its definition to read,

Army forces combine offensive, defensive, and stability or civil support operations simultaneously as part of an interdependent joint force to seize, retain, and exploit the initiative, accepting prudent risk to create opportunities to achieve decisive results. They employ synchronized action—lethal and nonlethal—proportional to the mission and informed by a thorough understanding of all variables of the operational environment. Mission command that conveys intent and an appreciation of all aspects of the situation guides the adaptive use of Army forces.¹⁸

This definition reflected the realities of seven years of combat in Afghanistan and Iraq. Terms like "prudent risk," "proportional," and "understanding of all variables" acknowledged the complex nature of the operational environment and threat the Army was likely to face.

During the decade that full spectrum operations was the Army's exclusive operating concept, the Army introduced, improved, or expanded several important ideas and changed or discarded others. It retained the importance of initiative in Army operations. It expanded and improved the definition of battle command, eventually discarding the term in 2011—although retaining its essential elements. The Army also discarded the terms *deep*, *close*, and *rear* as part of the battlefield framework, as well as the term *supporting effort* to delineate priorities. It elevated *stability operations* to an importance equal to *combat operations*, touching off an extended Army debate about balance and priorities. Finally, the Army expanded and changed the definition of *operational art*.

In 2001, FM 3-0 introduced a chapter on the foundations of full spectrum operations by describing the essence of warfighting as inherently simple, distilling it into five general rules. This same language appears in the introduction to the FM.



Members of the 173rd Airborne Brigade Combat Team train for their Full Spectrum Training Event held at Hohenfels, Germany.

The doctrine states Army forces—

- Win on the offense.
- Initiate combat on their terms—not their adversaries.
- Gain and maintain the initiative.
- Build momentum quickly.
- Win decisively.¹⁹

The first four of these rules amplify the importance of initiative to successful Army operations. While long held as an important tenet, the codification of initiative within the definition of the Army’s operating concept in 2008 returned initiative to its central place of importance. That fundamental precept remains almost unchanged in *Unified Land Operations*.

In 2001, *battle command* was defined as “the exercise of command in operations against a hostile, thinking enemy.” The chapter dedicated to battle command relies on the terms “visualize, describe, direct, and lead” to describe battle command.²⁰ In 2001, command and control was subordinate to battle command, but the 2008 version of FM 3-0 reversed the subordination.

Command and control ascended to preeminence with battle command becoming subordinate to it. The 2008 FM added the term *understand* before *visualize*, and introduced *mission command* as a term to describe the “preferred means of battle command.”²¹ By 2011, mission command had subsumed battle command and replaced command and control as a warfighting function. In this new role, mission command is both a warfighting function and the preferred method of command. The FM stresses using “mission orders to enable disciplined initiative within the commander’s intent.”²² It explains this change as a philosophical shift, necessary to place emphasis on the *commander* instead of the systems employed.

The terms battle command, command and control, and mission command evolved during the ten years full spectrum operations were the Army’s operating concept, but those terms’ most useful elements—the essence of battle command (i.e. understand, visualize, describe, direct, lead, assess) and the emphasis of the commander’s role in operations—were retained. The construct

of unified land operations reflects the evolution completely and retains mission command among its foundations.

The terms describing the *battlefield framework* (later the *operational framework*) also evolved.²³ The 2001 version of the manual introduced *decisive*, *shaping*, and *sustaining* operations as a way to describe the “allocation of forces by purpose,” while it retained *close*, *deep*, and *rear* to describe operations in “spatial terms.” The FM retained the term *main effort* as the “activity, unit, or area that constitutes the most important task at the time,” but dropped the term *supporting effort*.²⁴ By 2008, the term *operational framework*—which included the terms *deep*, *close*, and *rear*, *battlespace*, *battlefield organization*, and *area of interest*—was completely rescinded, leaving *decisive*, *shaping*, *sustaining*, and *main effort* as descriptors within the chapter on *command and control*.

The authors of *Unified Land Operations* considered the history and evolution of the operational framework in Army doctrine as they developed the new operating concept. As a result, *Unified Land Operations* reintroduces many terms rescinded in 2008 and returns the AirLand Battle term *supporting effort* to the lexicon.²⁵

The intent is to provide Army leaders with the broadest menu of terms for “clearly articulating their concept of operations in time, space, purpose, and resources,” while acknowledging that leaders “are not bound by any specific framework” and that leaders should use the frameworks “in combination.”²⁶ It is important to emphasize that none of these terms or concepts are new; rather, they have each proved their utility in some cases for 30 years.

Making stability operations equal to offensive and defensive operations represents the most significant and controversial doctrinal evolution of the past 30 years. The 2008 change represented a change in culture and philosophy that portends adjustments in Army priorities across all the domains of doctrine, organization, training, materiel, leadership, personnel, and facilities (DOTMLPF). General William Wallace, the commander of Training and Doctrine Command at the time, explicitly referred to the 2008 version of FM 3-0 as a “*revolutionary departure from past doctrine*” that recognized the Army’s need to operate among populations and

the fact that battlefield success was “no longer enough.”²⁷ Similarly, the 2008 version of FM 7-0, *Training for Full Spectrum Operations*, invalidated the practice of assuming that success in stability operations flowed from the Army’s ability to prosecute major combat operations:

During the Cold War, Army forces prepared to fight and win against a near-peer competitor. The Army’s training focus was on offensive and defensive operations in major combat operations. As recently as 2001, the Army believed that forces trained to conduct the offense and defense in major combat operations could conduct stability and civil support operations effectively... However, the complexity of today’s operational environments and commander’s legal and moral obligations to the population of an area of operations has shown that approach to be incorrect.²⁸

More than a reflection of Army experiences in Iraq and Afghanistan, this change had been Department of Defense policy since 2005.²⁹ By 2008, Army doctrine emphasized the “essentiality of nonlethal actions with combat actions” and promoted stability operations tasks as “a central element of operations equal in importance to the offense and defense.”³⁰ The tasks associated with stability operations were not new to the Army, but the belief that stability operations could be “as important as—or more important than—offensive and defensive operations” was. The belief that these operations were not only the responsibility of specialized forces but also of general-purpose forces at every echelon was also new.³¹

At the same time, descriptors used to explain the application of full spectrum operations, such as “equal weight,” “parity,” and “balance,” subtly shifted the utility of the operating concept. For example, the section of FM 3-0 (2011) titled *Combining the Elements of Full Spectrum Operations* reads, “Commanders consider their missions, decide which tactics to use, and balance

...none of these terms or concepts are new...

the elements of full spectrum operations while preparing their concept of operations.” The chapter also discusses how “commanders analyze the situation carefully to *achieve a balance* between lethal and nonlethal actions.” While the presence of the word “balance” does not discredit the usefulness of an operating concept like full spectrum operations, it is important to acknowledge that “achieving balance” or using a “balanced approach” to operations does not produce any effect on an enemy or equate to winning.

It is also important to recognize how pervasive the use of the term “balance” has become in Army and national security parlance. The 2010 *National Security Strategy*, for example, discusses *rebalancing* military capabilities “to excel at counterterrorism, counterinsurgency, and stability operations.”³² The *U.S. Army Forces Command Campaign Plan* acknowledges that the current operational tempo has left an Army *out of balance* to meet its full spectrum operations obligations.³³ The *2009 Army Posture Statement* notes, “After seven years of continuous combat, our Army remains *out of balance*, straining our ability to . . . maintain strategic depth.” In fact, *restoring balance* is referred to 16 times in the statement.³⁴ While “balance” in this context refers to many of the DOTMLPF domains, it also clearly refers to the loss of the Army’s capability to conduct major combat operations because of its almost exclusive focus on stability operations.

The new operational concept, *unified land operations*, seeks to refocus leaders on arranging activities and forces to achieve a position of relative advantage over the enemy by seizing, exploiting, and retaining the initiative—a marked difference from language calling for achieving “balance” between combat and stability tasks or lethal and nonlethal tasks.

Operational art is the final significant topic of evolutionary doctrinal change that influenced the development of *Unified Land Operations*. AirLand Battle doctrine introduced the term in 1986, but did not associate it with any particular Army echelon or level of war. The doctrine stated, “No particular echelon of command is solely or uniquely concerned with operational art.”³⁵ The implication was that *every* Army echelon had a stake in sequencing actions contributing to the

accomplishment of strategic goals. The 1993 version of FM 100-5 retained this language, although it embedded operational art within the chapter on the operational level of war. By 2008, the importance of operational art as a concept gave rise to a chapter on it, but its applicability across echelons had changed. Doctrine restricted the use of operational art to the operational level of war by stating explicitly that operational art was “applied only at the operational level.”³⁶ By 2011, this caveat had been removed, leaving it once again less restrictive: “Operational art integrates ends, ways, and means across the levels of war.”³⁷

The Army’s latest operating concept, *unified land operations*, embraces the joint definition of operational art, but decouples it from the levels of war and from echelons. It states: “Operational art is not associated with a specific echelon or formation, and . . . applies to any formation that must effectively arrange multiple tactical actions in time, space, and purpose to achieve a strategic objective, in whole or in part.”³⁸

Many authors have examined applying operational art across echelons and levels of war, and we will not perform another such examination here. This article discusses operational art only to demonstrate its connections with earlier Army operating concepts like full spectrum operations and to highlight its importance for how the Army intends to fight in the future.

Unified Land Operations

The foundations of current Army doctrine have links to key ideas articulated in AirLand Battle in the 1993 version of FM 100-5 and in the Army’s most recent operating concept—full spectrum operations. AirLand Battle emphasized initiative, operational art, and operations as part of a joint force. The 1993 version of FM 100-5 introduced battle command and full-dimension operations, initiated a discussion of conditions for conflict resolution, and raised operations other than war to the level of combat operations. In the decade that full spectrum operations served as the Army’s operating concept, the Army expanded the meaning of battle command, incorporated it within mission command. It discarded or changed the terms *operational framework* and *operational art*. Operations other than war became stability



Republic of Korea Army soldiers with U.S. soldiers from the 75th Mechanized Infantry Brigade and 2-9th Infantry, 1st HBCT, dismount their armored personnel carriers during a combined arms live fire exercise, 15 April 2010.

operations—and equal in importance to major combat operations.

To a great extent, the Army carried forward the most useful aspects of each of these ideas into the new operating concept of unified land operations. The definition of unified land operations is “to seize, retain, and exploit the initiative to gain and maintain a position of relative advantage in sustained land operations through simultaneous offensive, defensive, and stability operations in order to prevent or deter conflict, prevail in war, and create the conditions for favorable conflict resolution.” The definition cements the best ideas of past doctrine into one statement that reaffirms the intent of all Army operations, regardless of conditions, environment, or operational context.

In addition, *Unified Land Operations* stresses the importance of mission command and operational art and returns to doctrine many of the terms used in the past to describe the battlefield and operational frameworks. The title, *Unified Land Operations*, implies that the Army operates as part of a joint, interagency, or international coalition, and the FM explicitly states that the Army’s contribution to unified action requires the “full integration of U.S. military operations with the efforts of

coalition partners and other government agencies.”³⁹ The evolution of these ideas and constructs as well as the reasons for their inclusion within *Unified Land Operations* have already been described.

The 2011 version of ADP 3-0 offers two additional ideas that demand introduction. One, lethality, is certainly not a new idea, but its articulation as “the most basic building block for military operations” is. The second, the introduction of *combined arms maneuver* and *wide area security* as the Army’s two core competencies, represents an important addition whose utility and meaning require further discussion.

Previous versions of FM 3-0 described lethal actions as “critical to accomplishing offensive and defensive missions,” and stated, “Offensive and defensive operations place a premium on employing the lethal effects of combat power against the enemy.” On the other hand, stability and civil support operations emphasize *nonlethal* actions: “Army forces employ a variety of nonlethal means in stability and civil support operations. . . Stability and civil support operations emphasize nonlethal, constructive actions by Soldiers.”⁴⁰

Army Doctrinal Publication 3-0 departs from this philosophy, stating that “lethality is the foundation for effective offensive, defensive, and stability operations,” and that “lethality is a persistent requirement for Army organizations, even in conditions where only the implicit threat of violence is sufficient to accomplish the mission through non-lethal engagements and activities.”⁴¹

These statements reflect a sentiment that an increasing number of Army practitioners express, that the U.S. Army’s capability and capacity to apply lethal force provide it with the credibility and skills for success in all types of operations and distinguish it from other government institutions and even from other armies of the world.⁴² Recognition of *lethality as the foundation of all other military capabilities* is sure to be controversial, but that should not detract from the statement the doctrine makes about the underlying purpose of the U.S. Army, nor from the focus it provides to Army units and leaders for training and operations in the future.

The introduction of *combined arms maneuver* and *wide area security* as core competencies is the second significant addition ADP 3-0 offers. Combined arms maneuver is the means by which units gain and maintain the initiative within an operation, while wide area security is the means by which units deny the initiative to the enemy. These two core competencies help Army forces defeat or destroy an enemy, seize or occupy key terrain, protect or secure critical assets and populations, and prevent the enemy from gaining a position of advantage. Army forces use them in combination and execute them through a combination of offense, defense, and stability operations. For example, in a counterinsurgency operation against a substantial internal or external threat, one set of units or Army systems may focus on exploiting the initiative through offensive operations—i.e., is enemy focused; and another, collaboratively and correspondingly, may focus on retaining the initiative through stability operations—i.e., is population focused. This does not imply that the units perform these missions exclusively; different units have different priorities that support the larger operation's broader goals, end states, and strategies, regardless of echelon.

ADP 3-0 defines *combined arms maneuver* as “the application of the elements of combat power in unified action to defeat enemy ground forces, seize, occupy, and defend land areas, to achieve physical, temporal, and psychological advantages over the enemy in order to seize and exploit the initiative.” *Wide area security* is “the application of the elements of combat power in unified action to protect population, forces, infrastructure, and activities, deny the enemy positions of advantage, and consolidate gains in order to retain the initiative.”⁴³ Together they provide a cognitive tool for orienting combat power through offense, defense, and stability operations toward two related purposes: namely, gaining and exploiting the initiative and preventing the enemy from obtaining it.

It is important to note that wide area security and combined arms maneuver do not supplant offense, defense, and stability operations, nor are they intended for use as tactical tasks. Instead, they provide commanders a means to describe the arrangement of tactical actions and/or the

application of combat power to achieve a position of advantage over an enemy. The core competencies are applicable in all Army operations, at all echelons. Used properly they provide a cognitive tool to assist commanders in describing their vision and orienting forces to purpose.

Conclusion

This article has explored the logic behind the adaptation and adoption of the Army's new operating concept, unified land operations. As noted by General Martin Dempsey, select, unified land operations were a “natural intellectual outgrowth” of AirLand Battle and full spectrum operations.⁴⁴ Unified land operations embrace past concepts that have the most utility for success today and in the future, concepts that proved their utility during 30 years of application in places like Panama, Kuwait, Bosnia, Afghanistan, and Iraq.

The article also introduces concepts that are new or unique to unified land operations. While discussions of lethality are certainly not new, championing lethality as the “foundation for all other military capabilities” by acknowledging a lethal capability as necessary, *a priori*, to accomplishing all Army missions—combat and otherwise—is a sharp departure from earlier Army doctrine. This emphasis communicates that the Army's unique, core capability—its expert application of lethal force during sustained land operations—is what sets the Army apart from every other government, military, and international institution.

The core competencies of combined arms maneuver and wide area security are the only truly new constructs within unified land operations. They will assist commanders in describing the arrangement of tactical actions with the elements of combat power to achieve a position of advantage *vis-à-vis* the enemy. They do not represent radical departures from earlier doctrine, but rather new cognitive tools that bind existing Army operations—offense, defense, and stability—to the purpose of gaining or retaining the initiative. In other words, *they link the emphasis on initiative found in AirLand Battle with the operating concept described by full spectrum operations.*⁴⁵

The adoption of unified land operations continues the long tradition of meaningful

doctrinal evolution within the Army. Certainly, future additions of ADP 3-0 and related doctrinal manuals will address important elements of doctrine not fully developed within the 2011 versions, such as a definition of *combat power*, to include the role of the leader and leadership in successful Army operations. This enduring construct has been central to Army doctrine for years, but the current version of ADP 3-0 does not fully discuss it. Another area needing more discussion is how the practitioners of operational art are influenced by and account for tactical, operational, and strategic risks. Other themes and ideas may require more discussion as well.

Unified land operations amplify the utility of initiative, full spectrum operations, and mission command. Army doctrine recognizes lethality's importance in all operations and introduces combined arms maneuver and wide area security as means to link offense, defense, and stability operations to the purpose of gaining and maintaining the initiative.

The Army's contribution to unified action—unified land operations—are how the Army will succeed in sustained land operations as part of a joint or combined force. They are also the foundation for future doctrinal development to carry the Army through the many emerging challenges it will face in the coming decades. **MR**

NOTES

1. For consistency, this article uses the term *operating concept* to describe the Army's central doctrinal themes or constructs. Operating concept is used because of existing connotations attached to the other terms as well as their association with specific time periods or previous version of FM 100-5 and FM 3-0. For example, the 1986 version of FM 100-5 refers to AirLand Battle as the Army's *warfighting doctrine*. The 2008 version of FM 3-0 refers to *full spectrum operations* as the Army's *operational concept*. Other editions of FM 3-0 are without a clearly articulated central theme altogether.
2. Clayton R. Newell, *On Operational Art* (Washington, DC: U.S. Army Center of Military History, 1994): 13-14.
3. Bruce W. Menning, "Operational Art's Origins," *Historical Perspectives of the Operational Art* (Washington, DC: U.S. Army Center of Military History, 2007): 15.
4. FM 100-5, *Operations*, is the predecessor to FM 3-0, *Operations*. Under the new initiative known as Army Doctrine 2015, the Army's capstone manuals are now Army Doctrinal Publications (ADPs). Army Doctrinal Publication 3-0, *Unified Land Operations*, is the first manual published under this construct.
5. FM 100-5, *Operations* (Washington, DC: U.S. Government Printing Office [GPO], 1986), 14-15.
6. John S. Brown, "The Maturation of Operational Art," *Historical Perspectives of the Operational Art* (Washington, DC: U.S. Army Center of Military History, 2007), 459-73.
7. FM 100-5 (1986), 2.
8. *Ibid.*, 5.
9. Robert T. Davis II, *The Challenge of Adaptation: The U.S. Army in the Aftermath of Conflict, 1953-2000, Long War Occasional Paper 27* (Fort Leavenworth, KS: Combat Studies Institute Press, 2008), 1.
10. *Ibid.*, 84-100. Also see Geoffrey R. Gerlach, "Pentagon Myths and Global Realities: the 1993 Military Budget," CATO Policy Analysis No. 171. CATO Institute, 24 May 1973. <<http://www.cato.org/pubs/pas/pa-171.html>> (22 July 2011).
11. FM 100-5 (1993), iv.
12. *Ibid.*, 1-4 and Glossary-4.
13. FM 3-0, *Operations* (Washington, DC: GPO, 2001), 1-4.
14. The September 2011 publication of ADP 3-0, *Unified Land Operations*, replaces the term *full spectrum operations* with the term *decisive action* to describe the simultaneous execution of offense, defense, stability, and defense support of civilian authorities. This change was made because of the tendency within the Army to equate full spectrum operations with major combat operations. None of the descriptive or qualifying language used to describe the construct was changed.
15. FM 100-5 (1993), 2-12.
16. *Ibid.*, 6-23.
17. FM 3-0 (2001), viii.
18. FM 3-0 (2008), 3-1.
19. FM 3-0 (2001), 4-1.
20. *Ibid.*, 5-3.
21. FM 3-0 (2008), 5-19.

22. FM 3-0 (2011), 4-5.
23. The 1986 and 1993 versions of FM 100-5 used the term *battlefield framework*. This was changed with the publication of the 2001 version of FM 3-0 to *operational framework*, which included a section titled *battlefield organization*. The 2008 version of FM 3-0 uses neither term.
24. FM 3-0 (2001), 4-18 to 4-25.
25. In unified land operations, *deep-close-security* replaces *deep-close-rear*. This change reflects the reality and importance of the domains of cyber/electronic warfare, space, and other threats not confined to a rear area. The term "rear area" may still have utility when describing the arrangement of friendly forces but is not included as part of the operational framework.
26. Draft Army Doctrinal Publication 3-0, *Operations* v9.5 (July 2011), 10.
27. FM 3-0 (2008), Foreword.
28. FM 7-0, *Training for Full Spectrum Operations* (Washington DC: GPO, 2008), 1-6.
29. U.S. Department of Defense, Department of Defense Directive (DODD) 3000.05 (Washington, DC: 2005). DODD 3000.05 states, "Stability operations are a core U.S. military mission that the Department of Defense shall be prepared to conduct with proficiency equivalent to combat operations." This policy was renewed in 2009.
30. FM 3-0 (2008), vii-viii.
31. FM 3-0 (2011), x.
32. *National Security Strategy* (Washington, DC: The White House, 2010), 14.
33. United States Army Forces Command, *U.S. Army Forces Command Campaign Plan 2011-2015* (Atlanta, GA: October 2010).
34. U.S. Army, *Army Posture Statement* (May 2009).
35. FM 100-5 (1986), 10.
36. FM 3-0 (2008), 6-1.
37. JP 3-0, *Joint Operations* (Washington, DC: GPO, 13 February 2008), GL-21.
38. Draft Army Doctrinal Publication 3-0, 9.
39. Draft Army Doctrinal Publication 3-0. The principle of *integration* on page 7 of ADP 3-0 captures the necessity of operating as part of a joint, interagency, or multinational coalition.
40. FM 3-0 (2011), 3-4, 3-5.
41. Draft Army Doctrinal Publication 3-0, 7.
42. COL Craig A. Collier, "Now That We're Leaving What Did We Learn?" *Military Review* (September-October 2010): 89. For more on the relative importance of lethality in stability operations see also MAJ Kenneth Burgess, "Transformation and the Irregular Gap," *Military Review* (November-December 2009): 29; and LTC William E. Benson, "Major Combat Operations v. Stability Operations: Getting Army Priorities Correct," *Advanced Operational Arts Studies Fellowship Monograph*, Fort Leavenworth, KS, 2011.
43. Draft Army Doctrinal Publication 3-0, 6.
44. *Ibid.*, Foreword.
45. Now referred to as *Decisive Action* with the adoption of ADP 3-0, *Unified Land Operations*.



Heuristics and Biases in Military Decision Making

Major Blair S. Williams, U.S. Army

If we now consider briefly the subjective nature of war—the means by which war has to be fought—it will look more than ever like a gamble . . . From the very start there is an interplay of possibilities, probabilities, good luck, and bad that weaves its way throughout the length and breadth of the tapestry. In the whole range of human activities, war most closely resembles a game of cards.

—Clausewitz, *On War*.¹

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PHOTO: U.S. Army SSG Clarence Washington, Provincial Reconstruction Team Zabul security forces squad leader, takes accountability after an indirect fire attack in Qalat City, Zabul Province, Afghanistan, 27 July 2010. (U.S. Air Force photo/SrA Nathanael Callon)

CARL VON CLAUSEWITZ'S metaphoric description of the condition of war is as accurate today as it was when he wrote it in the early 19th century. The Army faces an operating environment characterized by volatility, uncertainty, complexity, and ambiguity.² Military professionals struggle to make sense of this paradoxical and chaotic setting. Succeeding in this environment requires an emergent style of decision making, where practitioners are willing to embrace improvisation and reflection.³ The theory of reflection-in-action requires practitioners to question the structure of assumptions within their professional military knowledge.⁴ For commanders and staff officers to willingly try new approaches and experiment on the spot in response to surprises, they must critically examine the heuristics (or “rules of thumb”) by which they make decisions and understand how they may lead to potential bias. The institutional nature of the military decision making process (MDMP), our organizational culture, and our individual mental processes in how we make decisions shape these heuristics and their accompanying biases.

The theory of reflection-in-action and its implications for decision making may sit uneasily with many military professionals. Our established doctrine for decision making is the MDMP. The process assumes objective rationality and is based on a linear, step-based model that generates a specific course of action and is useful for the examination of problems that exhibit stability and are underpinned by assumptions of “technical-rationality.”⁵ The Army values MDMP as the sanctioned approach for solving problems and making decisions. This stolid template is comforting; we are familiar with it. However, what do we do when our enemy does not conform to our assumptions embedded in the process? We discovered early in Iraq that our opponents fought differently than we expected. As

a result, we suffered tremendous organizational distress as we struggled for answers to the insurgency in Iraq. We were trapped in a mental cave of our own making and were unable to escape our preconceived notions of military operations and decision making.⁶

Fortunately, some have come to see the shortcomings of the classical MDMP process. It is ill-suited for the analysis of problems exhibiting high volatility, uncertainty, complexity, and ambiguity. The Army's nascent answer, called "Design," looks promising. As outlined in the new version of FM 5-0, *Operations Process*, Chapter 3, Design is defined as "a methodology for applying critical and creative thinking to understand, visualize, and describe complex, ill-structured problems and develop approaches to solve them."⁷ Instead of a universal process to solve all types of problems (MDMP), the Design approach acknowledges that military commanders must first appreciate the situation and recognize that any solution will be unique.⁸ With Design, the most important task is framing a problem and then reframing it when conditions change.⁹

Framing involves improvisation and on-the-spot experimentation, especially when we face time and space constraints in our operating environment. FM 6-0, *Mission Command*, Chapter 6, states, "Methods for making adjustment decisions fall along a continuum from analytical to intuitive . . . As underlying factors push the method further to the intuitive side of the continuum, at some point the [planning] methodology no longer applies."¹⁰ In the course of intuitive decision making, we use mental heuristics to quickly reduce complexity. The use of these heuristics exposes us to cognitive biases, so it is important to ask a number of questions.¹¹ What heuristics do we use to reduce the high volatility, uncertainty, complexity, and ambiguity, and how do these heuristics introduce inherent bias into our

decision making? How do these biases affect our probabilistic assessments of future events? Once apprised of the hazards rising from these heuristic tools, how do we improve our decisions? This article explores these questions and their implications for the future of military decision making.

Behavioral Economics

The examination of heuristics and biases began with the groundbreaking work of Nobel Laureate Daniel Kahneman and Professor Amos Tversky. Dissatisfied with the discrepancies of classical economics in explaining human decision making, Kahneman and Tversky developed the initial tenets of a discipline now widely known as behavioral economics.¹² In contrast to preexisting classical models (such as expected utility theory) which sought to describe human behavior as a rational maximization of cost-benefit decisions, Kahneman and Tversky provided a simple framework of observed human behavior based upon choices under uncertainty, risk, and ambiguity. They proposed that when facing numerous sensory inputs, human beings reduce complexity via the use of heuristics. In the course of these mental processes of simplifying an otherwise overwhelming amount of information, we regularly inject cognitive bias. Cognitive bias comes from the unconscious errors generated by our mental simplification methods. It is important to note that the use of a heuristic does not generate bias every time. We are simply more prone to induce error. Additionally, this bias is not cultural or ideological bias—both of which are semi-conscious processes.¹³ Kahneman and Tversky's identified phenomena have withstood numerous experimental and real-world tests. They are considered robust, consistent, and predictable.¹⁴ In this article, we will survey three important heuristics to military decision making: availability, representativeness, and anchoring.¹⁵

In the course of intuitive decision making, we use mental heuristics to quickly reduce complexity. The use of these heuristics exposes us to cognitive biases...



US Marine Corps photo by Lance CPL Abby Burdine.

U.S. Marine Corps SSgt Tommy Webb of Headquarters Battalion, Marine Forces Reserve, teaches a class on grid coordinates and plotting points on a map, 22 February 2010. The course emphasizes combat conditioning, decision making, critical thinking skills, military traditions, and military drill. These professional courses must focus on critical reflection when examining new problems in order to avoid bias.

Availability

When faced with new circumstances, people naturally compare them to similar situations residing in their memory.¹⁶ These situations often “come to one’s mind” automatically. These past occurrences are *available* for use, and generally, they are adequate for us to make sense of new situations encountered in routine life. However, they rarely are the product of thoughtful deliberation, especially in a time-constrained environment. These available recollections have been unconsciously predetermined by the circumstances we experienced when we made them. These past images of like circumstances affect our judgment when assessing risk and/or the probability of future events. Ultimately, four biases arise from the availability heuristic: retrievability bias, search set bias, imaginability bias, and illusory correlation.

Retrievability bias. The frequency of similar events in our past reinforces preconceived notions of comparable situations occurring in the future. For example, a soldier will assess his risk of being wounded or killed in combat based on its frequency

of occurrence among his buddies. Likewise, an officer may assess his probability of promotion based on the past promotion rates of peers. Availability of these frequent occurrences helps us to quickly judge the subjective probability of future events; however, availability is also affected by other factors such as salience and vividness of memory. For example, the subjective probability assessment of future improvised explosive device (IED) attacks will most likely be higher from a lieutenant who witnessed such attacks than one who read about them in situation reports. Bias in their assessment occurs because the actual probability of future attacks is not related to the personal experience of either officer.¹⁷

Similarly, consistent fixation on a previous event or series of events may also increase availability.¹⁸ Naval officers most likely experienced a temporary rise in their subjective assessment of the risk of ship collision after the highly publicized reports of the collision between the USS *Hartford* and USS *New Orleans*.¹⁹ The true probability of a future collision is no more likely than it was prior to the

collision, yet organizational efforts to avoid collisions increased due to the subjective impression that collisions were now somehow more likely. People exposed to the outcome of a probabilistic event give a much higher post-event subjective probability than those not exposed to the outcome. This is called *hindsight bias*.

When combining hindsight bias and retrievability biases, we potentially fail to guard against an event popularized euphemistically as a *black swan*. Nassim Taleb describes black swans as historical events that surprised humanity because they were thought of as non-existent or exceedingly rare. We assume all swans are white; they are in our available memory.²⁰ For example, in hindsight the 11 September 2001 terrorist attacks look completely conceivable; therefore, we hold the various intelligence agencies of the U.S. government publicly accountable for something that was not even considered plausible before the event. Furthermore, mentally available disasters set an upper bound on our perceived risk. Many of our precautionary homeland security measures are based on stopping another 9/11 type attack, when in fact the next attempt may take on a completely different context that we cannot imagine (because our searches for past experiences are limited).²¹

Availability played a role in the current global financial crisis. Our collective memories contained two decades of stable market conditions. The inability to conceive a major economic downturn and the flawed assumption that systemic risk to the national real estate market was minuscule contributed to creating a black swan event.²² Taleb wrote the following passage *before* the collapse of the asset-backed securities market (a major element of the current economic recession):

Globalization creates interlocking fragility, while reducing volatility and giving the appearance of stability. In other words, it creates devastating Black Swans. We have never lived before under the threat of a global collapse. Financial institutions have been merging into a smaller number of very large banks. Almost all banks are interrelated. So the financial ecology is swelling into gigantic, incestuous banks—when one fails, they all fail. The increased concentration among banks seems to have the effect

of making financial crises less likely, but when they happen they are more global in scale and hit us very hard.²³

Given the possibility of black swans, we should constantly question our available memories when faced with new situations. Are these memories leading us astray? Are they making our decisions more or less risky? Are our enemies exploiting this phenomenon? Military planners have done so in the past, seeking the advantage of surprise.

For example, the British were masters at exploiting retrievability biases during World War II. They employed the COLLECT plan in North Africa in 1941 to obfuscate the exact timing of General Auchinleck's offensive (Operation Crusader) against Rommel's forces in Libya.²⁴ Via official, unofficial, and false channels, the British repeatedly signaled specific dates of the commencement of the operation, only to rescind these orders for plausible reasons. These artificial reasons included the inability to quickly move forces from Syria to take part in the operation to the failure of logistics ships to arrive in Egypt. Planners wanted to lull Rommel into expecting the repeated pattern of preparation and cancellation so that when the actual operation began, his memory would retrieve the repeated pattern. The plan worked. The British achieved operational deception. They surprised Rommel and after 19 days of fighting ultimately succeeded in breaking the siege at Tobruk. The repetitive nature of orders and their cancellation demonstrates the power of availability on human decision making.²⁵

Search Set Bias. As we face uncertainty in piecing together patterns of enemy activity, the effectiveness of our patterns of information retrieval constrain our ability to coherently create a holistic appreciation of the situation. These patterns are called our search set. A simple example of search set is the Mayzner-Tresselt experiment, in which subjects were told to randomly select words longer than three letters from memory. Experimenters asked if the words more likely had the letter *R* in the first position or third position. Furthermore, they asked subjects to estimate the ratio of these two positions for the given letter. They also asked about *K*, *L*, *N*, and *V*. The subjects overwhelmingly selected the first position for each letter given over the third position, and the median subjective ratio for the first position was 2:1.²⁶ In fact, the aforementioned letters appear with far more

frequency in the third position. This experiment highlighted the difficulty of modifying established search sets. When we wish to find a word in the dictionary, we look it up by its first letter, not its third. Our available search sets are *constructed* in unique patterns that are usually linear. We tend to think in a series of steps versus in parallel streams.²⁷

The effectiveness of our search set has a big impact on operations in Iraq and Afghanistan. When observing IED strikes and ambushes along routes, we typically search those routes repeatedly for high-value targets, yet our operations rarely find them. Our search set is mentally constrained to the map of strikes we observe on the charts in our operation centers. We should look for our adversaries in areas where there are no IEDs or ambushes. They may be more likely to hide there. In another scenario, our enemy takes note of our vehicle bumper numbers and draws rough boundaries for our respective unit areas of operation (AOs). They become used to exploiting operations between unit boundaries and their search set becomes fixed; therefore, we should take advantage of their bias for established boundaries by irregularly adjusting our unit AOs. From this example, we can see that to better structure our

thinking to escape search set bias, we should think along a spectrum instead of categorically.²⁸ (Using both methods allows us to think in opposites which may enhance our mental processing ability.)

Imaginability Bias. When confronted with a situation without any available memory, we use our imagination to make a subjective premonition.²⁹ If we play up the dangerous elements of a future mission, then naturally we may perceive our likelihood of success as low. If we emphasize the easy elements of a mission, we may assess our probability of success too high. The ease or lack thereof in imagining elements of the mission most likely does not affect the mission's true probability of success. Our psychological pre-conditioning to risk (either low or high) biases our assessment of the future. Following the deadly experience of the U.S. Army Rangers in Mogadishu in 1993, force protection issues dominated future military deployments. Deployments to Haiti and Bosnia were different from Somalia, yet force protection issues were assumed tantamount to mission success. We could easily imagine dead American soldiers dragged through the streets of Port-au-Prince or Tuzla. This bias of imaginability concerning force protection



U.S. Army, SPC Eric Cabral

1LT Matthew Hilderbrand, left, and SSG Kevin Sentieri, Delta Company, 1st Battalion, 4th Infantry Regiment, patrol in search of a weapons cache outside Combat Outpost Sangar in Zabul Province, Afghanistan, 27 June 2010.

actually hampered our ability to execute other critical elements of the overall strategic mission.³⁰

Biases of imaginability may potentially become worse as we gain more situational awareness on the battlefield. This seems counterintuitive, yet we may find units with near-perfect information becoming paralyzed on the battlefield. A unit that knows an enemy position is just around the corner may not engage it because the knowledge of certain danger makes its members susceptible to inflating risk beyond its true value. These Soldiers may envision their own death or that of their buddies if they attack this known position. Units with imperfect information (but well-versed in unit battle drills) may fare better because they are not biased by their imagination. They will react to contact as the situation develops.³¹ As an organization, we desire our officers and NCOs to show creativity in making decisions, yet we have to exercise critical reflection lest our selective imagination get the best of us.

Illusory Correlation. Correlation describes the relationship between two events.³² People often incorrectly conclude that two events are correlated due to their mentally available associative bond between similar events in the past.³³ For example, we may think that the traffic is only heavy when we are running late, or our baby sleeps in only on mornings that we have to get up early. These memorable anecdotes form false associative bonds in our memories. Consider the following example regarding military deception operations from CIA analyst Richard Heuer:

The hypothesis has been advanced that deception is most likely when the stakes are exceptionally high. If this hypothesis is correct, analysts should be especially alert for deception in such instances. One can cite prominent examples to support the hypothesis, such as Pearl Harbor, the Normandy landings, and the German invasion

of the Soviet Union. It seems as though the hypothesis has considerable support, given that it is so easy to recall examples of high stakes situations...How common is deception when the stakes are not high . . . What are low-stakes situations in this context? High stakes situations are definable, but there is an almost infinite number and variety of low-stakes situations . . . we cannot demonstrate empirically that one should be more alert to deception in high-stakes situations, because there is no basis for comparing high-stakes to low stakes cases.³⁴

Heuer highlights the potentially pernicious effect illusory correlation can have on our decision making. Exposure to salient experiences in the past generates stereotypes that are difficult to consciously break. In fact, we may fall victim to *confirmation bias*, where we actively pursue only the information that will validate the link between the two events. We may ignore or discard important data that would weaken our illusory correlation. In social settings (such as staff work), the effects of illusory correlation and confirmation bias are reinforcing factors to the concept of *groupthink*, whereby members of a group minimize conflict and reach consensus without critically examining or testing ideas. Groupthink generates systematic errors and poor decisions. Scholars have identified a number of military disasters, such as the Bay of Pigs fiasco and the Vietnam War, as examples of the dangers of heuristics associated with groupthink.³⁵ To avoid illusory correlation, we should ask ourselves whether our intuitive or gut feeling on the relationship between two events is correct and why. This does not come naturally. It takes a deliberative mental effort to ask ourselves a contrary proposition to our assumed correlation. Individually, we may be unable to overcome illusory correlation. The solution potentially lies in

Exposure to salient experiences in the past generates stereotypes that are difficult to consciously break. In fact, we may fall victim to confirmation bias, where we actively pursue only the information that will validate the link between the two events.

a collective staff process where we organize into teams to evaluate competing hypotheses.³⁶

Representativeness

Representativeness is a heuristic that people use to assess the probability that an event, person, or object falls into a larger category of events, people, or things. In order to quickly categorize a new occurrence, we mentally examine it for characteristics of the larger grouping of preexisting occurrences. If we find it to “represent” the traits of the broader category, we mentally place it into this class of occurrences. This heuristic is a normal part of mental processing, yet it is also prone to errors. Representativeness leads to five potential biases: insensitivity to prior probability of outcomes, base-rate neglect, insensitivity to sample size, misconceptions of chance, and failure to identify regression to the mean.

Insensitivity to prior probability of outcomes. Consider the following description of a company-grade Army officer:

He is a prudent, details-oriented person. He meticulously follows rules and is very thrifty.

He dresses conservatively and drives a Ford Focus.

Is this officer more likely to be an aviator or finance officer? If you picked finance officer, then your stereotype of the traits of a typical finance officer may have fooled you into making the less likely answer. You may even hold the stereotype that aviators are hot-shot pilots, who fly by the seat of their pants. It is common to view pilots as individuals who believe rules are made to be broken, and money is made to be spent on fast cars and hard partying. Given these stereotypes, you chose unwisely because there are statistically more aviators than finance officers who fit the given description. As a branch, aviation assesses approximately 20 times more officers than finance each year. It is always important to understand the size of the populations you are comparing before making a decision. Stereotypes often arise unconsciously; therefore, it is important to remain on guard against their potential misleading effects.

Base-rate neglect. Consider the following problem given to cadets at West Point:

While on a platoon patrol, you observe a man near a garbage pile on the side of a major road. In recent IED attacks in the area, the primary method of concealment



Cecil Stoughton, White House, in the John F. Kennedy Presidential Library and Museum

President John F. Kennedy addresses the 2506 Cuban Invasion Brigade, 29 December 1962, Miami, FL.

for the device is in the numerous piles of garbage that lay festering in the street (trash removal is effectively non-existent due to insurgent attacks on any government employee—including sanitation workers). You immediately direct one of your squad leaders to apprehend the man. Based on S2 reports, you know that 90 percent of the population are innocent civilians, while 10 percent are insurgents. The battalion S3 recently provided information from detainee operations training—your platoon correctly identified one of two types of the population 75 percent of the time and incorrectly 25 percent of the time. You quickly interrogate the man. He claims innocence, but acts suspiciously. There is no IED in the trash pile. What is the probability that you detain the man and that he turns out to be an insurgent rather than a civilian?

Most cadets answered between 50 percent and 75 percent.³⁷ This estimate is far too high. The actual probability is 25 percent.³⁸ The 75 percent detection probability from the platoon’s training provides available *individuating* information. Individuating information allows the lieutenant to believe that he

is individually differentiated from his peers due to his high training score. This available information potentially causes the lieutenant to order information based upon its perceived level of importance. The high detection ability in training may facilitate overconfidence in actual ability and neglect of the base-rate of actual insurgents in the population of only 10 percent. The result is that the lieutenant is far more likely to mistake the innocent civilian for an insurgent.³⁹ Outside of the lieutenant's mind (and ego), the base-rate actually has a far greater impact on the probability that the apprehended man is an innocent civilian rather than an insurgent.⁴⁰

Insensitivity to sample size. Consider a problem from Afghanistan:

We suspect two primary drug trafficking routes along the Afghan-Pakistani border. A small village is located along the first suspected route, while a larger village is located along the other suspected route. We also suspect that local residents of each village guide the opium caravans along the mountainous routes for money. Human intelligence sources indicate that thirty men from the small village and sixty-five men from the large village engaged in guide activities over the last month. Furthermore, coalition check points and patrols recently confirmed the G2 long-term estimate that on average, twenty-five percent of the male population of each village is engaged monthly in guide activity. The smuggling activity fluctuates monthly—sometimes higher and other times lower. Which village is likely to experience more months of over forty percent participation rate in smuggling?

If you selected the large village, then you are incorrect. If you guessed it would be 25 percent for both villages, you are also incorrect. The small village would have greater fluctuations in activity due to the “law of large numbers.” As population size grows, the average number becomes more stable with less variation; therefore, the larger village's monthly percentage of guide activity is closer to the long-term average of 25 percent. The smaller village has greater monthly deviations from the long-term average value. This example highlights that insensitivity to sample size occurs because many people do not

consider the “law of large numbers” when making probability assessments and decisions.⁴¹

Misconceptions of chance. Many people misunderstand the elements of chance. For example, suppose you observe roulette in a casino. The following three sequences of red and black could occur: RBRBRB or RRRBBB or RBBBBB. Which sequence is more likely? The answer is that all of these sequences are equally likely; however, if you were like most people in similar experiments, then you most likely picked RBRBRB.⁴² This sequence is the most popular because people expect the fundamental traits of the equilibrium sequence (50 percent Black and 50 percent Red) to be represented—yet if you stopped to do the math, each sequence has a probability of 1.56 percent.⁴³ If the sequence was RBBBBB, then you most likely would hear people say “Red is coming up for sure”—this is the *gambler's fallacy*. Many people expect the equilibrium pattern to return after a long run of black; however, the laws of randomness have not changed. The probability of red is equal to black. The implication is that we unconsciously judge future events based on representativeness of sequence, not on probability.

Now, consider the following question:

Which is more likely: 1) “Iran tests a nuclear weapon in 2013” or 2) “Iran has domestic unrest after its next election and tests a nuclear weapon sometime in 2013?”

If you selected the second scenario, then you are incorrect. The reason is the more specific the description, the less likely the event. The two events occurring in the same year are less likely than only one event occurring; however, many people tend to judge an event more likely as more specific information is uncovered. This human tendency has potential implications for military decision making as situational awareness improves with technology. Adding new details to a situation may make that scenario seem more plausible, yet the mere discovery of further information does not affect the probability of the situation actually occurring.

Failure to identify regression to the mean. Suppose we examine the training records of tank crews during gunnery qualification.⁴⁴ Observer-controllers (OCs) may report that praising to a tank crew after an exceptional run on Table VII is normally followed by a poor run on Table VIII.

They might also maintain that harsh scorn after a miserable run on Table VII is normally followed by a great run on Table VIII. As a result, OCs may assume that praise is ineffective (makes a crew cocky) and that criticism is valuable (makes a crew buckle down and perform). This assumption is false due to the phenomenon known as *regression to the mean*. If a tank crew repeatedly executed Tables VII and VIII, then the crew's scores would eventually converge (or regress) to an average score over the long term. However, at the beginning of this process, the scores are likely to be highly volatile with some scores alternating far above and others far below the average. OCs may falsely assume that their social interaction with the crew has a causal effect on the crew's future scores. Kahneman and Tversky write that the inability to recognize the *regression to the mean* pattern "remains elusive because it is incompatible with the belief that the predicted outcome should be maximally representative of the input, and, hence, that the value of the outcome variable should be as extreme as the value of the input variable."⁴⁵ In other words, many times we fail to identify settings that follow the *regression to the mean* phenomenon because we intuitively expect future scores to be representative of a previous score. Furthermore, we attribute causal explanations to performance that are actually irrelevant to the outcome.

Anchoring

When facing a new problem, most people estimate an initial condition. As time unfolds, they adjust this original appraisal. Unfortunately, this adjustment is usually inadequate to match the true final condition. For example, the average number of U.S. troops in Iraq from May 2003 to April 2007 was 138,000. Mounting evidence during this time exposed this initial estimate as insufficient, yet decision makers were anchored on this number over the course of this four-year period. They did not upwardly adjust the number until Iraq was on the verge of a civil war between Sunnis and Shiites. The anchoring phenomenon kept the value closer to the initial value than it should have been. Historically, anchoring bias has had harmful effects on military operations.

As previously identified, the British in World War II were masters of exploiting human mental

errors. They exploited German anchoring bias with the deception scheme called the Cyprus Defense Plan.⁴⁶ Following the German seizure of Crete, the British were concerned that the 4,000 troops on Cyprus were insufficient to repel a German attack. Via the creation of a false division headquarters, barracks, and motor pools along with phony radio transmissions and telegrams, the British set out to convince the Germans that 20,000 troops garrisoned the island. A fake defensive plan with maps, graphics, and orders was passed via double agents a lost briefcase. The Germans and Italians fell for the ruse. This deception anchored the Germans on the 20,000 troop number for the remaining three years of the war. In spite of their own analysis that the number might be too high, intelligence intercepts and post-war documents revealed the Germans believed the number almost without question. This exposes another negative effect of anchoring: excessively tight confidence intervals. The Germans were more confident in their assessment than justified when considering the contradictory information they had. In summary, the Germans were anchored, made insufficient adjustments and had overly narrow confidence intervals.

Biases in the evaluation of conjunctive and disjunctive events. Anchoring bias appears in our assessments of conjunctive and disjunctive events. A conjunctive event is comprised of a series of stages where the previous stage must be successful for the next stage to begin. In spite of each individual stage having a high probability of success, the probability of total event success may be low due to a large number of stages. Unfortunately,

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researchers have shown that many people do not think in terms of total event (or system) probability. Instead, they anchor on initial stage probabilities and fail to adjust their probability assessment. This results in overestimating the likelihood of success for a conjunctive event.

A disjunctive event occurs in risk assessment. When examining complex systems, we may find that the likelihood of failure of individual critical components or stages is very small. However, as complexity grows and the number of critical components increases, we find mathematically that the probability of event (or system) failure increases. However, we again find that people anchor incorrectly. In this case, they anchor on the initial low probabilities of initial stage failure. Consequently, people frequently underestimate the probability of event failure. This overestimation of success with a conjunctive event and underestimation of failure with a disjunctive event has implications for military decision making.

For example, military planners in 2002 and 2003 may have fallen victim to conjunctive event bias during strategic planning for the Iraq invasion. In order to realize success in Iraq, a number of military objectives had to occur. These included—

- Ending the regime of Saddam Hussein.
- Identifying, isolating, and eliminating Iraq's WMD programs.
- Searching for, capturing, and driving terrorists out of Iraq.
- Ending sanctions and immediately delivering humanitarian assistance to support the Iraqi people.
- Securing Iraqi oil fields and resources for the Iraqi people.
- Helping the Iraqi people create conditions for a transition to a representative self-government.⁴⁷

For illustrative purposes, suppose planners gave each stage a 75 percent independent probability of success.⁴⁸ This level of probability potentially anchored decisionmakers on a 75 percent chance of overall mission success in Iraq, while the actual probability of success is approximately 18 percent.⁴⁹ The total probability of accomplishing all of these objectives gets smaller with the addition of more objectives. As a result, the conclusion by strategic leaders that Operation Iraqi Freedom had a high likelihood of success was potentially overoptimistic and unwarranted.

A more recent example of conjunctive event bias occurs in procurement decisions. One of the main selling points of the Future Combat System Manned Ground Vehicle family (MGV) was tank-level survivability combined with low weight for rapid deployability. While the M1 tank relies on passive armor for its protective level, the MGV would reach an equivalent level via increased situational awareness (“why worry about armor when you are never surprised by your enemy?”) and an Active Protective System (APS) that vertically deploys an interceptor to strike an incoming threat munition. The Active Protective System is a conjunctive system that requires a chain of stages to occur for overall system success: 1) detect an incoming threat munition, 2) track and identify munition trajectory, 3) deploy appropriate countermeasure, 4) hit incoming munition, and 5) destroy or deflect the munition.⁵⁰ Again for illustrative purposes, assume that the individual probability of success for each of these five stages is 95 percent. Suppose that the M1A2's passive armor is only 80 percent effective against the threat munition. Anchoring bias occurs in that people may conflate the 95 percent individual stage rate with an overall APS system success rate. This is a false conclusion. In this example, the overall APS probability of success is actually 77 percent.⁵¹ When compared to the M1 tank, the APS is actually less survivable than passive armor with this notional data.⁵²

We could also view the APS as a disjunctive system. Instead of success rate, suppose the failure rate of each component is five percent. Naturally, a five percent failure rate looks better than the M1 tank's 20 percent failure rate. Framed this way, many people may erroneously anchor on a total system failure probability of five percent, when the disjunctive probability that at least one critical APS component fails is actually 23 percent.⁵³ Again, we find that the APS is worse than the M1 tank's passive armor. This simple example shows that disjunctive and conjunctive events are opposite sides of the same coin. Kahneman and Tversky write, “The chain-like structure of conjunctions leads to overestimation; the funnel-like structure of disjunction leads to underestimation.”⁵⁴ The direction of the flawed probability estimate is a matter of framing the problem, yet the bias exists in both types of events.



DOD

The XM1203 Non-Line-of-Sight Cannon was a mobile 155-mm cannon intended to provide improved responsiveness and lethality to the unit of action commander as part of the U.S. Army's Future Combat Systems project, Yuma, AZ, 2009.

Overcoming this anchoring phenomenon is difficult. Even when test subjects are apprised of the bias, research has shown anchoring and inadequate adjustment persist. In dealing with highly volatile, uncertain, complex, and ambiguous environments, military professionals need to improvise and experiment with a variety of new methods. These activities are part of the critical task of reframing the problem, outlined in FM 5-0. In order to avoid anchoring, it may be necessary to reframe a problem anew; however, this may be a difficult proposition in a time-constrained environment.⁵⁵

Summary

The volatility, uncertainty, complexity, and ambiguity of our operating environment demand that military professionals make rapid decisions in situations where established military decision making processes are either too narrow or ineffective. The fast tempo of operational decisions potentially may render any elaborate approach, either MDMP or Design, infeasible. As a result, commanders and staff may find themselves engaged in more intuitive decision making. FM 3-0, *Operations*, states that intuitive decision

making rests on “reaching a conclusion that emphasizes pattern recognition based upon knowledge, judgment, experience, education, intelligence, boldness, perception, and character.”⁵⁶ This article has identified several heuristics that people use to make intuitive decisions to emphasize the potential cognitive biases that subconsciously arise and can produce poor outcomes. When subjective assessments, ego, and emotion are intertwined with cognitive processes, we realize that intuitive decision making is fraught with potential traps. We must constantly strive to avoid these mental snares and plan to compensate for them when they arise. The solution may lie in the organizational embrace of the concept of reflective practice as advocated by previous authors in this journal.⁵⁷ Instead of the usual striving toward a “best practices” methodology, which is also full of potential heuristic biases, reflective practice calls for “valuing the processes that challenge assimilative knowledge (i.e. continuous truth seeking) and by embracing the inevitable conflict associated with truth seeking.”⁵⁸ Institutionalizing this approach may help us to avoid some of the intrinsic human mental frailties that inhibit good decision making. **MR**

NOTES

1. Carl von Clausewitz, *On War*, trans. and ed. Michael Howard and Peter Paret (Princeton University Press, 1976), 85-86.
2. The specific terms volatility, uncertainty, complexity, and ambiguity (VUCA) gained favor in the curricula of the military senior service colleges. For a history of its pedagogical evolution, see Judith Stiehm, *The U.S. Army War College: Military Education in a Democracy* (Temple University Press, 2002).
3. The origins for these concepts come from Nobel Laureate Herbert Simon and Charles Lindblom. Simon's concept of "satisficing" and Lindblom's notion of "muddling through" challenged the dominant technical-rational view (still prevalent in the operations research community) that optimally efficient solutions can be found to inherently social problems. See Charles E. Lindblom, "The Science of 'Muddling Through,'" *Public Administration Review* 19 (1959): 79-88, and Herbert A. Simon, *Administrative Behavior*, 4th Ed. (Simon and Schuster, 1997). Later theorists applied it to business organizations (Karl E. Weick, "Improvisation as a Mindset for Organizational Analysis," *Organization Science* 9, no. 5 [1998]: 543-55) and to codes of professional knowledge (Donald A. Schön, *Educating the Reflective Practitioner* [Jossey-Bass, 1987]). There are a number of recent works that apply these concepts to the military: Don M. Snider and Gayle L. Watkins, *The Future of the Army Profession*, 2d Ed. (McGraw-Hill, 2005) and Christopher R. Papparoni and George Reed, "The Reflective Military Practitioner: How Military Professionals Think in Action," *Military Review* 88, no. 2 (2008): 66-77.
4. Donald A. Schön writes that if "we think critically about the thinking that got us into this fix or this opportunity . . . we may, in the process, restructure strategies of action, understandings of phenomena, or ways of framing problems," *Educating the Reflective Practitioner* (Jossey-Bass, 1987), 28.
5. "Technical-rationality" is the positive epistemology that has largely structured our current view of knowledge. It is the view that we can reduce the elements of a complex system, analyze them individually, and then reconstruct them into a holistic appreciation of the system. Simultaneous causality and endogeneity make this type of analysis very difficult when analyzing social situations.
6. Plato uses this metaphor to describe a group of people unable to perceive the true nature of the world because they are chained in a cave of their own making. See Gareth Morgan, "Exploring Plato's Cave: Organizations as Psychic Prisons," in *Images of Organization* (Sage, 2006).
7. Field Manual (FM) 5-0 (Washington, DC: U.S. Government Printing Office [GPO]), 3-1.
8. At its core, Design calls for an open mind that examines problems from multiple lenses. It is not a systems engineering process with a sequence of steps similar to MDMP. It calls for a broader intellectual examination of a problem. Unfortunately, educating many in our profession to examine problems in this manner will most likely meet institutional resistance. We are a culture of doers, not thinkers. We decisively execute rather than thoughtfully deliberate. Process checklists are easy to use and require little thought in a time-constrained environment. Understanding and using Design may require more officers with liberal arts educations over engineering training. The full embrace of a Design-type methodology to face volatile, uncertain, complex, and ambiguous environments may require the complete re-tooling of the core curricula at West Point, Command and General Staff College, and the War College. This topic is highly controversial (and provocative).
9. For more on framing effects, see Erving Goffman, *Frame Analysis* (Cambridge: Harvard University Press, 1974).
10. FM 6-0 (Washington, DC: GPO), 6-116.
11. We are examining individual heuristics as identified in behavioral economics, not social heuristics (how a culture appraises a situation). The effect of social influences on decision making is a topic beyond the scope of this paper. However, a merging of individual and social influences is proposed in Mark Granovetter, "Economic Action and Social Structure: The Problem of Embeddedness," *The American Journal of Sociology* 91, no. 3 (1985), 481-510.
12. See Daniel Kahneman and Amos Tversky, "Judgment under Uncertainty: Heuristics and Biases" *Science* 185 (1974), 1124-31; Daniel Kahneman and Amos Tversky, "Prospect Theory: An Analysis of Decision under Risk," *Econometrica* 47, no. 2 (1979), 263-92; and *Choice, Values, and Frames*, ed. Daniel Kahneman and Amos Tversky (New York: Cambridge University Press, 2000).
13. These assumptions are not critical for this analysis of unconscious decision making heuristics. Viewed from a sociological perspective, we could potentially relax these assumptions and examine the complex interplay of unconscious organizational influences on decision making. This would be an interesting topic for future research.
14. In spite of experimental and real world tests, behavioral economics is not without critics. For more, see Mikhail Myagkov and Charles R. Plott, "Exchange Economics and Loss Exposure: Experiments Exploring Prospect Theory and Competitive Equilibria in Market Economics," *American Economic Review* 87, no. 5 (1997): 801-28.
15. These heuristics and their attendant biases are previewed in *Judgment under Uncertainty: Heuristics and Biases*, ed. Daniel Kahneman and Amos Tversky (New York: Cambridge University Press, 1982), 1-20.
16. Professor Christopher Papparoni suggests that one might call these references a search for metaphors. For more, see Christopher R. Papparoni, "On Metaphors We Are Led By," *Military Review* 88, no. 6 (2008): 55-64.
17. Unless one is to believe the superstitious notion of a Soldier with the unlucky distinction of being a "bullet-magnet."
18. Kahneman and Tversky write, "Continued preoccupation with an outcome may increase its availability, and hence its perceived likelihood. People are preoccupied with highly desirable outcomes, such as winning the sweepstakes, or highly undesirable outcome, such as an airplane crash. Consequently, availability provides a mechanism by which occurrences of extreme utility (or disutility) may appear more likely than they actually are," *Judgment under Uncertainty: Heuristics and Biases*, ed. Daniel Kahneman and Amos Tversky (New York: Cambridge University Press, 1982), 178.
19. Commander, U.S. 5th Fleet Public Affairs, "USS *Hartford* and USS *New Orleans* Arrive in Port Bahrain," 21 March 2009, story number: NNS090321-03, <http://www.navy.mil/search/display.asp?story_id=43630>.
20. See Nassim N. Taleb, *The Black Swan: The Impact of the Highly Improbable* (Random House, 2007).
21. We see this same type of phenomenon occurring in the sale of insurance. People use the last accident or disaster as an upper limit on what is possible for the future; therefore, they only insure up to this level.
22. The assumption made was that all real estate market fluctuations are local. At the national level (or systemic-level), the local markets would never fall at the same time. In fact, this is what occurred.
23. Nassim N. Taleb, <<http://www.fooledbyrandomness.com/imbeciles.htm>>.
24. See Thaddeus Holt, *The Deceivers: Allied Military Deception in the Second World War* (New York: Scribner, 2004), 39-40.
25. One must be careful using historical examples. The study of military history potentially exposes us to availability-related biases. We do all that reading to learn what has worked and what hasn't worked in the past, yet this source of professional knowledge can tether us to specific courses of action. If we apply lessons from the past that are incorrectly suited for the problems of today, then we may sow the seeds of disaster. Military history is useful for informing our understanding of the problem, but we must be cautious not to let history inappropriately guide our actions.
26. Mark S. Mayzner and Margaret Tresselt, "Tables of single-letter and bigram frequency counts for various word-length and letter position combinations," *Psychonomic Monograph Supplements*, 1965, no. 1, 13-32.
27. Although I generalize about mental search sets, it is important to acknowledge that some personality types may exhibit parallel thought processes. We might find this capacity in "creative" people, such as painters, musicians, and architects.
28. I am indebted to Professor Christopher Papparoni for this insight. Also see Deborah A. Stone, *Policy Paradox: The Art of Political Decision Making*, 2d Ed. (New York: W.W. Norton, 2001).
29. See Daniel Kahneman and Amos Tversky, "Judgment under Uncertainty: Heuristics and Biases" *Science* 185 (1974): 1124-31.
30. See John T. Fishel, "Operation Uphold Democracy: Old Principles, New Realities," *Military Review* 77, no. 4 (1997): 22-30, and Robert F. Baumann, "Operations Uphold Democracy: Power Under Control," *Military Review* 77, no. 4 (1997): 13-21.
31. In light of this potential bias, we may want to re-evaluate the allocation of our budget resources. Which contribute more to combat effectiveness—dollars spent on technical systems that enhance situational awareness, or dollars spent on realistic, tough training?
32. In technical terms, correlation is a measure of covariance, which is a measure of the linear dependence between two random variables. It does not imply causality. For example, people carrying umbrellas are positively correlated with the possibility of rain, yet carrying umbrellas does not cause it to rain.
33. See Loren J. Chapman and Jean P. Chapman, "Genesis of popular but erroneous psychodiagnostic observations," *Journal of Abnormal Psychology* 72 (1967): 193-204; Loren J. Chapman and Jean P. Chapman, "Illusory correlation as an obstacle to the use of valid psychodiagnostic," *Journal of Abnormal Psychology* 74 (1969); and Dennis L. Jennings, Teresa M. Amabile, and Lee Ross, "Informal covariation assessment: Data-based versus theory-based judgments," in *Judgment under Uncertainty: Heuristics and Biases*, ed. Daniel Kahneman, and Amos Tversky (Cambridge, 1982).
34. Richard J. Heuer, *Psychology of Intelligence Analysis* (Center for the Study of Intelligence, 1999), 144-45.
35. Irving L. Janis, *Groupthink: Psychological Studies of Policy Decisions and Fiascoes*, 2d ed. (Boston, MA: Houghton Mifflin, 1982). I am indebted to Major Robert Meine, U.S. Army, for his comments on this article. He noted that the Army is particularly vulnerable to the effects of groupthink given our rank structure, deference to authority, and organizational structure.
36. Heuer, ch. 8. The military has named this process "red teaming."
37. This problem was a variation of Kahneman and Tversky's famous taxicab experiment in *Judgment under Uncertainty: Heuristics and Biases*, ed. Daniel Kahneman and Amos Tversky (New York: Cambridge University Press, 1982), 156-57. It is similar to a quiz I gave during my Game Theory class at West Point.
38. Mathematically, this problem can be solved using Bayesian inference.
39. Some may feel that the lieutenant should err on the side of caution—assume the man is an insurgent until proven otherwise. This may save the lives of soldiers. However, in the broader context, this approach most definitely will increase the innocent man's sympathy for the insurgency (as well as his family's). In fact, he and his kin may begin to actively support or join the insurgency.
40. For more, see Maya Bar-Hillel, "The base-rate fallacy in probability judgments," *Acta Psychologica* 44 (1980): 211-33; Maya Bar-Hillel, "Studies of Representativeness," in *Judgment under Uncertainty: Heuristics and Biases*, ed. Daniel Kahneman, Paul Slovic, and Amos Tversky (New York: Cambridge, 1982); and Kahneman and Tversky, "Evidential impact of base rates" in *Judgment under Uncertainty: Heuristics and Biases*, ed. Daniel Kahneman, Paul Slovic, and Amos Tversky (New York: Cambridge, 1982).
41. See the hospital example in Daniel Kahneman and Amos Tversky, "Subjective probability: A judgment of representativeness," *Cognitive Psychology* 3 (1972): 430-54.
42. See the coin example in Daniel Kahneman and Amos Tversky, "Subjective probability: A judgment of representativeness," *Cognitive Psychology* 3 (1972): 430-54.
43. $0.5 \times 0.5 \times 0.5 \times 0.5 \times 0.5 = 0.015625$ or 1.56 percent.

44. I am indebted to MAJ Nick Ayers, U.S. Army, for his explanation of tank gunnery training.

45. *Judgment under Uncertainty: Heuristics and Biases*, ed. Daniel Kahneman and Amos Tversky, (New York: Cambridge University Press, 1982), 10.

46. For a complete description, see Holt, 31-32.

47. See <http://www.globalsecurity.org/military/ops/iraqi_freedom.htm>.

48. For this simple example, we assume independence of events. However, most of these events are conditional on the success of other events; therefore, Bayesian analysis may be more appropriate. The point of the example is that people do not usually think even in terms of simple independent probability, let alone more complex conditional probability.

49. $0.75 \times 0.75 \times 0.75 \times 0.75 \times 0.75 \times 0.75 = 0.1779$ or 17.79 percent.

50. See <<http://www.globalsecurity.org/military/systems/ground/iaaps.htm>>.

51. $0.95 \times 0.95 \times 0.95 \times 0.95 \times 0.95 = 0.77$ = 77 percent. To be equivalent to the M1 tank,

each APS component would have to have a success rate above 95 percent (actual answer is greater than 95.64 percent).

52. This problem is relatively simple to analyze when the probabilities involve objective engineering data. They become much harder when we consider the subjective probabilities found in social situations.

53. $1 - 0.77 = 0.23$ = 23 percent

54. *Judgment under Uncertainty: Heuristics and Biases*, ed. Daniel Kahneman and Amos Tversky, (New York: Cambridge University Press, 1982), 16.

55. Bayesian inferential techniques may be appropriate tools for overcoming anchoring; however, they take time to model and understand.

56. FM 3.0, *Operations* (Washington, DC: GPO, 27 February 2008), 5-11.

57. See Christopher R. Paparone and George Reed, "The Reflective Military Practitioner: How Military Professionals Think in Action," *Military Review* 88, no. 2 (2008): 66-77.

58. *Ibid.*, 74.

RED TEAMING



The University of Foreign Military and Cultural Studies (UFMCS) at Fort Leavenworth is an Army-directed education, research, and training initiative for Army organizations, joint organizations, and other government agencies.

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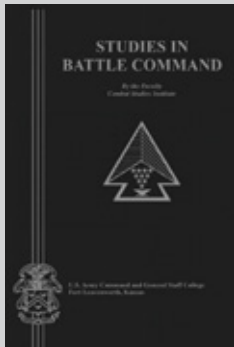


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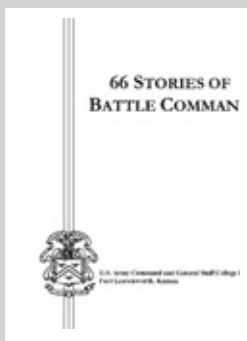
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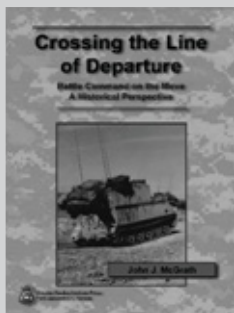
Studies in Battle Command

Written by the combined faculty of the Combat Studies Institute (1998, U.S. Army Command and General Staff College Press), a collection of 24 essays that analyze various combat engagements and military leaders throughout history—from Gustavus Adolphus in the seventeenth century to Hamburger Hill in Vietnam—illustrating the concept we now call Mission Command.



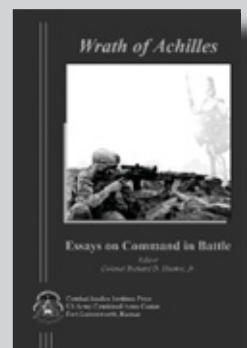
66 Stories of Battle Command

Edited by Adela Frame and James A. Lussier (2000, U.S. Army Command and General Staff College Press), a collection of 66 essays from field-grade and general officers utilizing what we now call Mission Command during training exercises, mostly at the National Training Center. These essays describe their thoughts, their actions, their successes, and their mistakes.



Crossing the Line of Departure: Battle Command on the Move, A Historical Perspective

Written by John J. McGrath (2006, CSI Press), uses case studies from ancient times through operations in Iraq to discuss the historical development of technology and personal technique that has led to our current ability to apply Mission Command in today's mobile military forces.



Wrath of Achilles: Essays on Command in Battle

Written by Colonel Richard D. Hooker, Jr. (2012, CSI Press), a collection of 10 essays on battles from the last 150 years, offering concise descriptions and analyses that focus on command and maneuver. The insights focus on why successful leaders are able to gain decisive advantages over their enemies, even from a position of disadvantage.

All these titles are available in electronic form at: <http://usacac.army.mil/cac2/CSI/RandPTeam.asp>.

Limited hard copies are available to Department of Defense employees by contacting Mr. Kendall Gott at 913-684-2138 or usarmy.leavenworth.tradoc.mbx.csi-rp@mail.mil



The Charge Of The Light Brigade

by Alfred, Lord Tennyson

Memorializing Events in the Battle of Balaclava, October 25, 1854

Half a league, half a league,
Half a league onward,
All in the valley of Death,
Rode the six hundred.
“Forward, the Light Brigade!
Charge for the guns!” he said.
Into the valley of Death
Rode the six hundred.

“Forward, the Light Brigade!”
Was there a man dismayed?
Not though the soldier knew
Someone had blundered.
Their’s not to make reply,
Their’s not to reason why,
Their’s but to do & die.
Into the valley of Death
Rode the six hundred.

Cannon to right of them,
Cannon to left of them,
Cannon in front of them
Volleyed & thundered;
Stormed at with shot and shell,
Boldly they rode and well,
Into the jaws of Death,
Into the mouth of Hell
Rode the six hundred.

Artwork above: Charge of the Light Cavalry Brigade, 1854, William Simpson.

*Artwork right: Hunters in Africa commanded by General Allonville at the Battle of Balaclava, 1860
Henri Felix Phillippoteaux*

Flashed all their sabers bare,
Flashed as they turned in air,
Sabering the gunners there,
Charging an army, while
 All the world wondered.
Plunged in the battery-smoke
Right through the line they broke.
Cossack and Russian
Reeled from the saber-stroke,
 Shattered and sundered.
Then they rode back, but not,
 Not the six hundred.

Cannon to right of them,
Cannon to left of them,
Cannon behind them
 Volleyed and thundered;
Stormed at with shot and shell,
While horse and hero fell.
They that had fought so well
Came through the jaws of Death,
Back from the mouth of Hell,
All that was left of them,
 Left of six hundred.

When can their glory fade?
O the wild charge they made!
 All the world wondered.
Honor the charge they made!
Honor the Light Brigade,
Noble six hundred!

