BRIDGING THE COMPETENCE GAP: DEVELOPING TACTICAL LEADERS FOR THE ARMY OF 2015

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The views expressed in this paper are those of the authors and do not necessarily reflect the official policy or position of the Department of the Army, Department of Defense, or the U.S. Government.

ABSTRACT

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This paper examines the Army's Leader Development System and its current inability to provide tactically competent leaders for the future battlefield. Faced with the challenges of increasingly constrained resources, a technology driven Revolution in Military Affairs, and a Leader Development System designed for the cold war, the Army is faced with the requirement to overhaul the current system, focus on new skills required of future leaders, and leverage technology in training in developing critical competencies.

CONTENTS

EXECUTIVE SUMMARY

Thesis: The Army's leader development system must be modified now if we are to field tactical leaders competent for the battlefield of 2015.

The current leader development system, designed to produce officers for a large cold war force, has long struggled to field tactically competent leaders ready for combat at the onset of hostilities. Faced with societal pressures for quick and painless victories, resource limitations, the infusion of information technologies and a vastly more complex battlefield, this competence gap will in fact grow over the next 15-20 years. To close this gap, the Army's leader development system must be modified to ensure that tactical leaders possess a specific set of competencies - basic tactical expertise plus several nontraditional skills.

Tactical Command in 2015

Tactical command in 2015 for battalion and brigade commanders will be more difficult.

- Commanders will have to operate in a much more complex, unstructured, ambiguous and vastly expanded battlespace.
- The rapid advance of information-age technologies will transform the capabilities and procedures of almost all the participants.
- Our potential adversaries will have the power to determine the timing, location and general nature of the fight.
- Other players such as the media, non-governmental organizations and political bodies like the UN will increasingly impose unprecedented constraints on the force.
- Our own capabilities, doctrine, and expectations will greatly increase the pressures and demands placed on commanders.

Implications for Tactical Commanders of 2015: Critical Competencies

To succeed in this environment, commanders must possess true expertise in the tactical employment of their units. Additionally, they must possess several nontraditional skills. Specifically, the ability to:

- Visualize an expanded battlespace.
- Process, synthesize, and communicate information.
- Make decisions in extremely uncertain situations.
- Learn as an individual and an organization.

Deficiencies of the Current Leader Development System

The current officer development system effectively met the requirements of the cold war era but is not prepared to meet the challenges of 2015.

- Conflicting assignment requirements and resource constraints are decreasing the tactical experience of battalion and brigade commanders and thereby reducing their ability to synchronize fast-paced tactical operations.

- The primary schools in the institutional component, specifically the Command and General Staff College and War College, do not address in a practical sense the nontraditional skills noted above.

- Simulations such as JANUS and BBS are primarily used once an officer is in command and not fully utilized to develop virtual competence prior to taking command.

Recommendations

- Conduct internal US Army Personnel Command boards to identify prospective commanders/operators at the 6-year point in a year group's progression.

- Structure the assignment patterns of the selected officers to ensure they complete these minimum requirements:

  ◊ At least 24 months as a TOE company commander.
  ◊ At least 24 months as a battalion XO, battalion S3, or brigade S3 (or combination).
  ◊ One 18 month tour as an observer/controller at a training center, BCTP, PCC simulation program, or tactics instructor at an advanced course.

- Modify the School for Command Preparation to provide battalion and brigade commanders true "virtual competence" prior to assuming command through a rigorous and structured simulation program.

- Integrate these topics into the curricula of the Command and General Staff College and Army War College:

  ◊ Systems thinking and learning organizations.

  ◊ Personal information management in a tactical setting and delineation of responsibilities in an information rich environment.

  ◊ Information systems architecture and capabilities.

- Establish a 21st Century self-development program or "collaboratory" to keep tactical leaders educated in a world of constant change.

Recalling that our nation has been unprepared for the opening battle of virtually every war it has fought and that the battalion commanders of 2015 are already entering the force as junior officers, it is essential that we implement these actions now.

CHAPTER ONE
The Competence Gap

The instruments of battle are valuable only if one knows how to use them.[1]
Ardant du Picq
Etudes de Combat

In the summer of 1997 new lieutenants, products of Reserve Officer Training Corps programs at civilian universities, West Point, and Officer Candidate School will attend respective branch oriented officer basic courses, their first formal training as commissioned officers. Eighteen years later, in 2015, many will assume command of battalions, and soon after some will lead brigades. If tradition and trends continue, most will be intelligent, courageous and dedicated leaders, the product of years of work and the Army's Leader Development System, *and at the outset of hostilities, largely lacking key warfighting skills required for combat command.*

Being Less Than We Need To Be

To a degree, this has always been the case. The American Army's ignominious habit of suffering painful reverses in the early stages of most conflicts, as exemplified by Manassas, Kasserine Pass, and Task Force Smith, can be attributed in large part to inept and unprepared leaders. While historically these initial defeats have produced intense periods in which incompetent leaders are replaced while other talented, yet unprepared leaders are developed and promoted, they illustrate an American Army tradition - the competence gap. This gap, the difference between the level of competence possessed by our leaders prior to hostilities and the actual competence required for success in combat, has been accepted, despite its obvious cost, because America's geographical isolation and the relatively slow-paced strategic environment in

which we competed provided adequate time for the Army, after the outbreak of hostilities, to develop a sufficient number of effective tactical leaders for ultimate victory.

That is no longer the case. The environment in which initial defeats were tolerated as normal occurrences on the road to victory is gone. Already, political expectations and real-time scrutiny of operations place commanders under tremendous pressure to win quickly with a minimum of casualties on a battlefield complicated by omnipresent media and a wide spectrum of peripheral players (eg non-governmental organizations). Even the reassuring absence of current peer competitors is both temporary and relative. TF Ranger in 1993 Somalia found Somali gunmen, on that day, in that environment, competitive indeed.

But what about the DESERT STORM experience? The much talked about post-Vietnam "rebirth" of the Army and its subsequent impressive effectiveness against the Iraqis seems to belie both the existence and importance of a competence gap. Unfortunately, some of this competence was illusory, and much of it transitory. While the performance of American Commanders was excellent overall, the extended preparation time afforded most units in-theater prior to the Ground War and the relative non-performance of the Iraqis threatens to skew conclusions. Further, post-war downsizing, resource constraints, competing non-combat missions (eg peacekeeping) and continual changes in technology contribute to the atrophy of critical competence.

Developing leaders prepared for this new environment is becoming increasingly difficult. Our commanders of 2015 and beyond, the young lieutenants of today, operate in a smaller, resource constrained service in which direct operational experiences are harder to get. And they will be faced with a host of still-undefined changes wrought by the information age. Yet even faced with these challenges, they will be the product of an Army Leader Development process

that, unless modified, will be largely unchanged from the one that developed their grandfathers. And that won't be enough.

The Competence Gap is Growing

To attain the high level of competence and new skills required of tactical leaders in 2015, the Army will require new approaches to its Leader Development Process. This paper will argue that while political and societal pressures are reducing tolerance for the traditional competence gap, the gap itself is growing. It will show that changes in technology and doctrine are producing a battlefield upon which tactical command itself is already more difficult than before, and will get harder still. And that in addition to traditional tactical skills, specific competencies - largely related to the changing nature of tactical command will demand development. We will further argue that the Army's current Leader Development system, pulled by conflicting manning requirements and designed for an earlier era, does not provide adequate experience or focused training to meet current needs, yet alone these future requirements. The result is a widening competence gap in an environment which allows none. Yet the gap can be closed and our conclusions will be framed with the realization that increasing the competence of tactical leaders is not the Army's only requirement and cannot be conducted in a vacuum, despite its importance.

Closing the Gap

Within these constraints we will recommend that to improve both the effectiveness and efficiency of our tactical leader development, thereby narrowing the competence gap:

- *Development of a commander/operator assignment pattern.* Adjustment of assignment policies to reinforce the development of essential tactical skills by balancing critical experience-producing jobs with opportunities for intellectual

growth. This system would support the intensive development of promising warfighters while providing real career progression for specialists.

- *Modification of Field Grade Institutional Training.* Curricula at key schools such as Command & General Staff should be modified to provide a better balance of tactical and technical skills with the development of wider, conceptual skills.

- *Revision of the School For Command Preparation (PCC).* Increased use of High-Technology Based Simulations to aggressively "manufacture combat experience" through repetitive virtual-combat simulations prior to assumption of command duties.

- *Establishment of a 21ˢᵗ Century Internet-based Learning System.* Employment of a wide ranging Distance Learning system to augment and update current self-development programs.

To support our analysis and recommendation for modifications to the Army's Current

Leader Development System this paper will in subsequent chapters:

- *Chapter 2:* Outline a predictive view of war for the tactical commander in 2015 examining the ramifications of information-age technology and the resulting *expanded battlespace.* Then it will propose four critical competencies that will be required of future tactical leaders.

- *Chapter 3:* Analyze the critical competencies identified in Chapter 2 in terms of current learning theories and summarize strategies for their development.

- *Chapter 4:* Examine the Army's current Leader Development System and its component parts of Tactical Assignments, the Institutional Training System, and Simulation Training to identify on-going programs and shortfalls in the development of critical competencies.

- *Chapter 5:* Summarize our recommendations for improving the Army's Leader Development System and our suggestions for implementation.

Notes:

[1] Quote by Colonel Ardant du Picq (1821-1870), a French officer and military theorist who studied the realities of combat. Bellamy, Christopher. The Evolution of Modern Land Warfare. London: Routledge Press, 1990, p. 30.

CHAPTER TWO
Tactical Command in 2015

The commander of 2015 will be required to employ a wider variety of more complex assets, across more dimensions, throughout a larger battlespace, in less time, to more rigorous standards, than ever before.

Combat in 2015 will be different. That less than startling revelation has already been the subject of significant discussion, speculation, and debate, often against a backdrop of combat of a different sort, the fight for resources. Regardless of the outcome of that particular conflict, for the tactical commander of 2015, it will be different. *It will be more difficult.*

With the arrival of information-age technology and the quantum leap in situational awareness that it provides to the tactical commander, the idea that the task is getting harder seems startlingly counterintuitive. And the apparent ease with which American forces triumphed in DESERT STORM appears to further refute this contention. But this chapter will argue that the competence gap introduced in the preceding chapter is both real and growing. That it is the result of the inability of the Leader Development System to prepare for the inherent difficulty of war and a vastly expanded *battlespace*[1] in which future commanders will be forced to deal with greater complexity across more dimensions than ever before. We will discuss the factors that are contributing to this expansion of the battlespace and then offer a predictive view of the tactical commander's battlefield experience of 2015 to demonstrate that the huge changes wrought by technology, peripheral players, and doctrine will demand tremendous, and in some cases, entirely new, competencies from these leaders. Further, that we must modify the Army's Leader Development System to produce leaders skilled to meet these challenges, and that four of these competencies, the ability to:

- *Visualize an Expanded Battlespace* - the conceptual ability to comprehend the battlespace as an immense environment and visualize the complex interrelationships between all of its parts, in all of its dimensions.
- *Process, Synthesize, and Communicate Information* - the mastery of both the architecture and content of information-age systems.
- *Decisionmaking With Uncertainty* - operate confidently in conditions of tremendous uncertainty, risk, and scrutiny.
- *Learn as an Individual and an Organization* - the ability to master the process of change itself.

will be critical to narrowing the potential competence gap of future commanders.

An Expanded Battlespace

The challenges facing commanders as a result of the explosive expansion of their battlespace are a central cause of the competence gap. To understand these challenges we must first examine the nature and causes of this expansion. Many factors will contribute, but four will dominate the process. **First**, the rapid advance of information-age technology will transform the capabilities and procedures of almost all the actors. It will provide an overarching catalyst for change. **Second**, the capabilities and intentions of our potential enemies will, for largely political reasons, give them the power to determine the timing, location, and general nature of the fight. **Third**, other players such as the media, non-governmental organizations, and political bodies like the UN will impose unprecedented constraints and requirements on the force. **Finally**, the American Army, our own capabilities, doctrine and expectations will, as much as any other factor, complicate and greatly increase the challenge of tactical command.

Technology: The Engine of Change

Clearly the single greatest contributor to the ongoing Revolution in Military Affairs is the explosion of technology, primarily information-related technology. As will be shown in our discussion of the American Army, it provides unprecedented capabilities for seeing the

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battlefield, communications, and lethality for all the players. It is single biggest factor in expanding the commander's battlespace and it provides an umbrella of rapid technological advancement which largely drives all the other factors.

Our Potential Enemies And Their Capabilities

Our adversaries of the future will take an endless number of forms and titles; Nonnation forces, Metanational forces, and Complex, Adaptive Armies, among others.[2] Regardless of the terminology used to categorize them, each will bring to the conflict their own strengths and vulnerabilities and attempt to frame the fight to maximize them.

Terrorists, guerrillas, and other groups will seek to limit the battlespace (and their vulnerabilities) by appearing unexpectedly, operating where American rules of engagement limit effective response, or refusing to operate in areas of US dominance such as information warfare. In some cases they can create situations where an otherwise effective military response is politically counterproductive. To these traditional tactics they add increasingly modern capabilities to employ power through the use of sophisticated weapons such as shoulder-fired air defense missiles and even weapons of mass destruction (WMD) along with an almost instantaneous ability to propagate their message through the media.

To these challenges are added potential Peer or Near-Peer Adversaries whose military power is sufficient to meet US forces on a more equal footing. Although a completely equal peer competitor is unlikely before 2010, the development of modern forces and their employment on distant battlefields requiring American force projection and extended combat is quite possible. Like the smaller threats discussed above, rational adversaries will use timing, terrain, the political environment and other factors to limit US superiority. They will then leverage niche parity or

superiority in weaponry, population, political cohesiveness (a willingness to accept casualties and damage), economic strength, or other factors to achieve their definition of success.

In each case across the spectrum, US forces and their commanders will be required to operate flexibly and often with restraint in deference to the environment in which the conflict is fought, yet rapidly and decisively against capable foes.

Peripheral Players: The Impact of the Outside Agencies on the Battlefield

The impact of outside factors such as the media and political bodies is nothing new to the battlefield. Correspondents have long recorded acidly the shortcomings of military operations or their leaders and political pressures from governments and the home front have plagued commanders since Julius Caesar. But to believe that nothing has changed in this regard would be foolish. The speed of information and current unwillingness of the American populace to accept casualties have significantly changed the dynamic of military operations. Success is no longer measured solely in final outcome. In most cases victory must be achieved rapidly and with little cost, or political support will evaporate. Commanders will face a battlefield where every action is visible, scrutinized, and subjected to almost instantaneous feedback. These leaders will be analogous to football coaches whose teams must not only win, but hold their opponents scoreless. Implications for morale of the force, the confidence and credibility of the commander, and operational security will be immense.

So if the tactical commander of 2015 will lead against formidable adversaries in a complex political environment, what will his force be like and how will it function?

The American Army in 2015: A Vastly More Capable Force

The American Army of the Gulf War is gone - not only downsized, but outdated. In only six years of modernization, highlighted by the March 1997 Army Warfighting Experiment at the National Training Center, advances in digitalization, night vision, and similar technology have dramatically changed operations. But we've seen change before. In constant development since its organization in 1775, American soldiers have never fought two successive conflicts with the same equipment or doctrine and have routinely seen radical change during single conflicts. Change as a process, therefore, is nothing new. The speed, scope, and implications of probable changes during the next 18 years, however, will be monumental.

First, normal evolutionary progress will continue. Although severely constrained by resources, most existing systems will have been modernized to some extent and some new versions of traditional systems will be fielded. Systems such as the Crusader Self-Propelled 155 mm Howitzer with a range of 40-50 km, the Improved, and Extended-Range versions of the Multiple Launched Rocket System (MLRS), Block II and IIA versions of the Army Tactical Missile System, and new families of smart munitions will significantly improve the commander's ability to destroy enemy targets.[3] These types of improvements, matched with corresponding evolutionary progress in mobility, armor protection, ballistics, and the like, will steadily increase the effectiveness of the force.

Then, against this backdrop of constrained resources and evolutionary progress, beneath a veneer of 20th century systems, a true Revolution in Military Affairs will be reflected. Under the architecture of the Army's Warfighter Information Network (WIN), an infrastructure of information-age technology is planned that will profoundly change the way we operate.[4] Highlighted by a family of systems that do justice to the Army's penchant for acronyms (ABCS, ATCCS, MCS, AFATDS, CSSCS, ASAS, and FAADC2) and supported by strategic and tactical

sensors and other information technology, the tactical Commander will have an unprecedented ability to visualize terrain, friendly and enemy locations, logistical status, and other critical information.[5] And then, supported by an extensive communications network that allows him to provide information and his intent instantaneously to virtually every soldier on the battlefield, he will have to act on that information with greater speed, precision, and lethality than ever before.

These advances in technology will be matched, or more likely exceeded, by changes in doctrine. Earlier threat and capability-based frameworks will be replaced by ones in which commanders will be expected to leverage information superiority to conduct extremely economical yet effective multi-dimensional operations.[6] Doctrine will prescribe rapid deployment and employment of smaller, flexible forces capable of executing near-simultaneous strikes against almost every component of the enemy's combat capability. Measured in terms of the Army's own modernization objectives, commanders will be expected to:

- *Project and Sustain Combat Power:* deploy smaller, carefully tailored forces without the large reserves or logistical stockpiles of the past.
- *Win the Information War:* employ a myriad of systems to develop and communicate real-time, a coherent picture of a complex battlefield, while denying the enemy a similar situational awareness.
- *Conduct Precision Strikes:* employ a limited number of highly capable systems using information-age targeting to destroy key enemy capabilities.
- *Dominate Maneuver:* employ speed and information to unhinge and destroy enemy forces while minimizing head-to-head slugfests.
- *Protect the Force:* dispose forces on the battlefield, prevent enemy collection, and employ weapons systems to reduce friendly vulnerabilities.

War on the Margins

Taken as a whole, it is likely that American forces will retain an essential overmatch in traditional combat capabilities vis-à-vis most potential enemies of 2015. But examined in the

larger sense, in light of the diverse capabilities and intentions of potential adversaries, the political environment, and our own strengths and weaknesses, it will be war commanders must negotiate on the margins. And they will be largely self imposed; how we choose to operate rather than in direct response to an enemy threat or radical developments in mobility or armaments. This Army will be the product of our experiences - a recognition of our national distaste for extended conflict and casualties. It reflects a conscious effort to leverage emerging technology and economic superiority to avoid traditional combat by rapidly paralyzing and overwhelming our foes with precision strikes and it is as much an admission of our vulnerabilities as a reflection of our strengths. Gone will be the large armies and logistical mountains that supported blunt, yet ultimately successful campaigns. Grant's Wilderness Campaign of 1864, Eisenhower's broad advance across 1944 Europe, and even Schwartzkopf's deliberate buildup and then 1991 lightening campaign across Southwest Asia will give way to expectations of Chancellorsville and Inchon. The nation will provide the commander the finest tools ever, but their value and limited quantity will require the work of a craftsman. And from this craftsman, the battlefield of 2015 will demand absolute competence.

The Growing Challenge: Tactical Command in 2015

At this point in our analysis it is already obvious that the tactical commander of 2015 will face formidable challenges. But tactical command has always been difficult so why will it be more challenging in 2015? The emergence of useful tools - systems that let the commander see, shoot, and communicate with mind-boggling speed and accuracy - are all designed to facilitate their control of events. But it is precisely the appearance of these capabilities that will make their personal task so much harder. Where once commanders could only see to the limit of their

personal vision and command to the range of their voice or presence, future leaders face a battlefield where the historically simple model has exploded in scope and complexity. Recipients of a critically important, yet potentially bewildering avalanche of information, they will be required to employ a myriad of assets with frightening speed and precision. All in an environment that will continue to demand the physical and moral leadership traditionally associated with battlefield command. This progression will, in some ways, be akin to going from checkers in 1944, to Chess in 1991, to 3-Dimensional Chess in 2015.

To gain an appreciation of what combat in 2015 will demand of tactical commanders, the concept of battlespace provides a useful construct within which to examine the key factors of size, dimensions, speed, lethality, and structure.

Size: Bigger Battlefields

Battlefields have continued to expand in size over time, but the tactical commander of 2015 will face a scope unimaginable to his ancestors. At Agincourt in 1415, Henry V's army fought on a battlefield of less than 1 square mile. He could view his entire army arrayed on a front of about 950 meters and the absence of long range weapons combined with the slow rate at which armies moved limited the battlespace with which he had to concern himself.[7] Four hundred years later, Napoleon at Waterloo still commanded on a field of about 6 square miles, though his battlespace was obviously larger.[8] Even during the "information-age" Gulf War, an American Division Commander focused on a battle area limited largely by the range of his rockets and artillery (about 30 km) and was reliant on higher level commanders for much of his situational awareness. By 2015 a Heavy Brigade Commander, directly supported by collection assets such as the Joint Tactical Unmanned Aerial Vehicle (JT-UAV) that can detect and target

enemy forces 150 km out, and by precision fire support assets such as the Improved and Extended-Range MLRS and Crusader Howitzer than can engage targets from 40-50 km, will be concerned with an area many times that of Henry V or Napoleon, and far larger than the Division Commander of 1991. The size and resulting force dispersion alone will challenge the Commander's ability to visualize the still important factor of terrain and tax his ability to control the battle.

Dimensions: More Dimensions And Tighter Tolerances

Like the growth in size, battlespace has expanded in dimensions as well. Robert E. Lee's Army of Northern Virginia fought the battle of Gettysburg in five dimensions: width, height, depth, time, and the human dimension. But within these dimensions tolerances were still wide. Lee's natural concern for soldiers imposed human requirements, but the demands of the civilians of Gettysburg, the media, or other factors were negligible. Further, although time was critical in determining his ability to mass his forces vis-à-vis the Union Army, it was measured in hours and days, leaving opportunities for reflection and consultation. And although combat for critical high ground defined the contest, Lee's requirement to deal with the dimension of height is minimal compared to modern operations involving aircraft and space-based platforms. By 2015 tactical commanders will fight across Lee's traditional dimensions, but to much tighter tolerances. In a battlespace where targets will be located, their locations transmitted digitally and simultaneously to command posts, and fire support assets and precision strikes delivered within seconds, time will take on new significance, leaving little opportunity for reflection or hesitation. And to these dimensions are added new height and the electro-magnetic spectrum, where air power and information warfare will expand the commander's capabilities and vulnerabilities.[9]

Speed: Moving into the Fastlane

Speed has always been a decisive factor in combat. The rapidity at which armies gather

information, communicate it to Commanders, analyze the data and make decisions, transmit

those decisions to subordinate forces, and then execute maneuvers, called the *Decision Cycle*,

often determines success or failure. Traditionally, communications and mobility limitations have

made transmission and execution of orders the longest component of the process, but this is

changing rapidly. Already in 1996, initial tests with the US Army's Force XXI test bed unit

indicate a threefold increase in tempo as a result of information technologies.[10] By 2015 the

speed of combat will reflect the inherent mobility of modern equipment accelerated by

information technology assisted planning, coordination and execution. Supported by ATCCS

and its component systems, responsive strike assets, and highly mobile units, Commanders will

be able to direct almost instantaneous fires or maneuver in response to perceived threats or

opportunities. Where once the Commander's decision was followed by ponderous execution of

his orders, by 2015 the time taken to assess and decide may exceed the time required to execute.

The implications for the relative criticality of the Commander to assess and decide rapidly, with

incomplete information, are tremendous.

Lethality: More Deadly Than Ever

Battlefields have always been deadly places. Against the fact that in the 4 ½ months of

combat called the Battle of the Somme the British, Germans, and French suffered 998,000

casualties, it seems to absurd to argue that future battlefields will be more lethal.[11] And the

limited Americans killed in recent conflicts: Grenada, 19[12]; Panama, 23; and the Gulf War 147;[13]

would appear to indicate the contrary, that we have learned to win on the cheap. Yet for the

soldier and tactical commander of 2015, nothing could be further from the truth. Where Henry V's vaunted archers could, at best, range 300 meters and then not penetrate plate armor,[14] and the British Army's famed "Brown Bess" musket of the 18th century was uncertainly accurate to only 100 yards,[15] infantry weapons on the battlefield of 2015 will employ both infrared and thermal night vision devices to achieve frightening accuracy in all conditions. The greatest leaps, however, will come in precision strikes by air or ground-launched rockets and modernized tube artillery firing smart munitions 40 to 50 times farther than the artillery employed against Cemetery Ridge at Gettysburg. The 1970's adage that "what can be seen can be hit; and what can be hit can be killed," will be expanded as information-age collection and targeting systems increase our ability to see, be seen, and be engaged. And the speed at which this striking capability can occur will be staggering. Tactical mistakes will be punished severely.

Structure: An Absence of Battlelines

The structure of the battlespace in 2015 will demand new skills from the commander, both as tactician and leader. The increased mobility and effective engagement ranges of both friendly and enemy forces, and the reality of limited numbers of expensive forces and weapons systems will dramatically increase the size of a Commander's battlespace, which combined with force protection requirements will dictate tremendous dispersion and a non-linear disposition. Traditional battle lines will give way to careful positioning, balancing vulnerability with the need to mass fires and forces at the critical time and place.

The implied requirement for tactical competence is obvious. The challenge to leadership, may, in fact, be even greater. The ability of the Commander to personally lead the fight, like Alexander at Issus, or direct the fight based on his personal observations, like Wellington at

Waterloo, will be impossible. He will be the prisoner of digital reports, accurate and inaccurate, and have only a limited ability to conduct face-to-face interaction with his subordinates. Meanwhile his subordinates will face a psychologically challenging experience. What John Keegan calls "the killing zone," that part of the battlefield where soldiers are in immediate danger, will have continued to expand.[16] Whereas at Agincourt soldiers were essentially safe until within 200 yards of the battle line, and World War II soldiers more than 15 km behind the front had only aircraft to worry about, troops in 2015 will face immediate danger almost entirely throughout the battlespace, all of the time. And they will do so without the moral support of standing shoulder to shoulder with large numbers of their comrades. The implications for leadership are significant.

Physically Demanding

Finally, tactical command in 2015 will remain a physically demanding task. It will be anything but push-button warfare conducted from a warm, dry, and safe place by relaxed Commanders whose perfect picture of the battlespace allows for stress-free direction of decisive maneuvers. Although the Middle Ages' tradition of individual combat and up front leadership of Civil War Brigade Commanders have given way to less heroic TAC's and CP's, the requirements for forward leadership, the virtual non-stop nature of modern operations as during the 100-hour advance of DESERT STORM, and the intellectual demands of information warfare will continue to make combat both physically and mentally exhausting.

Summary: Implications for Tactical Commanders of 2015

Our analysis of the expanded battlespace of the future has led to two important conclusions. First, that *the Commander of 2015 will be required to employ a wider variety of*

more complex assets, across more dimensions, throughout a larger battlespace, in less time, to more rigorous standards, than ever before. Second, that information age technology will simultaneously represent both a major challenge to master, and the single greatest key to mastering the battlespace. While the traditional skills associated with effective tactical leaders; the ability to visualize terrain and its effects, an intuitive feel for battle, and an unshakable focus on essential tasks combined with courage, communications skills and other leadership traits will remain essential for the Commander of 2015, new requirements are emerging that demand recognition. These requirements can be identified as four critical competencies effective commanders will have to possess. The ability to:

- *Visualize an Expanded Battlespace*

- *Process, Synthesize, and Communicate Information*

- *Decisionmaking With Uncertainty*

- *Learn as an Individual and an Organization*

While clearly these competencies are not entirely new, the changing nature of information-age warfare gives them unprecedented importance for the future. As horsemanship and swordsmanship were indispensable for leaders like Alexander and Henry V, these competencies represent skills needed by commanders to employ their most lethal weapons and they will be essential to reducing the looming competence gap of the future. In subsequent chapters we will examine the nature and content of these competencies and training requirements for their development.

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[1] The concept of battlespace is discussed in many publications and is critical to understanding many descriptions of future operations. TRADOC Pamphlet 525-200-4: Mounted Battlespace Battle Dynamic Concept states it includes "the breadth, depth, and height in which the commander positions and moves assets over time." But that and other publications go further in describing it as a holistic concept of fighting through visualization of an area of

operations, the way forces will interact and other factors such as population. It represents an attempt to force commanders to visualize beyond normal battlefield boundaries and integrate all possible factors in anticipating the nature of operations within their battlespace. TRADOC Pamphlet 525-5: Force XXI Operations, 1 August 1994, p. 3-6 and TRADOC Pamphlet 525-200-4: Mounted Battlespace Battle Dynamic Concept, p. 7.

[2] TRADOC's Threat Spectrum Model identifies six general types of threats with some subcategories:

Phenomenological Threats: Nonmilitary threats resulting from human occurrences, environmental disasters and the like.

Nonnation Forces: Threats using modern technologies that give them niche capabilities similar to those of nation states. Scope differentiates the categories of Nonnation threats:

Subnational: Threats which include the political, racial, religious, cultural, and ethnic conflicts that challenge the defining features and authority of the nation state from within.

Anational: Threats operating without regard to the authority of their nation states. Not part of the nation states, these entities have no desire to establish such a status. Regional organized crime, piracy, and terrorist activities comprise these threats.

Metanational: Threats moving beyond the nation state, operating on an interregional or global scale. They include religious movements, international criminal organizations, and informal economic organizations that facilitate weapons proliferation.

Internal Security Forces. In most cases, small, poorly trained and equipped forces of the less-developed world. Capable of maintaining internal security but unlikely to be effective at defending borders or able to conduct extended military operations. As with Nonnation forces, most internal security forces and local criminal activity may be strongly connected.

Infantry-Based Armies: The majority of the less-developed world's armies, these armies have some armor but are reliant upon dismounted infantry for the majority of their combat power. Skills in integrating weapons technology and ability to conduct combined-arms operations are marginal to basic.

Armor-Mechanized-Based Armies: Armies of most industrial nations fall into this class-those that generally mount 40 percent of their forces in armored vehicles. Effectiveness of weans integration and ability to combine arms vary. These armies share several characteristics. First, they tend to modernize selected systems to match the best systems deployed by their neighbors. Second, they display generally hierarchical C3I structures. Not as technologically advanced as complex, adaptive armies, particularly in the harnessing of information technology, they compensate with numbers and weight of metal.

Complex, Adaptive Armies: From developed nations, these most technically and tactically advanced armies will be smaller and exceedingly expensive to equip, train, and maintain. Complex forces possess greater flexibility to seize opportunities on the battlefield as well as to adapt to dynamic situations across the continuum of war and OOTW. Future military operations conducted by these armies will involve increasingly high-technology equipment, joint/multinational forces, multidimensional maneuver, precision munitions, smart weapons platforms, and enhanced situational awareness. These operations will also be conducted under the threat of theater ballistic missile attack and other weapons of mass destruction. However, the multiplication of specialized units that allows flexibility also adds vulnerabilities. Disruption of key support elements can render a combat force ineffective or, at least, eliminate its edge over a less-advanced force.

TRADOC Pamphlet 525-5: Force XXI Operations, 1 August 1994, p. 2-3.

[3] Annex E (Fire Support Systems) to the Army's 1997 Modernization Plan (Draft), pp. E-13-15.

[4] Annex C (Command, Control, Communications and Computers) to the Army's 1997 Modernization Plan (Draft), p. C-1.

[5] The family of systems, only a few of many planned, which will most directly affect the tactical commander are:

ATCCS Army Tactical Command and Control System

> Description: *Umbrella architecture for five major battlefield functional area command and control systems from Corps to Battalion level. Designed to provide commanders a common picture of the battlefield and facilitate synchronization of the battle. Incorporates: MCS, AFATDS, ASAS, FAADC2, and CSSCS.*

AFATDS Advanced Field Artillery Tactical Data System

> Description: *An automated command, control, and communications system which provides integration of planning, coordination, and control of all fire support assets. Designed as a component system of ATCCS and compatible with NATO systems.*

MCS Maneuver Control System

> Description: *An automated C2 system for planning, coordinating and controlling tactical operations at Corps level and below. Designed as a component system of ATCCS.*

ASAS All Source Analysis System

> Description: *A highly deployable, automated intelligence system designed to receive, correlate, and display data from strategic and tactical intelligence sources and facilitate dissemination of intelligence information. Designed as a component system of ATCCS.*

FAADC2 Forward Area Air Defense Command and Control

> Description: *An automated air defense command, control, and communications system which coordinate air defense operations, provides timely target data and facilitates airspace management. Designed as a component system of ATCCS.*

CSSCS Combat Service Support Control System

> Description: *An automated C2 system for planning, coordinating and executing logistics operations from Brigade through Echelons Above Corps Units. Designed as a component system of ATCCS.*

from Office of the Secretary of Defense for Research, Development and Acquisition, "The Army Modernization Plan: Weaponry, Equipment and New Technologies." *Army* Vol. 46, No. 10 (October 1996): 237-314.

[6] TRADOC Pamphlet 525-5: Force XXI Operations, 1 August 1994, p. 3-15.

[7] Keegan, John. *The Illustrated Face of Battle.* New York: Viking Publishers, 1988, p. 91.

[8] Keegan, John. *The Illustrated Face of Battle.* New York: Viking Publishers, 1988, p. 120-121.

[9] Force XXI multi-dimensional operations are expected to include: width, depth, height, the electro-magnetic spectrum, human, and time. TRADOC Pamphlet: Land Combat in the 21st Century.

[10] Rosenberger, John D., "A Year in the EXFOR." *Army* Vol. 46, No. 11 (November 1996): 27.

[11] Casualties were reported as German: 336,000; Allied: 362,000. Ropp, Theodore. War in the Modern World. New York: Collier Books, 1962, p. 248.

[12] 18 Americans were reported killed in action and 1 died as a result of wounds. Additionally, 115 were wounded. Bolger, Daniel P. *Americans at War 1975-1986: An Era of Violent Peace*. Navato, CA: Presidio Press, 1988, p. 344.

[13] 147 Americans were reported killed as a result of hostile action. Additionally 84 and 152 non-hostile deaths were reported during Operations DESERT SHIELD and DESERT STORM respectively. The JCS total for wounded is 434. Cordesman, Anthony H., and Abraham R. Wagner. *The Lessons of Modern War, Volume IV: The Gulf War*. Boulder, Colorado: Westview Press, 1996, p. 339.

[14] Keegan, John. *The Illustrated Face of Battle*. New York: Viking Publishers, 1988, p. 78.

[15] Ropp, Theodore. *War in the Modern World*. New York: Collier Books, 1962, p. 50.

[16] Keegan, John. *The Illustrated Face of Battle*. New York: Viking Publishers, 1988, p. 270.

CHAPTER THREE
Critical Competencies for the 21ˢᵗ Century Leader

"The Commander in war must work in a medium which eyes cannot see; which his best deductive powers cannot always fathom; and with which, because of constant changes, he can rarely become completely familiar."[1]

Carl von Clausewitz

Natural leaders may be born, but tactical commanders truly competent in the expanded battlespace of 2015 will be far more the product of a focused and effective development program than simply the lucky recipients of good genes. The fast-paced, complex, and unforgiving combat environment outlined in Chapter 2 will demand nothing less than a wide range of learned skills buttressed by solid natural ability. While many of these skills, or competencies, are those traditionally associated with the training of military leaders, the concept of a radically expanded battlespace and the resulting four critical competencies outlined in Chapter 2 argue forcefully for the need to revamp the Army's Leader Development System to include a greatly increased focus on these requirements.

This chapter will examine in more depth the four competencies outlined in Chapter 2, highlighting some of the contemporary academic research and theory relevant to leader training, and identify some specific requirements related to the effective development of these skills. From this analysis, subsequent chapters will offer an assessment of current system shortfalls in the development of these competencies and offer a prescription for improvement.

Skill One: Visualizing an Expanded Battlespace

The need for a commander to visualize the battlefield is nothing new. As early as 500 BC the venerable Sun Tzu's wrote "Know the enemy, know yourself; your victory will never be endangered. Know the ground, know the weather; your victory will be total."[2] Time and again

that axiom has been upheld - the commander with the clearest visualization of the battlefield in all its dimensions - - Frederick the Great at Leuthen, Napoleon at Jena, and Grant at Vicksburg - - has been victorious. But possessing that clarity of vision is no easy task. Dr. Jerold Brown, a recognized expert in military history, described vision like this:

> "vision is an indispensable ingredient for victory. A successful commander must be able to establish a vision of the as-yet-unseen battlefield and battle he is to fight. The problem is that many unknown and unknowable factors intrude between the present and future. No matter how careful the planning has been, no matter how diligently the intelligence has been gathered and analyzed, the mental picture of the battlefield and future battle will always be imperfect. As confident and certain as the commander may be, his vision cannot guarantee success, but faulty vision can surely lead to failure."[3]

To determine how this critical skill is developed in future commanders it is necessary to examine what abilities and skills are involved in visualizing an expanded battlespace.

Visualizing: Seeing Things as Systems

As a starting point, we offer this definition for visualizing the battlespace:

> *The ability to conceptualize and understand the battlespace as a multidimensional, complex system, to include the dynamic interrelationships within that systems, as well as, understand the cause and effect consequences of decisions and actions taken and how they will affect the outcome of the mission.*

Learning theory reflects a belief that effectively achieving this level of proficiency in dealing with complex systems, a level of proficiency that will be demanded on the future battlefield, will require leaders who understand and effectively employ the concepts of mental models and systems thinking.

Mental Models

Peter Senge, in his Fifth Discipline Fieldbook, provides this description of mental models:

"Mental models are the images, assumptions, and stories which we carry in our minds of ourselves, other people, institutions, and every aspect of the world. Like a pane of glass framing and subtly distorting our vision, mental models determine what we see. Human beings cannot navigate through the complex environments of our world without cognitive 'mental maps' and all these mental maps, by definition are flawed in some way."[4]

The concept of mental models has been around since antiquity but its present day meaning is derived from the Scottish psychologist Kenneth Craik in the 1940s:

"It has since been used by cognitive psychologists (notably Philip Johnson-Laird of Princeton University), by cognitive scientists (notably Marvin Minsky and Seymour Papert of MIT), and gradually by managers. In cognition, the term refers to both the semipermanent tacit "maps" of the world which people hold in their long term memory, and the short term perceptions which people build up as part of their everyday reasoning processes. According to some cognitive theorists, changes in short term everyday mental models, accumulating over time, will gradually be reflected in changes in long-term deep seated beliefs."[5]

With this theory a commander's mental models are the product of experiences and biases and they act to frame future decisionmaking. A failure to recognize and account for these tendencies, or update mental models, results in seriously flawed assessments. Custer's outdated mental model of fighting Indians, the product of a decade of experience, acted to undermine his normally excellent tactical sense and resulted in his defeat at the Little Big Horn.

Updating Mental Models

Two skills needed to update mental models are *reflection* and *inquiry*. *Reflection* involves slowing down our thinking processes to increase awareness of how are mental models are formed while in *inquiry* conversation with others is used as a tool to develop an understanding of how our own assumptions, and the assumptions of others, are formed.[6] Theorists and educators Chris Argyris and Donald Schon, in their studies in *action science,* have developed techniques for learning these skills aimed at exploring the reasoning and attitudes

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which underlie human action. Using scenario driven interplay, Argryris and Schon introduce various situations that demonstrate how mental models in people and organizations become dysfunctional due to biases and flawed assumptions. From this type of training, future leaders can increase their understanding of the mental models which impact thinking.

Systems Thinking

In its simplest sense systems thinking is nothing more than a holistic understanding of something - seeing it as the sum of its parts. It would seem to be natural, for we obviously view a human being as more than a collection of bones, organs, and tissue. But since the dawn of the industrial age we have developed a *mechanistic* pattern of thinking and problem solving which breaks issues or problems into component parts so that each can be addressed individually. The apparent advantage of making complex tasks easier to understand and solve makes some more manageable, but we pay an enormous hidden price. The resulting fragmented picture does not allow us to see the larger whole and frequently we cannot predict the consequences of our actions.[7] In other words we lose the big picture.

To succeed in the information-age, commanders will have to transition from using this Newtonian model of the world, characterized by materialism and reductionism, to patterns of thinking emphasizing a holistic view of systems and an intuitive understanding of the relationships that exist among the seemingly discrete parts.[8]

Developing Systems Thinking

Developing tactical commanders into effective systems thinkers is not easy but it is essential. Colonel George C. Marshall wrote over 60 years ago:

"... mission, terrain, weather, dispositions, armament, morale, supply and comparative strength are variables whose mutations always combine to form a

new tactical pattern. Thus, in battle, each situation is unique and must be solved on its own merits. . . It follows, then, that the leader who would become a competent tactician must first close his mind to the alluring formulae that well meaning people offer in the name of victory. To master his difficult art he must learn to cut to the heart of the situation, recognize its decisive elements and base his course of action on these."[9]

As alluded to by Marshall, effective systems thinking skills are the product of training in which patterns of thinking are rigorously exercised with a wide array of variables, changing conditions, and often unexpected consequences. Viewed on a mechanistic level, effective responses are often counterintuitive - - they are the product of a more complete visualization of the system as a whole. The individual is taught to seek the wider view and approach with suspicion the quick technical fix.

Following initial training in the concept of systems thinking, simulations provide tremendously effective tools for developing holistic problem-solvers. By repetitive iterations of ever-changing situations, leaders are conditioned to view each situation as unique, employing prior experiences for balance, but not solutions.

A good example of currently effective development of systems thinking lies in the training of aviators where the pilot is taught to understand the aircraft and flight as a system. The critical interdependencies of weather, aerodynamics, aeromedicine, airspace, electrical and mechanical systems on the aircraft, avionics and communications are self-evident, but require extensive training. The use of increasingly sophisticated simulators provides exceptionally effective vehicles for developing systems thinking skills.

Skill Two: Process, Synthesize and Manage Information

In Chapter 2 we outlined an information-rich environment that is driven by a series of electronic systems and sensors. For this discussion, we have further defined the skill associated with operating within this environment as

The ability to understand the major complex systems capable of providing information to your operation and to accurately scan, sort, integrate, analyze, and synthesize data and direct information in order to make timely decisions that ultimately positively effect the mission.

To be able to effectively manage and, more importantly, use the wealth of information available, the tactical leader of 2015 must have an understanding of three areas: the structure or basic architecture of the overarching information system; the capabilities, limitations and inherent accuracy of the component systems and their respective data; and the information environment in which subordinate leaders will operate.

In addition to these skills, tactical leaders will be required to develop their own techniques and individualistic methods of receiving, viewing and filtering information. In 1997 this translates into how a commander arranges his map/overlay, personally captures in writing or mentally key reports and concepts, and determines what type decisions and how much initiative he delegates to subordinates. On the battlefield of 2015, this may mean what electronic format or which display the commander uses, what level icons are aggregated on the display (platoon, company, battalion,...), and what information the commander wants to filter out, either electronically or mentally, to avoid micro-management and allow initiative at lower levels.

Developing the Ability to Manage Information

Developing personal information management skills is a relatively new field in America. A number of businesses and large corporations already operate in an information rich environment, but their requirements are considerably different from those of the future tactical

leader. From our perspective, developing these skills in tactical leaders will require teaching

courses in the basic systems architecture, to insure that the officer understands the capabilities

and limitations of the system, and requiring the officer to negotiate a series of simulations in a

tactical setting employing all of the information systems interfaces.

Skill Three: Decisionmaking with Uncertainty

To Carl von Clausewitz uncertainty, like fog and friction, was a basic element of war - -

inseparable from the essence of combat and a factor to be considered - - rarely reduced and never

eliminated. The ability (or failure) of a commander to deal with this reality often determined his

success on the battlefield and Clausewitz reflected this belief in his definition of military genius:

> "Any complex activity, if it is to be carried on with any degree of virtuosity, calls
> for appropriate gifts of intellect and temperament. If they are outstanding and
> reveal themselves in exceptional achievements, their possessor is called a
> 'genius'."[10]

He then continues his discussion to identify what he feels are two indispensable qualities

of genius the battlefield commander must possess: *coup d'oeil* and *determination*. The

first is an ability to identify critical elements, establish advantages and disadvantages, and

come to a rapid decision. The second is an issue of courage, or more precisely an act of

temperament.[11]

Clausewitz's willingness to identify the commander's ability to cope with uncertainty as

a basic component of his genius, or effectiveness, highlights the essential nature of this

competency. But what is uncertainty and how do individuals deal with it?

Uncertainty: Causes and Effects

The obvious cause of uncertainty is incomplete knowledge. We are uncertain when we

lack a clear understanding of what was, is, or will be. It may be the product of insufficient

information, or the unpredictability of probability-based outcomes (as in gambling), but often it is less a shortage of data than an incomplete understanding of a complex environment or system that produces outcomes (as every meteorologist can confirm). In some cases uncertainty can be reduced through additional information gathering or an analysis of the system in question. This approach is common in decision-making processes yet seems to belie the essential intractability of a good measure of uncertainty.

The effects of uncertainty on decisionmakers are enormous and produce a wide range of behaviors designed to deny, reduce, or avoid. Tendencies to delay decisions to allow further collection of information can be, depending upon the situation, either wise or disastrous. Likewise, the use of intricate decision-making processes, models, committees and the like can be either effective tools or attempts to reduce (or at least share) risk.

Developing the Ability to Cope With Uncertainty

Like many cognitive skills, dealing with uncertainty requires individuals to first understand their own thought processes and the natural reaction to uncertainty. It must be understood and factored into decision-making instead of reduced or ignored. Further, individuals must learn to analyze uncertainty in the light of the wider systems that normally produce it and develop the mental flexibility to continually update their assessments and actions in the light of constantly changing, and often unpredictable conditions.

As we again project forward to the battlefield of 2015, we see that there are several actions that could be taken to help leaders develop the traits necessary to cope with uncertainty. Considering that a key component of coup d'oeil is "quick recognition of a truth that the mind would ordinarily miss *or would perceive only after long study and reflection,*" then negotiating a

lengthy series of challenging tactical events, either in live or virtual simulation, may serve as a means to develop this sixth sense and "imagination."

In terms of developing Clausewitz's trait of "determination," a rigorous academic program at educational institutions coupled with a challenging self - study program would address the component of intellect. Building the second component, courage, is a function of exposure to appropriate role models and placing the officer in positions that require both acceptance of responsibility and a sense of personal danger.

Skill Four: Learning as an Individual and an Organization

Learning in society is important. It allows mankind to progress into the future. On the future battlefield the ability to learn, and learn rapidly, will probably determine the victors. We can consider the capacity for learning as:

> *The ability of an individual or an organization to create or acquire and then transfer knowledge, allowing it to modify actions to reflect changes in environment or requirements.*

Our final skill deals with how to make future tactical leaders masters in the art and practice of leading an organization that learns and responds on the battlefield much faster than the enemy. As a framework for our discussion, we will use the concept of a learning organization as outlined in Peter Senge's book *The Fifth Discipline*.

From Senge's perspective, "learning has very little with taking in information. Most fundamentally, learning is about enhancing capacity. Learning is about creating and building the capacity to create that which you could not previously create."[12] This concept is based on his belief that "groups of people can potentially operate in ways that are fundamentally more generative, empowering, and inspiring than the ways in which we normally operate."[13]

In *The Fifth Discipline*, Senge presents five disciplines that, if followed, will allow an organization to convert learning organization theory into practice and achieve these objectives. These disciplines include building shared vision, personal mastery, mental models, team learning and systems thinking.

We have previously discussed mental models and systems thinking and how they relate to the ability to visualize our expanded battlespace. We also think that they play a key role in building a sense of tactical units as learning organizations on the battlefield. If we want future tactical leaders to learn faster than the enemy, and our tactical organizations to learn and respond faster than enemy formations, than our leaders need to understand the basic premise and concept of a learning organization and the underpinning principles.
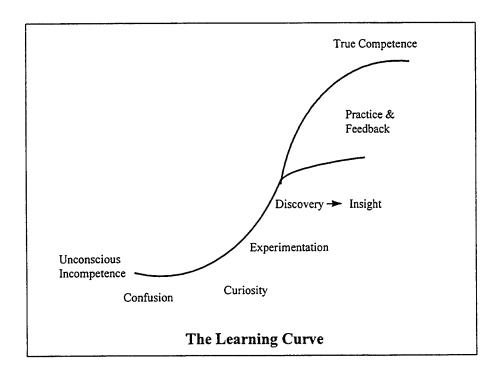
The Road to Competence

Webster defines *competence* as "the quality or state of being competent" . . ., having requisite or adequate ability or qualities, and having the capacity to function or develop in a particular way. . ."

For the sake of argument, we will assume that the majority of officers entering active duty have the mental and physical capacity to become competent tactical leaders, but largely lack knowledge, training and experience to be considered truly competent.

In the past, the "Learning Curve" has been steep for tactical commanders. But the future with all it's complexities, scenarios and the increased speed of information will make it even steeper. Dr. John Thompson in his article "The Renaissance of Learning" states "What must be provided to an individual or group of individuals in an organization for them to achieve competence in the subject of inquiry is a program of practice and feedback.

Practice and feedback are fundamental ingredients for acquiring real competence." (See figure 1)

The Learning Curve

The Learning Curve graphically illustrates how an individual can move from a level of Unconscious Incompetence to a level of True Competence. As the individual moves through the stages of the learning curve there is a point where the individual develops insight and innovates, but it is the point after that junction where practice and feedback develops true competence. This point is critical. Professional athletes, surgeons, grandmaster chess champions all require constant practice with good feedback in order to remain competent. The tactical commander of today is no different from these professionals.

For example, a professional quarterback goes through literally hundreds of practice sessions, scrimmages, numerous pre-season games, seventeen season games, and two post season

games before he does battle in the Super Bowl. He receives feedback every step of the way from coaches, other players, game films and sports commentators. A tactical commander at the battalion or brigade level might experience two or three field exercises, one or two simulations prior to going to his super bowl. A competent tactical commander responsible for the employment of hundreds of soldiers and weapons systems over hundreds of kilometers against a smart lethal enemy will require plenty of hands-on practice with quality feedback on the traditional skills and nontraditional skills .

Summary

In this chapter we have shown that development of the competencies which we have identified as critical for the expanded battlespace of 2015 require focused development of specific cognitive skills: the ability to comprehend and think in terms of complex systems, a recognition of mental models, information processing, dealing with uncertainty, and the ability to adapt or learn in changing conditions. These skills are neither automatic byproducts of normal education or consciously addressed in most traditional training activities. Yet they require particular emphasis if we are to field competent leaders on the future battlefield.

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[1] Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1984), p.59.

[2] Sun Tzu, *The Art of War*, trans. and intro. Samuel B. Griffith (Oxford University Press: London, 1971), p. 129.

[3] *Studies in Battle Command*, Custer's Vision, Dr. Jerold E. Brown (U.S. Army Command and General Staff College).

[4] Peter Senge, Art Kleiner, Charlotte Roberts, Richard Ross, Bryan Smith, *The Fifth Discipline Fieldbook*, Currency Doubleday, New York, 1994, p.235.

[5] ibid. 237.

[6] ibid. 233.

[7] Peter Senge, *The Fifth Discipline*, Currency Doubleday, New York, 1990.

[8] Systems Thinking is a conceptual framework, a body of knowledge and tools that has developed over the past fifty years. At its broadest level systems thinking encompasses a large and fairly amorphous body of methods, tools and principles, all oriented to looking at the interelatedness of forces, and seeing them as part of a common process. The systems field includes cybernetics and chaos theory, gestalt therapy; the work of Gregory Bateson, Russell Ackoff, Eric Trist, Ludwig von Bertallanfy, and the Santa Fe Institute; and the dozen or so practical techniques for

"process mapping" flows of activity at work. All of these diverse approaches have on guiding idea in common: that behavior of all systems follows certain common principles, the nature of which are being discovered and articulated.

One form of systems thinking has become particularly valuable as a language for describing how to achieve fruitful change in organizations. This form is called "system dynamics" developed at MIT by Professor Jay Forrester and his colleagues and had become a valuable tool for describing how to achieve valuable change in organizations. In all there are at least ten distinct types of systems thinking tools that fall into four broad categories: brainstorming tools, dynamic thinking tools, structural thinking tools and computer based tools. Although each of the tools are designed to stand alone, they can also build upon one another and can be used in combination to achieve deeper insights into dynamic behavior. These tools provide understanding of how complex feedback processes can generate problematic patterns of behavior within organizations and large-scaled human systems. A system is a perceived whole whose elements "hang together" because they continually affect each other over time and operate towrd a common purpose. Examples of systems include biological organisms (including human bodies) the atmosphere, diseases, ecological niches, factories, chemical reactions, political entities, communities, industries, families, teams - and all organizations. Peter Senge, Art Kleiner, Charlotte Roberts, Richard Ross, Bryan Smith, *The Fifth Discipline Fieldbook,* Currency Doubleday, New York, 1994, p.237.

[9] John D. Rosenberger, "Coaching the Art of Battle Command" *Military Review*, May-June 1996. p.27-28. Marshall's quote Military History and Publications Section, The Infantry School, Infantry in Battle, edited by Col George C. Marshall (Washington D. C. The Infantry Journal Inc., 1939, 3d ed, 2nd reprint, Quantico, Va: Marine Corps Association, 1986).

[10] Clausewitz, On War, p. 101.

[11] Coup d'oeil Clausewitz suggests is the "quick recognition of a truth that the mind would ordinarily miss or would perceive only after long study and reflection"( ) The phrase originated as reference to a capacity for rapid evaluation and quick decision regarding the time and space elements of a tactical event. This interpretation assumed the individuals presence at the tactical event. Over time coup d'oeil took on a strategic interpretation where a keen "inward eye" substitutes for physical presence in determining the situation. Like Clausewitz, Jomini, in spite of his effort to develop a scientific theory of war, also suggests coup d'oeil militaire as a desired trait in the commander.

Jomini asserts in *The Art of War* that coup d'oeil is the most important quality for a commander to possess. Without it, even the finest theories of war are lost on him as he cannot achieve the rapid and certain grasp of the situation necessary for action. Jomini's decisive point is illustrative. Strategic coup d'oeil facilitates the determination of the decisive point in order that it can be acted upon (*The Art of War*).

Coup d'oeil is a sixth sense, a sense that alerts to truth like smell to odor, or touch to texture. Clausewitz called it "an act of imagination" describing it as "the faculty of quickly and accurately grasping the topography of any area which enables a man to find his way about at any time."

[12] Peter Senge, "The Art and Practice of the Learning Organization," in *The New Paradigm,* p. 127.

[13] Ibid, p. 127.

[14] The learning curve is discussed in "The Renaissance of Learning in Business" by John W. Thompson, in *Learning Organizations,* ed. By Sarita Chawla and John Renesch, pg. 85.

CHAPTER FOUR
The Current Leader Development System

The previous chapters outlined the complex environment in which the leaders of

2015 will operate and the specific skills they will need to succeed on the battlefield. In

this section we will demonstrate that the current officer leader development system is not

adequately designed to develop all the skills and competencies that will be demanded of

tactical leaders in 2015. This discussion will first briefly review the components of the

existing system, then examine the officer assignment process and its impact on tactical

proficiency, next survey the institutional or school system, and finally look at how the

Army currently integrates simulations into the development of tactical leaders.

Components of the Current System

According to Department of the Army Pamphlet 350-58, Leader Development for

America's Army, "Army leaders gain their skills, knowledge, and behavior through a

combination of schooling, assignments, and self-development." [1] These three areas, more

commonly known as *institutional, operational,* and *self-development*, are formally

referred to as the "three pillars" of the Army's leader development system.

The first pillar, the institutional or school system, is specifically designed to provide

a base foundation of skills. Leaders attend institutional training courses at various times

in their careers, normally prior to moving into a new level of operational assignment. The

second pillar, operational, allows leaders to use and further develop those skills in actual

operational assignments. The focus of these assignments was summarized in Department

of the Army Pamphlet 350-58 like this:

"Repetitive performance of duty position requirements (practice) refines the leader's skills, broadens his knowledge, and shapes his behavior and attitudes. Through experience gained during operational assignments, leaders acquire the confidence and competence needed for more complex and higher level assignments." [2]

The final component or pillar, self-development, is described in the DA PAM as a "continuous process - taking place during institutional training and education, and during operational assignments - that should also stretch and broaden the individual beyond job or training." [3] In general terms, self-development may take the form of professional reading, attending courses in civilian institutions, and participating in a self-study program designed around the leader's goals.

Tactical Assignments

An officer's proficiency as a battalion or brigade commander and his or her ability to master the art of battle command is a function of many things, perhaps first and foremost the experience gained as a captain and major in tactical units. In these operational assignments, where captains command companies and majors serve as battalion operations officers or executive officers, young officers enhance their leadership and interpersonal skills, develop their tactical intuition, and gain confidence in being able to respond to challenging situations. They also acquire the "confidence and competence needed for more complex and higher level assignments" discussed in DA PAM 350-58. But faced with a growing list of assignment requirements that compete directly with troop assignments, the amount of time an officer spends in a tactical unit as a captain and major is gradually decreasing over time.

Establishing exactly how much less time officers are now spending in tactical assignments is difficult to pinpoint due to the nature of the databases involved. An examination of the experiences and assignment histories of two specific year groups as reflected in the Army's December 1995 Officer Master File, however, illustrates the point in general terms. The following table reflects the differences between officers selected for battalion command in year groups 72 and 78:

Year Group	Average Company Command Time	Average Battalion S3 Time	Average Battalion XO Time
72	20.9	14.6	16.6
78	14.8	13.2	13.4
Note: Time in months		Source: OPMS XXI Study Group	

It is important to note that this table reflects two year groups that for the most part commanded companies and in some cases served as S3s and XOs before the drawdown began. Based on current trends, we think that data collected several years from now will highlight that the average troop unit experience will have stabilized at about 14 months company command time and 12 months as a battalion S3 or executive officer. [4]

This downturn in the amount of time captains and majors spend in tactical assignments can be attributed to a number of factors. Some include congressionally mandated requirements such as assignment to joint positions or advisors to Reserve Component units. Others are related to the disproportionate reduction in tactical units compared to non-troop unit organizations as part of the downsizing of the Army which essentially reduces the opportunity for troop assignment. Regardless of the reason and

final figures, *the net effect is a reduction in troop unit experience for future battalion and brigade commanders and a corresponding reduction in the development of key leadership and tactical skills.*

An analysis of the actual impact of reduced troop assignments on tactical proficiency is largely a subjective drill that is extremely difficult to quantify. One method of indirectly assessing this proficiency, however, is to review observations and battle results formally collected by Observer/Controllers at the Army's Combat Training Centers. At these training centers, located at FT Irwin, California, FT Polk, Louisiana and Hoenfels Training Area, Federal Republic of Germany, brigades and their respective supporting organizations from throughout the Army go through realistic battles against a well trained enemy force. In general terms over the past few years, the performance of both brigade commanders and entire brigade combat teams has experienced a downward trend.[5] Again, there are a number of potential reasons for these observations - a reduction in training resources and a corresponding reduction in preparatory training conducted at the Brigade's home station, and personnel turbulence on staffs that makes it more challenging to develop a well trained team - but there is also strong evidence to indicate that a primary reason is a lack of proficiency in the commanders themselves.

A senior brigade trainer at the National Training Center in Fort Irwin, California who participated in over a hundred simulated battles in the Mojave desert described the problem like this:

> Most combined arms commanders at battalion and brigade levels lacked the full compliment of tactical and technical abilities that underpin the art of battle command. The absence of these abilities, more often than not, is the root of the substandard performance patterns our battalions and brigades have experienced at our CTCs in the past few years. [6]

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The official publication distributed by the Center for Army Lessons Learned that summarizes training observations at the CTCs also reflects recurring deficiencies in basic battle command leader skills. The following table lists the current top five areas requiring improvement in the area of tactical command and control for the past seven quarters through 2nd quarter FY 96. Each "X " and associated numeral reflects the number of times that skill was identified as a deficiency during a simulated battle.

Area requiring Emphasis	4QTR FY94	1QTR FY95	2QTR FY95	3-4QTR FY95	1-2QTR FY96
1. Course of Action Development and Wargaming		X2	X2	X5	X3
2. Task Force Rehearsals	X		X3	X2	X5
3. Communications and signal operations			X3	X3	X3
4. Tactical Decision Making Process	X	X	X2	X3	X
5. Battle Tracking and Predictive Analysis		X	X2	X2	X2

Source: Center for Army Lessons Learned [7]

For example, this chart indicates that the ability to execute the Army's tactical decision making process, a fundamental leader skill that is at the core of how we fight, was identified as a deficiency for all seven quarters. In some cases, it was identified as a deficiency on multiple occasions inside a quarter.

The question relevant at this point of our discussion is this: if the officer assignment

process is unable to provide the requisite experience and adequately prepare battalion and brigade commanders for the simulated battlefields of 1997, how can we expect it to successfully prepare them for the more rigorous "expanded battlespace" environment of 2015?

Institutional Training System

In Chapter 2 we presented a picture of a very complex and unstructured future battlefield where commanders must be able to visualize an expanded battlespace, manage and use a vast amount of information, make decisions while coping with uncertainty, and learn faster than the enemy. An examination of the curriculum of the Army's primary institutions for training battalion and brigade commanders - the Command and General Staff College, The Army War College, and The School for Command Preparation - reveals that these key skills at best are only beginning to be addressed.

The first of these institutions, the Command and General Staff College (CGSC), is designed to educate officers in "the values and attitudes of the profession of arms in the conduct of military operations during peace, conflict and war with emphasis at corps and division levels," [8] This 10-month school, which is attended by majors and lieutenant colonels, has begun to integrate into its curriculum courses that deal with creative thinking, the use of information technologies, and operating in changing environments, but not to the extent and with the focus necessary to develop the skills outlined in Chapter 3.

The current CGSC curriculum includes a core course entitled "Critical and Creative Thinking," which addresses how to think critically and build adaptive and effective

organizations. The elective program also offers two courses related to our discussion -

"New Perspectives for Leading the Army Through Change", which deals with how

organizations respond and manage change, and "Information Operations", which

examines the field of Information Warfare at the strategic, operational and tactical level

of war. As part of the 10-month program each student also participates in a computer

simulation driven command post exercise called Prairie Warrior that, based on the nature

of the student's involvement, may help develop an appreciation for the dimensions of

time and space in corps operations. [9]

Although these courses begin to address one of our key skills, how to cope with

uncertainty and change, their focus is such that they do not directly address or help

develop in a practical sense the others, principally how to operate in the expanded

battlespace or "system" we outlined in Chapter 2, how to effectively manage and use a

vast amount of information in a tactical setting, and how to learn faster than the enemy.

For example, the course "Information Operations" essentially surveys policy and doctrine

but does not specifically deal with how a tactical commander would manage,

discriminantly filter and use information provided by electronic systems in a tactical

setting.

The second of these institutions, The Army War College, is also a 10-month school

that operates within this mission statement:

> The US Army War College prepares selected military, civilian, and international
> leaders to assume strategic responsibilities in military and national security
> organizations; to educate students about the employment of the US Army, as part
> of a unified, joint, or multinational force in support of the national military
> strategy; to research operational and strategic issues; and to conduct outreach
> programs that benefit the USAAWC, the US Army and the nation.[10]

The War College, under the direction of MG Richard Chilcoat, is arguably at the forefront of the military schooling system in terms of addressing many of the leadership challenges of the twenty first century. The current curriculum includes courses such as "Information Management," "Military Application of Artificial Intelligence," and "Crisis Action Planning for Operations Other Than War" that force students to deal with the uncertainty of the post cold war era and consider the broad impact of information technologies. The entire focus of the War College, with an emphasis on theory, concepts and systems, begins to address how to cope with uncertainty and operate in the expanded battlespace.[11] It also clearly deals with the development of Clausewitz's "intellect." But, similar to CGSC, the courses are not focused in a manner that will develop in a practical sense all the nontraditional skills outlined in Chapter 3. Specifically, the curriculum does not address topics such as information systems architecture and the reliability/accuracy of certain information, or the concept of the battlefield as a system, and the students are not exposed to a wide variety of scenarios to help develop the ability to cope with uncertainty.

The last institution we will review, the School for Command Preparation, conducts battalion and brigade level pre-command training for active and reserve component commanders. This school runs from 3-7 weeks, depending on the type unit the officer is slated to command, and consists of a series of courses tailored toward the officer's specific requirements. Key courses related to our discussion that fall under the umbrella of this school include the Pre-Command course, the Tactical Commanders Development Course (TCDC) , and the Battle Command Development Course (BCDC).

The Pre-Command Course consists of a series of lectures and classes generally presented by senior Army leaders designed to bring command designees up-to-date on a wide variety of issues and topics. The Tactical Commanders Development Course is a 5-day course that reviews the decision making progress and, using several computer-driven simulations, focuses on synchronizing combat operations at the battalion and brigade level. The Battle Command development Course, which is a five-day course that follows TCDC, allows commander designees to enhance their battle command techniques. Similar to TCDC, BCDC students will fight 5-6 battles through computer-driven simulations. [12]

The current School for Command Preparation essentially updates officers on the most relevant issues facing the Army and, through the discussions and simulations conducted in TCDC and BCDC, enhances their skills in the decision making process and the tactical employment of the units they will command. The simulated battles also allow them to begin to formulate how they will cope with ambiguous situations. The existing system, however, does not specifically address the use of information technologies and basic information management in a tactical setting. Nor does it expose the commander to the complexities of the expanded battlespace outlined in Chapter 2. The current simulation program presents a fairly straight-forward battlefield and does not force interaction with other players such as large numbers of noncombatants, the media, and terrorists. In the end result, it does not allow the commander to develop the intuitive skills needed to be able to confidently operate in ambiguous and uncertain situations.

Simulation Program Focus

Over the past 15 years the Army has made great strides in integrating simulations into the operational and institutional components of the leader development system. In the operational arena, tactical units throughout the Army have access to a series of simulations such as JANUS, BBS, and CBS that are extremely effective tools to train commanders and staffs at various levels, and many use them on a regular basis to sustain basic staff planning and execution skills. The Battle Command Training Program centered at FT Leavenworth, Kansas also uses simulations to train and assess Division and Corps warfighting headquarters.

In the Institutional component, the Command and General Staff College employs the JANUS Simulation in several courses to reinforce certain lessons and, as outlined in the preceding discussion, the School for Command Preparation uses JANUS to train battalion and brigade commander designees on basic battle command skills.

While simulations have clearly had a significant impact on training warfighting staffs to function as teams and training commanders on basic battle command skills, they are *most effectively employed by commanders already in command in operational assignments*. They are not fully utilized in the institutional system to provide battalion and brigade commanders a high degree of virtual "competence" in warfighting skills *prior to assuming command*. As noted earlier, the average battalion and brigade commander will run through 7 or 8 JANUS simulations at the School for Command Preparation, and these events allow them to exercise tactical judgment and the application of combat power in a limited set of scenarios. They may also participate in several

simulations while a student at CGSC. The limited frequency, repetitiveness and non-complex nature of the simulations, however, does not support achieving a high level of confidence, experience and true competence before assuming command.. In general terms, the current use of simulations in the institutional system helps prepare officers for command by exposing them to the planning, execution and battle tracking processes. It does not make them near experts capable of acting intuitively on the battlefield. Most commanders only begin to achieve this level of proficiency after spending a year to two on the job. As noted in the preceding discussion, the environment in 2015 will not allow the luxury of on-the-job training for tactical leaders.

Notes:

[1] Department of the Army, *DA PAM 358-50: Leader Development for America's Army,* , (FT Leavenworth: 13 Oct 1994), online, Internet Center for Army Leadership, 13 Oct 94, Chapter 1, Pg.2.

[2] Ibid., Chapter 1, Pg. 3.

[3] Ibid., Chapter 1, Pg. 3.

[4] This table is an extract from a series of tables outlining troop experience provided by a member of the Army's OPMS XXI Study Group. This data was derived from the 9511 Officer Master File. An exact average amount of time officers spend in troop unit assignments across the entire Army is difficult due to establish due to the inexact nature of the database. A 3 February 1997 *Army Times* article entitled "Creeping Hollowness" described the problem in slightly different terms:

> "Today's company commander spends an average of only 17 months in command. The equivalent period before the start of the Army drawdown was more than two years." (*Army Times,* 3 Feb 97, Pg. 16)

The author of this specific article stated that these figures were derived from discussions with several senior officers who had recently been in positions that would make them knowledgeable on the subject. The figures the OPMS Study Group ultimately used for the grade of major reflected that for yeargroup 78 80% of the S3s averaged 12 months and 80% of the XOs averaged 13 months, compared to 14 months and 15 months respectively for yeargroup 73. Even considering the inaccuracies of the database and varying opinions on the topic, the net result is a decrease in troop unit experience. Our concern as authors of this study is that most of the data available reflects yeargroups that commanded and served as S3s/XOs before the real effects of the drawdown were felt, when the environment supported longer troop assignments, and that the current Army-wide averages are at best around 14 months as a company commander and a 12 months as an S3 or XO.

[5] There is a general consensus within the Army that units do not deploy to a Combat Training Center at the same level of proficiency as they did several years ago. There are varying opinions as to why this is the case, however. Many, to include GEN Reimer, the current Chief of Staff, believe the principal reason is a reduction in battalion and brigade-level exercises conducted at home station prior to deployment (Army Times, "Creeping Hollowness," 3 Feb 97). Others such as LTC John D. Rosenburger, a former senior Observer/Controller at the National Training Center, believe that a leader deficiency in the art of battle

command is the primary reason (Coaching the Art of Battle Command, *Military Review*, VOL LXXVI, NO3, May/June 1996, Professional Bulletin 100-96-5/6, pg. 27).

[6] LTC John D. Rosenburger, "Coaching the Art of Battle Command," *Military Review*, VOL LXXVI, NO 3, May/June 1996, Professional Bulletin 100-96-5/6, pg. 27.

[7] This matrix was extracted from a document entitled "National Training Center Priority Trends, 4QFY94 through 2QFY96," Center for Army Lessons Learned, Section A, pg. 2, online, Internet CALL Library 25 Oct 96. This document contains both positive and negative trends based on observer/controller observations at the National Training Center at FT Irwin, California.

[8] Department of the Army, *Command and General Staff College Pamphlet 351-1, CGSC Catalog,* (FT Leavenworth: 8 Nov 1996), online, Internet CGSC 3 Mar 97, Chapter 3, Pg. 1.

[9] For a summary of the CGSC curriculum, to include the core program and Advanced Applications Program (electives), see Department of the Army, *Command and General Staff College Pamphlet 351-1, CGSC Catalog,* (FT Leavenworth: 8 Nov 1996), online, Internet CGSC 3 Mar 97, Chapter 3, Pg. 1. Individual course summaries for the elective program are available through the CGSOC *Advanced Applications Program Memorandum of Instruction and Course Guide,* online, Internet CGSC 5 November 1996.

[10] Department of the Army, *Curriculum Pamphlet, U.S. Army war College, Academic Year 1997*, pg. 2.

[11] For a summary of the Army War College curriculum see *Curriculum Pamphlet, U.S. Army war College, Academic Year 1997*, pg. 2. and Richard A. Chilcoat, "The "Fourth" Army war College: Preparing Strategic Leaders for the next Century," *Parameters*, Winter 1995-96, Pg. 3-17, U.S. Army War College, Carlisle, PA.

[12] The content of the School for Command Preparation is summarized in Department of the Army, *Command and General Staff College Pamphlet 351-1, CGSC Catalog,* (FT Leavenworth: 8 Nov 1996), online, Internet 3 Mar 97, Chapter 6.

CHAPTER FIVE
Recommendations

Solving the deficiencies noted above will not require radical reform. Nor will it require a massive diversion of resources. From our perspective, we can achieve the desired result and adequately prepare commanders for the rigors of 2015 by further developing and implementing many of the programs currently under consideration or actually in the early stages of implementation. The most critical point is that we must act quickly. Remembering that the battalion commanders of 2015 will enter the service in the summer of 1997, and that it truly takes 15-20 years to develop battalion and brigade commanders, it is essential that we act now.

The following discussion will outline our specific proposals in the areas of assignments, the curriculum at the Army's schools, the use of simulations, and an advanced self-development program.

Recommendation 1: Develop a commander/operator assignment pattern. To address the first deficiency and reverse the downward trend in troop experience for captains and majors, the Army should establish a commander/operator assignment pattern or assignment track. This process would begin with internal US Army Personnel Command boards to identify prospective commanders/operators at the 6-year point in a year group's progression. These boards will consider officers from each branch and will base their assessment on potential demonstrated in previous troop assignments.

To ensure that this group of officers spends an adequate amount of time in troop units and develops a base level of leadership and tactical skills, their assignments would be structured to ensure they complete these minimum requirements:

- At least 24 months as a TOE company commander.
- At least 24 months as a battalion XO, battalion S3 or Brigade S3 (or combination).
- At least one 18 month tour as an observer/controller at a training center, BCTP, PCC simulation program, or tactics instructor at an advanced course.

We specifically selected the 6-year mark for the initial career field determination to ensure that the assignment process has adequate time to get officers into these types of positions. Making the decision after this point would simply be too late to influence the amount of company command time and may not provide the flexibility to ensure the officer gets 24 months with a unit as a major and also works in one other operationally focused position (O/C at BCTP, NTC,...).

We also established a 24-month requirement period for company commanders and S3s/XOs for a particular reason. Faced with a resource-driven reduction in tactical unit collective training throughout the Army, specifically a reduction in unit training at home station and pending reductions in actual NTC rotations, we feel that a standard year of training in the Army is not what it used to be. To build any depth of experience in being able to actually fight their respective organizations, captains and majors will need at least two years in these positions. Consider the example of an officer who commands for 14 months as a captain and later serves 12 months as a battalion S3. In our current environment, it is very possible that this officer would never participate in a Combat Training Center training event. Furthermore, it is possible that he would never participate in a challenging tactical exercise where the company or battalion trained at the collective level. Would this officer possess the experience needed to succeed as a battalion commander on the complex battlefield we portrayed in Chapter 2?

We recognize that the development of formal assignment tracks is an emotional issue for many officers in the Army, especially those who may fall outside the "command track." Yet the current assignment system executed by assignment managers essentially places officers in a "command" potential track and a "non-command" potential track at about the 9 or 10 year mark on an informal basis. Executed in an ad hoc manner and facing a host of competing requirements, the current system merely struggles to get potential commanders to troop units as best possible and, as noted earlier, does it in an unsatisfactory manner.

To make the command track process work and achieve a high degree of acceptance among the officer corps, the Army should adopt some of the measures being considered by the OPMS XXI Study Group and establish 3 or 4 assignment tracks or career fields, each of which has a well-defined path to a successful career. These could include the Commander/Operator field, Information Operations field, Operational Support field, and Army Management Specialist field currently being examined. Establishing these career patterns would allow officers in several areas to focus their potential and energy at a much earlier stage in their careers and ultimately produce more proficient leaders in various fields.

Recommendation 2: Modify the curricula at the primary field grade officer institutional training centers. To address the second set of deficiencies and focus the school system on developing the skills outlined in Chapter 3, specifically how to visualize an expanded battlespace, manage and use a vast amount of information, make decisions while coping with uncertainty, and learn faster than the enemy, the curricula at

the schools that most impact future battalion and brigade commanders, the Command and General Staff College, Army War College and School for Command Preparation, should be modified. The actions taken so far by both the War College and CGSC are good initial steps, but they are rather limited in nature and fall short of truly focusing on some of the nontraditional skills required for tactical leadership in 2015. If we really want our commanders to be able to execute our twenty-first century warfighting doctrine, then we must aggressively address the nontraditional skills outlined in Chapter 3 and integrate the following topics into the core programs of our schools.

- **Systems thinking and learning organizations.** Both the War College and CGSC should develop courses for officers in the Operational Career Field that address the basic concepts outlined in *The Fifth Discipline: The Art & Practice of the Learning Organization* by Peter Senge. The intent behind these courses would be to help develop the ability to view the battlefield not just as a series of related actions or events but as an extremely complex "system". When tied to an aggressive simulation program that replicates all of the appropriate forces and players, we feel that this type of course would help future tactical leaders develop a sense of how to visualize the expanded battlespace described in Chapter 2.

- **Personal information management in a tactical setting and delineation of responsibilities in an information rich environment.** The War College and CGSC should also develop classes that allow future tactical leaders to define their own information management techniques in a tactical setting plus determine their comfort level in terms of delegation of authority/initiative in an information rich environment. These courses would provide the opportunity for officers to determine what type of display they preferred, what type of information to be displayed (level icons are aggregated to ...), how they want their Commander's Critical Information Requirements displayed or flagged, and other techniques essential to making information usable in a tactical setting. These courses should also force leaders to begin to formulate how they will delegate authority and sustain initiative at lower levels in an environment where each level of command has a common shared situational awareness.

- **Information systems architecture and capabilities.** To be able to use effectively the information systems available in future command posts, tactical leaders will need a basic understanding of the overall information architecture and the

reliability/meaning of the data provided by the systems that feed the displays. Both CGSC and the War College should provide instruction on the architecture and capabilities of existing and programmed information systems to ensure tactical leaders possess this understanding.

Integrating courses that address these topics into each school's core program can be accomplished in two ways - increasing the number of instructors and adding new classes or using available resources and replacing existing classes. In an era of declining budgets, the second option is the most realistic as well as most prudent. Each institution should conduct a review of its respective curriculum and eliminate several classes that deal with " industrial age" skills to free up resources to support the new topics. Although this process will likely prove to be contentious to some, it is not without precedent. For over a hundred years the curricula at these schools have constantly been evolving to keep up with current doctrine and advances in technology, and our proposal is merely one more step along this evolutionary trail.

Recommendation 3: Revise the School for Command Preparation to provide commanders virtual "competence" before taking command through an intensive use of simulations. Perhaps the most significant action the Army can take to better prepare tactical leaders would be to establish a well-defined simulation program designed to allow commanders to develop true virtual expertise or competence prior to assuming command. In Chapter 4 we described the current use of simulations and highlighted that, although the School for Command Preparation uses JANUS Simulations to train on basic battle command skills, these systems are most effectively employed by commanders already in command. Under this program, we would use technology to give commanders the equivalent of a year or two's worth of virtual tactical experience prior to moving into

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the position, thereby eliminating much of the painful on-the-job learning we are struggling with now. In addition to helping to develop the base tactical skills we described in Chapter 2, this extensive use of simulations in a tactical setting would specifically facilitate the development of all four of the nontraditional skills we discussed in Chapter 3.

This ambitious but achievable goal could be attained with our current state of simulation technology and will get easier as we transition to the WARSIM 2000 simulation program. This program would be structured around these principles:

- Require each commander designee to take and pass a written test on basic competencies associated with the type of unit he or she will command prior to attending the School for Command Preparation. This test, which should be administered through the Internet, will ensure that each officer possesses a base level of understanding about tactics, systems capabilities, and combined arms operations.

- Extend the School for Command Preparation from the current 5 week schedule (2 weeks at Basic Branch School and 3 weeks at FT Leavenworth) to a 10 week calendar.

    ◊ 1 week conducted at the appropriate Basic Branch School for a branch update.
    ◊ 1 week at the National Training Center to observe several simulated battles and receive a tactics, techniques and procedures update.
    ◊ 1 week at the Joint Readiness Training Center to observe several simulated battles and receive a tactics, techniques and procedures update.
    ◊ 7 weeks at FT Leavenworth (1 week for an update by the Army Staff and participation in Command Team Seminars, 1 week for a review of the decision making process, and 5 weeks of intense simulation exercises).

- The simulation exercises conducted during the final 5 weeks would place each commander designee in as wide a range of scenarios as possible. They would include standard conventional tactical missions as well as stability and sustainment operations in ambiguous environments. This set of simulations

would do for tactical commanders what the space shuttle simulator does for shuttle pilots - allow them to run through multiple contingencies and gain confidence in how to react to problems.

- The simulations would generally be operated out of a tactical setting in the appropriate command post structure with trained personnel acting as a tactical staff. This would ensure that the commander receiving the training is the weakest link and ultimately the focal point of the training event. The simulated command post would also include all of the available information technology interfaces (displays, video conference systems...) to force the officer to develop personal information management skills and techniques.

- To enhance the learning aspects of the simulations, each commander would be assigned a mentor who would monitor the officer's progress and provide direct feedback. This mentor could be a retired officer, similar to the senior officer mentors who participate in the Battle Command Training Program, and should be at least one grade above the commander designee with previous command experience.

- Numerous complicating factors that would challenge the commander's conceptual skills and replicate the "expanded battlespace" would be introduced as the simulations progressed. These would include the introduction of non-governmental organizations, large numbers of non-combatants and live international media coverage.

- As a graduation and certification exercise, each commander would be required to demonstrate proficiency in a core set of scenarios based on his or her branch and type command.

Implementing this recommendation would on the surface require additional resources. At a minimum, the Army would have to finance 5 more weeks of temporary travel costs for each commander. Other costs likely to be incurred would include additional computer/simulation time and the trained staff to support the expanded scope of simulations. Yet our current leader development process has many hidden costs that are difficult to quantify but would be reduced by the implementation of this program. These include the training time lost at multi-million dollar Combat Training Centers due to the inexperience of commanders and the inefficient staff training programs developed

and executed at home station by commanders who are only marginally more proficient than the staffs they are trying to train. From our perspective, the additional costs required to produce commanders who are confident and competent prior to assuming command would be partially offset by productivity gains and more effective training at home station as well as at the Combat Training Centers.

Recommendation 4: Establish a 21st century self-development program or "collaboratory" to keep tactical leaders educated in a world of constant change. Modifying the assignment process, introducing new courses into the institutional training system, and refocusing the School for Command Preparation will help ensure tactical leaders go into command positions with a high level of competence. Sustaining this competence over time in a rapidly changing world, however, will require subsequent independent study in areas such as military doctrine/techniques, contemporary societal issues, international politics, and technological innovation.

A cost effective means of supporting this continuous learning process would be to employ techniques being developed by several civilian organizations and establish a self development program using the Internet and the teleconferencing capability that will shortly be resident in every personal computer. One example of this type of program is the "Collaboratory in Cyberspace" concept developed by the Center for Information Systems Management in the Graduate School of Business at the University of Texas at Austin. [1] This collaboratory is designed around the belief that the non-proprietary nature of the Internet facilitates the development of a collaborative system that "provides an open electronic platform for individuals or groups with common interests to efficiently

exchange, disseminate and create issues, idea and knowledge."[2]

A prototype collaboratory developed by the Center for Information Systems Management consists of a Web server with information organized based on the specific areas of interest and includes an on-line electronic forum, announcement and search features. This electronic system has two primary objectives: efficient dissemination of information through organization of information resources, and a global forum for asynchronous and synchronous interactions involving issues, ideas and research articles. [3]

To meet our objective of keeping tactical leaders educated in a world of constant change, we propose that a similar collaboratory be developed and integrated into the Army's ongoing WARRIOR XXI distance learning program. This program would be structured around these components:

- Basic self-study and personal research by tapping into existing commercial web sites, military on-line databases, and a host of growing news/political commentary sites.

- Dissemination, discussion and exchange of ideas and concepts on specific topics using an Internet based collaborative software program such as Lotus Domino. These discussions could be between two individuals or twenty, and would be easily established.

- Personal videoconferences with experts resident in the Army's school system or key training sites such as the National Training Center. These conferences would primarily be informal one-on-one discussions not hindered by time consuming formalities such as slide preparation and formal agendas.

- The primary databases, web sites, collaborative documents and, most importantly, videoconference discussions would all be accessible from an appropriately equipped home computer. The student would not be tied to the use of a costly and difficult to access teleconference center.

- One of the Army's schools such as the Command and General Staff College would serve as the proponent, and key administrative functions for the

program such as a directory of relevant web sites and listing of current discussion topics would reside on a server located at that institution.

Because this program would be built around existing systems - Internet sites, home and office personal computers, and inexpensive collaborative software - it would be fairly inexpensive to administer. The principal costs to the Army would be related to resourcing the proponent with a computer/server and several personnel to organize and monitor the program.

The principal benefit to the Army would be the establishment of a structured but simple means of exploiting the vast wealth of information available internal and external to the military, both in terms of recorded data and personal observations and experiences. In a world of accelerating change and great political turmoil, we must ensure that we use the latest technological innovations to learn and grow professionally faster than our potential adversaries.

Conclusion

In the preceding sections we presented our best assessment as to what warfare will be like in 2015 and what skills battalion and brigade commanders will need to succeed in that environment. We also noted that the current leader development system is questionably capable of producing leaders for today's battlefield and unprepared for the rigors of 2015. The obvious question is how to best modify the existing system to ensure that the young lieutenants entering the Army this coming summer will be masters of the battlefield 18 years from now.

In an unconstrained world there would be several possible solutions to this problem. But, in an era of declining defense budgets and competing requirements, we obviously

operate in anything but an unconstrained environment. We have framed our

recommendations within these constraints and have proposed a series of reasonable and

prudent actions that are limited in cost, structured around the use of emerging

technologies, narrowly focused at what we perceive to be the true problem areas and,

from our perspective, likely to be successful.

Recalling that our nation has been unprepared for the opening battle of

virtually every war it has fought and that it takes 16-20 years to develop battalion and

brigade commanders, it is essential that we implement these actions now.

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[1] For an explanation of the collaboratory concept see Anitesh Barua, Ramnath Chellappa, and Andrew B. Whinston, "Creating a Collaboratory in Cyberspace: Theoretical Foundation and an Implementation," Center for Information Systems Management, Department of MSIS, Graduate School of Business, The University of Austin at Texas, online, Internet 24 Mar 97.
[2] Ibid, pg. 2.
[3] Ibid, pg. 2.

REFERENCES

Bellamy, Christopher. *The Evolution of Modern Land Warfare: Theory and Practice*. London: Routledge Publishers, 1990.

Bolger, Daniel P. *Americans at War 1975-1986: An Era of Violent Peace*. Novato, California: Presidio Press, 1988.

Boutelle, Steven W.and Filak, Ronald. "AFATDS: The Fire Support Window to the 21st Century." *The Joint Force Quarterly* No. 11, Spring 1996, pg. 16-21.

Bunker, Robert J. "Advanced Battlespace and Cybermaneuver Concepts: Implications for Force XXI." *Parameters,* Vol XXVI, No. 3, Autumn 1996, pg. 108-120.

Chawla Sarita and Renesch, John. *Learning Organizations*. Portland, Oregon: Productivity Press, 1995.

Clausewitz, Carl Von. *On War 1975-1986*, Edited and Translated by Michael Howard and Peter Paret. Princeton, NJ: Princeton University, 1984.

Cooke, Roger M. *Experts in Uncertainty: Opinion and Subjective Probability in Science*. New York: Oxford University Press, 1991.

Cordesman, Anthony H., and Abraham R. Wagner. *The Lessons of Modern War, Volume IV: The Gulf War*. Boulder, Colorado: Westview Press, 1996.

Corum, James F. *The Roots of Blitzkrieg: Hans von Seeckt and German Military Reform*. Lawrence, KS: University of Kansas Press, 1992.

Czerwinski, Thomas J. "Command and Control at the Crossroads." *Parameters,* Vol XXVI, No. 3, Autumn 1996, pg. 121-132.

Defense Science Board 1996 Summer Study Task Force on "Tactics and Technology for the 21st Century Military Superiority" Volume 1, Final Report October 1996. Office of the Secretary of Defense.

Degroat, Arthur S., and Nilsen, David. "Information and Combat Power on the Force XXI Battlefield." *Military Review,* Vol LXXV , No. 5 November/December 1995, pg. 56-62.

Department of the Army. *TRADDOC Pamphlet 525-200-4: Mounted Battlespace Battle Dynamic Concept*. Washington, U.S. Department of the Army, 1 June 94. Online. Internet TRADOC Publications, 2 May 97.

Department of the Army. *National training Center Priority Trends 4QRFY94*. Center for Army Lessons Learned, FT Leavenworth, Kansas. Online CALL Library. Internet 25 Oct 96.

Department of the Army. *TRADOC Pamphlet 525-5: Force XXI Operations*. Washington: U.S. Department of the Army, 1 August 1994. Online. Internet TRADOC Publications 30 Oct 96.

Department of the Army. *Curriculum Pamphlet: Academic Year 1997*. U.S. Army War College. Carlisle Barracks, PA.

Department of the Army. *DA Pamphlet 350-58, Leader Development for America's Army*. Washington: U.S. Department of the Army, 13 Oct 94. Online. Internet Center for Army Leadership, 22 Nov 96.

Department of the Army. *Army Digitalization Master Plan '96*. Washington: U.S. Department of the Army. Online. Internet 4 Nov 96.

Department of the Army. *Army Distance Learning Plan*. Washington: U.S. Department of the Army. Online. Internet 4 Nov 96.

Department of the Army. *FT Leavenworth Pamphlet 351-1: Command and General Staff College Catalog*. U.S. Department of the Army. Online. Internet CGSC 3 Mar 97.

"Dominating Maneuever Workshop IV Summary Report" Center for Strategic Leadership, U.S. Army War College , Carlisle Pa. Report Developed by The Strategic Assessment Center Science Applications International Corporation, August 1996.

Dunnigan, James F. *Digital Soldiers: The Evolution of High-Tech Weaponry and Tomorrow's Brave New Battlefield*. New York: St Martin's Press, 1996.

Edwards, O.T. III. "Digital Battlefield Training and Insights of a User: The Good, The Bad, and The Ugly." *Military Review,* Vol LXXV, No. 3, May/June 1995.

Harig, Paul T. "The Digital General: Reflections on Leadership in the Post-Information Age." *Parameters,* Vol XXVI, No. 3, Autumn 1996, pg. 133-140.

Heifetz, Ronald A. *Leadership Without Easy Answers*. Cambridge: The Belknap Press. 1994.

Hertling, Mark P. "The Battle of Oom Chalouba, 17 June 2008." *Military Review,* Vol LXXV, No. 1, January/February 1995.

Hesselbein, Francis, Marshall Goldsmith and Richard Beckhard. *The Leader of the Future: New Visions, Strategies, and Practices for the Next Era*. San Francisco: Jossey-Bass Publishers, 1996.

Howard, Michael and Guilmartin, John F. "Two Historians in Technology and War." A Paper Presented at the US Army War College Fifth Annual Strategy Conference, 26-28 April 1994 at Carlisle Barracks, Pennsylvania.

Hunt, James G., and Blair, John D. *Leadership on the Future Battlefield.* Washington, D.C.: Pergamon - Brassey's Publishers, 1985.

Huntington, Samuel P. *The Soldier and the State: The Theory and Politics of Civil-Military Relations.* Cambridge: The Belknap Press, 1957.

Janov, Jill. *The Inventive Organization: Hope and Daring at Work.* San Francisco: Jossey-Bass Publishers, 1994.

Jones, Philip M. "Developing Army Leaders for the 21st Century." US Army War College, 28 February 1995. Online. Internet Force XXI articles, 30 Oct 96.

Kahneman, Daniel, Paul Slovic, and Amos Tversky. *Judgment Under Uncertainty: Heuristics and Biases.* Cambridge: Cambridge University Press, 1982.

Kanter Moss, Rosabeth. *World Class.* New York: Touchstone, Simon & Schuster, 1995.

Katzenbach, Jon R and Douglas K. Smith. *The Wisdom of Teams: Creating the High Performance Organization.* Boston: Harvard Business School Press, 1993.

Keegan, John. *The Illustrated Face of Battle.* New York: Viking Publishers, 1988.

Kolb David A, Joyce S. Osland and Irwin M. Rubin. *The Organizational Behavior Reader. Sixth Edition,* New Jersey: Prentice Hall, Inc, 1995.

Kotter, John P. *A Force for Change.* New York: The Free Press, 1990.

Kotter, John P. *Leading Change.* Boston: Harvard Business School Press, 1996.

Kouzes, James M. and Barry Z. Posner. *The Leadership Challenge: How to Keep Getting Extraordinary Things Done in Organizations.* San Francisco: Jossey-Bass Publishers, 1995.

Lowenthal, David. *The Past is a Foreign Country.* Cambridge: Cambridge University Press, 1985.

Metz, Steven and James Kievit. "Strategy and the Revolution in Military Affairs: From Theory to Policy." US Army War College Strategic Studies Institute, 1995.

Mitroff, Ian I; Richard O. Mason and Christine M. Pearson. *Framebreak The Radical Redesign of American Business.* San Francisco: Jossey-Bass Publishers, 1994.

Molander, Roger C.: Riddile, Andrew S.: and Wilson, Peter A. "Strategic Information Warfare: A New Face of War." *Parameters,* Vol XXVI, No. 3, Autumn 1996, pg. 81-92.

Naylor, Sean D. "Creeping Hollowness." *The Army Times*, 3 February 1997, pg. 14.

Neustadt Richard E. and Ernest R. May. *Thinking in Time: The Uses of History for Decision Makers*. New York: Free Press, 1986.

Ogilvie, D.T.; and Frances E. Hauge. "Decision Making Requirements For Future Organizational Leaders: A Creative Action-Based Approach." Paper presented at the Army Strategic Leaders Workshop, Carlisle Barracks, PA, 1-2 October 1996.

Ohle, David, Major General. "OPMS XXI Update Brief." Brief given 18 October 1996 to a U.S. Army Senior Leader Conference.

OPMS XXI Study Group summary of assignment experience. This reference was a series of tables outlining troop assignment experience for selective year groups derived from the 9511 Officer Master File in the U.S. Army Personnel Command.

Pearson, Paul F. and Glenn K. Otis. "Crusader: Linchpin of the Force XXI Army." *Army* Vol 46, No. 11, November 1996, pg. 45-47.

Rogers, Everett M., and F. Floyd Shoemaker. *Communication of Innovations: A Cross Cultural Approach*. New York, NY: The Free Press, 1971.

Ropp, Theodore. *War in the Modern World*. New York: Collier Books, 1962.

Rosen, Stephen Peter. *Winning the Next War*. Cornell University Press, 1991.

Rosenberger, John D., "A Year in the EXFOR." *Army,* Vol 46, No. 11, November 1996, pg. 26-29.

Rosenberger, John D., "Coaching the Art of Battle Command." *Military Review*, VOL LXXVI, No 3, May/June 1996, Professional Bulletin 100-96-5/6, pg. 27.

Rosenburger, John D. " The Burden Our Soldiers Bear. Observations of a senior Trainer ." Unpublished paper, U.S. Army war College. Carlisle:U.S. Army war College, 1 Mar 95.

Rost, Joseph C. *Leadership for the Twenty-First Century*. Westport, Connecticut: Praeger Publishers. 1991.

Russo J. Edward and Paul J. H. Schoemaker. *Decision Traps*. New York: Simon & Schuster, 1989.

Senge, Peter M. *The Fifth Discipline: The Art & Practice of the Learning Organization*. New York: Currency Doubleday,1990.

Senge, Peter. "The Art & Practice of the Learning Organization." In *The New Paradigm In Business,* ed. Michael Ray and Alan Rinzler. New York: G.P. Putnam's Sons, 1993.

Senge, Peter; Art Kleiner; Charlotte Roberts; Richard Ross and Bryan Smith. *The Fifth Discipline Fieldbook*. New York: Currency Doubleday, 1994.

Sikes, James E. "Battle Command and Beyond: Leading at the Speed of Change in the 21st Century." US Army War College, 29 February 1995. Online. Internet Force XXI articles, 24 Oct 96.

Sims, Henry P and Peter Lorenzi. *The New Leadership Paradigm*. Newbury Park, CA: Sage Publications Inc., 1992.

Stares, Paul B. *Command Performance: The Neglected Dimension of European Security*. Washington, D.C.: The Brookings Institution, 1991.

Steele, Dennis. "Countdown to the Next Century." *Army* Vol 46, No. 11, November 1996, pg. 16-22.

Sullivan, Gordon R. and Michael V. Harper. *Hope is Not a Method*. New York, NY: Random House, 1996.

Taylor Robert L and William E. Rosenbach. *Military Leadership: In Pursuit of Excellence*. Third Edition. Boulder Colorado: Westview Press, 1996.

Thomas, Kent. "Proposed Changes to Officer Development and Schooling as Part of the Army's Transition to Force XXI." US Army War College. Online. Internet Force XXI articles, 24 Oct 96.

Toffler, Alvin. *The Third Wave*. New York: Bantam Books, 1980.

Department of the Army. *Curriculum Pamphlet: Academic Year 1997*. U.S. Army War College. Carlisle Barracks, PA.

Van Creveld, Martin. *On Future War*. London: Brassey's, 1991.

Van Creveld, Martin. *Supplying War: Logistics From Wallenstein to Patton*. Cambridge: Cambridge University Press, 1977.

Van Creveld, Martin. *The Training of Officers: From Military Professionalism to Irrelevance*. New York: The Free Press, 1990.

Vas de Czege, Huba. "Mobile Strike Force: A 2010 Potential Force." *Military Review,* Vol LXXVI, No. 4, July/August 1996, pg. 70-84.

Weinberger, Caspar and Peter Schweizer. *The Next War.* Washington, D.C.: Regnery Publishing, 1996.

Wheatley, Margaret J. *Leadership and the New Science: Learning about Organization from an Orderly Universe.* San Fransisco: Berrett-Koehler Publishers Inc., 1992.