Network Centric Warfare and Its Effect on Unit of Employment$_X$ (UE$_X$) Use of Mission Command

A Monograph

by

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The 2002 NSS call for "transform[ing] …to meet the challenges and opportunities of the twenty-first century", and the Army's leadership elected to concentrate the service's transformation efforts on battle command. The three pillars supporting the U.S. Army's transformation of battle command are its doctrine of mission command, reorganization of its warfighting forces – including the creation of the Unit of Employment$_X$ (UE$_X$) headquarters – and the emerging joint concept of network centric warfare (NCW). The decision to merge these practices and concepts, coupled with the focus on transformation through battle command, necessitates understanding how network centric warfare may affect the UE$_X$'s use of mission command doctrine. FM 6-0, *Mission Command: Command and Control of Army Forces,* states that trust and mutual understanding underpin the practice of mission command. Evaluated against these two principles, the Army's move to a brigade-based force, coupled with policy changes and emerging warfighting concepts, improves UE$_X$ commanders' ability to exercise mission command. These improvements overshadow the tendency of commanders to diminish trust and mutual understanding by relying on centralized command and control practices, which result from the influence of U.S. Army policies, UE$_X$ structural and conceptual limitations, and features of network centric warfare theory.

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Abstract

NETWORK CENTRIC WARFARE AND ITS EFFECT ON UNIT OF EMPLOYMENT$_X$ (UE$_X$) USE OF MISSION COMMAND by Major Jeffery A. Hannon, USA, 53 pages.

History shows that the U.S. Army can fight and defeat its opponents using centralized command concepts, but the challenges of the contemporary operating environment place a premium on the abilities of subordinate commanders to act independently and more quickly than their opponents act. Spurred by the 2002 National Security Strategy (NSS) call for "transform[ing] …to meet the challenges and opportunities of the twenty-first century", the Army's leadership elected to concentrate the service's transformation efforts on battle command.

The three pillars supporting the U.S. Army's transformation of battle command are its doctrine of mission command, reorganization of its warfighting forces – including the creation of the Unit of Employment$_X$ (UE$_X$) headquarters – and the emerging joint concept of network centric warfare (NCW). Mission command provides a foundation for freedom of action, network centric warfare provides a framework for rapid decision-making, and the UE$_X$ headquarters and its modular brigade combat teams provide commanders with the organizational structure and resources to translate accelerated, low-level decision making into action. The decision to merge these practices and concepts, coupled with the focus on transformation through battle command, necessitates understanding how network centric warfare may affect the UE$_X$'s use of mission command doctrine.

FM 6-0, *Mission Command: Command and Control of Army Forces*, states that trust and mutual understanding underpin the practice of mission command. Evaluated against these two principles, the Army's move to a brigade-based force, coupled with policy changes and emerging warfighting concepts, improves UE$_X$ commanders' ability to exercise mission command. These improvements overshadow the tendency of commanders to diminish trust and mutual understanding by relying on centralized command and control practices, which result from the influence of U.S. Army policies, UE$_X$ structural and conceptual limitations, and features of network centric warfare theory. Therefore, to retain the advantages of mission command, UE$_X$ Commanders must remain aware of the impediments to mission command, which can come from U.S. Army culture and policies, UE$_X$ structure and employment concepts, and the concept of network centric warfare.

To foster awareness of the impediments to practicing mission command, the U.S. Army should take several initiatives to refine the UE$_X$ structure and, more broadly, the U.S. Army culture. These initiatives strengthen social networks, which in turn aids in cultivating and preserving trust. Additionally, the Army should improve mutual understanding through training, material solutions, leadership development, or personnel policy.

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CHAPTER ONE

INTRODUCTION

Following the collapse of the Soviet Union in 1989, the U.S. military struggled to change so it could more effectively contend with the ebb and flow of uncertainty of the global security environment. On September 11, 2001, terrorists attacked the United States, and in outlining America's response to the attacks the 2002 National Security Strategy (NSS) called for "transform[ing] America's national security institutions to meet the challenges and opportunities of the twenty-first century"; the 2002 NSS reinvigorated the decade-old U.S. Army transformation effort.[1] The Army leadership elected to concentrate the service's renewed transformation efforts on battle command for two reasons.[2] First, they regarded battle command as the bridge between the current force and the future force, and second, they viewed battle command as the essential operational capability fundamentally enabling the conduct of future joint operations.[3] The decision to concentrate on battle command as a means to transform the U.S. Army necessitates understanding how practices and concepts are merging and appreciating how they may shape Army operations in the future.

To focus the examination of changes to the US Army's practice of battle command this study considers three pillars that support the Army's battle command transformation efforts. The first pillar is the Army battle command doctrine of mission command, which dictates the decentralized execution of military operations through subordinate leaders' exercise of initiative

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[1] President of the United States, *National Security Strategy of the United States, September 2002* (Washington DC: U.S. Government Printing Office, September 2002), 1-2. Available from http://www.whitehouse.gov/nsc/nss.pdf.

[2] U.S. Department of the Army, *TRADOC PAM 525-3-0.1, The United States Army Objective Force Battle Command (C4ISR) Concept*, (Ft. Monroe, VA: U.S. Government Printing Office, March 5, 2003), 3. This study uses the definition of battle command proposed by *The United States Army Objective Force Battle Command (C4ISR) Concept*: "Battle Command is the art and science of applying leadership and decision making to achieve mission success."

[3] U.S. Department of the Army, *2003 Army Transformation Roadmap*, On-line document. (Washington DC: U.S. Department of the Army, November 1, 2003), XI. Available from http://www.army.mil/2003TransformationRoadmap/FwdAndExecSum.pdf

within the commander's intent.[4] The second pillar this study considers is the Unit of Employment$_X$ (UE$_X$), which is the primary tactical and operational war fighting headquarters for the Army's brigade-based force.[5] The Army's ongoing reorganization to a brigade-based force complements the practice of mission command because the restructured brigade combat teams possess the resources necessary to enable freedom of action within the scope of the UE$_X$ commander's intent. The final pillar this study considers is the emerging joint concept of network centric warfare (NCW), which posits that networking sensors, decision-makers, and weapons will increase combat power through shared awareness, increased speed of command, greater lethality and increased survivability.[6] The Army's conversion to a brigade-based force under the command of the UE$_X$ headquarters is an on-going initiative, but NCW remains an emerging concept.[7] This study contends that the Army's move to a brigade-based force coupled with policy changes and emerging warfighting concepts will improve UE$_X$ commanders' ability to exercise mission command. These improvements overshadow the tendency of commanders to rely on centralized command and control practices due to U.S. Army policies, UE$_X$ structural and conceptual limitations, and features of network centric warfare theory.

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[4] U.S. Department of the Army, FM 6-0, *Mission Command: Command and Control of Army Forces*, (Washington DC: US Government Printing Office, August 2003), 1-17.

[5] U.S. Department of the Army, *United of Employment Operations White Paper, version 3.5* (Ft. Leavenworth, KS: Combined Arms Doctrine Directorate, July 16, 2004), 74.

[6] David Alberts and others, *Network Centric Warfare: Developing and Leveraging Information Superiority*, (Washington DC: Department of Defense Command and Control Research Program, 1999), 2.

[7] Proponents of NCW point to a growing body of evidence that proves the validity of the concept's hypotheses. See: David Alberts and others, *Understanding Information Age Warfare*, (Washington DC: Department of Defense Command and Control Research Program, 2001), 239-284. This evidence underpins the requirement for U.S. forces to operate in a networked environment, which is articulated in four recently published Joint Operating Concepts. See: U.S. Strategic Command, *Strategic Deterrence Joint Operating Concept* (Offutt AFB, NE: Strategic Command, February 2004), 26; U.S. Joint Forces Command, *Major Combat Operations Joint Operating Concept*, (Norfolk, VA: Joint Forces Command, September, 2004), 11; U.S. Northern Command, *Department of Defense Homeland Security Joint Operating Concept*, (Peterson AFB, CO: Northern Command, February 2004), 5; U.S. Joint Forces Command, *Stability Operations Joint Operating Concept*, (Norfolk, VA: Joint Forces Command, September, 2004), 34.

History shows that the U.S. Army can fight and defeat its opponents using centralized command concepts. However, the challenges of the contemporary operating environment place a premium on the abilities of subordinate commanders to act independently and more quickly than their opponents act. Mission command provides a foundation for freedom of action, network centric warfare provides a framework for rapid decision-making, and the UE_X headquarters and its modular brigade combat teams provide commanders with the organizational structure and resources to translate accelerated, low-level decision making into action. To retain these advantages, commanders must remain aware of the impediments to mission command, which can come from U.S. Army culture and policies, UE_X structure and employment concepts, and the concept of network centric warfare.

Organization, Methodology, and Criteria

Organization

This study consists of three sections. The first section examines the roots of U.S. Army mission command doctrine, which arose from nineteenth and early twentieth century Prussian and German decentralized command approaches. These Prussian and German decentralized command approaches were the antecedents of U.S. Army decentralized command doctrine and ultimately, mission command doctrine. The second section of this study explains how the UE_X, which is the warfighting headquarters for the U.S. Army's emerging brigade-based force, enables the practice of mission command doctrine. The third section of the study defines the concept of NCW and evaluates how NCW will shape the UE_X's practice of mission command.

Methodology

The first section of this study explains how the Prussian Army's implementation of training, organizational, and doctrinal reforms in the early nineteenth century enabled their development of a decentralized command approach. Helmuth von Moltke and Hans von Seeckt

built on this foundation and refined decentralized command approaches to surmount the command and control challenges of late nineteenth century and early twentieth century battlefields, respectively. Inexperienced at producing doctrine, the U.S. Army lifted entire phrases out of the German Army's 1936 edition of *Truppenfuhrung* – Leadership of Troops – when it published its first decentralized command doctrine in the 1941 edition of FM 100-5 – Operations.[8] Analyzing U.S. Army decentralized command and control doctrines published in World War Two and in the late Twentieth Century against organizational, training, and personnel policies provides explanations for differences between the American practice of decentralized command and the German Army's practice of *Auftragstaktik.*[9] Finally, this study examines mission command doctrine, described in FM 6-0, Mission Command: Command and Control of Army Forces, to determine if it enables decentralized command and control.

The second section of this study explains the role of the UE_X and details the reasons for the objective force transformation. A survey of changes to doctrine, organization, training, material, leadership, and personnel policies shows how these improve trust and mutual understanding, which enable decentralized command. In contrast, other changes to U.S. Army force structure and doctrine may diminish trust and mutual understanding. Evaluating the aggregate of these changes shows how the UE_X enables mission command better than the division-based force by fostering trust and enhancing mutual understanding.

The third section defines network centric warfare (NCW) and explains the impetus for its development. It evaluates the usefulness of NCW by forecasting how it interacts with mission

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[8] Martin van Creveld, *Fighting Power: German and U.S. Army Performance, 1939-1945*, (Westport, CT: Greenwood Press, 1982), 38.

[9] *Auftragstaktik* was a term coined at the end of the Second World War to describe the German command arrangement used in varying forms by the Germans, and their predecessors the Prussians, since the early nineteenth century. Richard Simpkin states that, "[c]ommand is based on task (*Auftrag*) and situation. The task lays down the aims to be achieved, which the commander charged with achieving it must keep in the forefront of his mind. Task and situation give rise to mission….The mission must be a clearly defined aim to be pursued with all one's powers. …The commander must leave his subordinates freedom of action, to the extent that doing so does not imperil his intention". From Richard E. Simpkin,

command. The study next addresses how NCW will affect the UE_X's practice of mission command.

Criteria

Criterion for analysis is interpersonal trust and mutual understanding, which the historical analysis will show are enduring features of the forerunners of mission command as well as the two doctrinal enablers of mission command doctrine. Interpersonal trust, hereafter referred to as trust, is a person's assumption about the reliability of others, which is an evaluation of their consistency based on observation.[10] Consistency, which consists of foretelling the outcome of future transactions based on understanding of behavior patterns, and not honesty is the key factor in evaluating interpersonal trust.[11] Mutual understanding defined as 'complete knowledge shared in common among individuals'.

Recent experience with operations in Iraq and Afghanistan highlight the challenges of contemporary warfare. The Army's mission command doctrine, which enables rapid decision-making, makes it possible for commanders to make decisions faster than their adversaries do. Similarly, the UE_X headquarters and its modular brigade combat teams provide commanders with the organizational structure and resources to translate the rapid decision making of mission command into rapid action. However, network centric warfare can alternately enhance or undermine these advantages because its character may reinforce extant U.S. Army practices and some aspects of UE_X transformation, thereby impeding the UE_X's ability to exercise mission command.

Race to the Swift: Thoughts on Twenty-First Century Warfare (London: Brassey's Defence Publishers, 1985), 228.

[10] *Longman Dictionary of Psychology and Psychiatry*, ed Robert M. Goldenson, (New York: Longman Inc., 1984), 630

[11] Consistency is synonymous with predictability. *Longman Dictionary of Psychology and Psychiatry*, 388, 576.

CHAPTER TWO

THE FIRST PILLAR: MISSION COMMAND

FM 6-0, Mission Command: Command and Control of Army Forces, defines mission command as "the conduct of military operations through decentralized execution based on mission orders for effective mission accomplishment. Successful mission command results from subordinate leaders at all echelons exercising disciplined initiative within the commander's intent to accomplish missions". Additionally, FM 6-0 notes that mission command requires trust and mutual understanding. [12]

FM 6-0 does not address adequately what steps leaders should take to foster the trust and mutual understanding necessary for practicing mission command.[13] This shortfall underscores the point that historically the U.S. Army has not emphasized the underlying prerequisites for using decentralized command doctrines. The Army's focus on creating a decentralized command arrangement predominantly through doctrinal promulgation stands in sharp contrast to the historical record, where the Prussian and German Armies' experiences in developing decentralized command arrangements illustrate the importance of training, organizational, and social components in fostering trust and mutual understanding.

Prussian and German Decentralized Battle Command

After the French defeat of the Prussian army in 1806, the Prussian Army leadership initiated training, organizational, and doctrinal reforms that produced a decentralized command approach. The first reform called for formal education to hone the intellect of Prussian officers, which enhanced mutual understanding among Prussian, and later German, General Staff

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[12] FM 6-0, *Mission Command: Command and Control of Army Forces.*

[13] FM 6-0, *Mission Command: Command and Control of Army Forces.* Measures recommended by FM 6-0 for forming trust and mutual understanding are limited to the following: training (6-17); factors that can act against the formation of trust such as personal turbulence, operational pace, and budgetary

officers.[14] However, as the reformers pushed through their measures, more conservative officers maintained that character, not education, was the essential attribute for Prussian officers. Thus, even as the Prussians moved into the Industrial Age the vestiges of aristocratic values remained entrenched in their army, and this cultural homogeneity fostered trust within the officer corps.[15] The second reform established the *Generalstabsdientweg* – the General Staff channel. The Prussian Army assigned its General Staff officers to field commands to serve as chiefs of staff. This promoted mutual understanding by providing doctrinal uniformity in an army that drew most of its senior commanders from the nobility, who collectively were military amateurs. Additionally, the measure fostered trust between commanders and their chiefs of staff, who shared equal responsibility for all command decisions.[16]

Establishing a military education system and the General Staff Channel, coupled with the uniform culture of the Prussian Army officer corps, set the conditions for the Prussians to implement the third reform, which established the practice of *Vollmacht* - command by directive. *Vollmacht*, which codified the ideas underlying Napoleon's decentralized command approach, encouraged initiative within boundaries established by the commander.[17]

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restrictions (5-8); and the foundations of trust – personal example, competence, integrity, shared experiences, and time (2-10).

[14] Martin Van Creveld, *The Training of Officers: From Military Professionalism to Irrelevance* (New York: The Free Press, 1990), 26-27. Evidence from the crisis resolution field shows education promotes mutual understanding. From: Alan Smith and Alan Robinson, *Education for Mutual Understanding: The Initial Statutory Years*, (Coleraine, IR: University of Ulster Press, 1996), 1-2. Also available from: http://cain.ulst.ac.uk/csc/reports/mutual.htm#preface

[15] For details on the character of the Prussian officer corps see: Geoffrey Megargee, *Inside Hitler's High Command* (Lawrence, KS: University Press of Kansas, 2000), 6. Also see: David Fraser, *Knight's Cross: A life of Field Marshal Erwin Rommel* (New York: Harper Collins, 1994), 10-11. For the importance of cultural homogeneity and its impact on the formation of trust, see: Amy C. Edmondson, *Psychological Safety, Trust, and Learning in Organizations: A Group-Level Lens* (Boston, MA: Harvard Business School, 5 May 2003), 26. Also available from: http://www.hbs.edu/units/tom/faculty_files/edmondson_trust-new_pap.pdf. Also see: Edward L. Glaeser and others, *What is Social Capital? The Determinants of Trust and Trustworthiness*, (Cambridge, MA: National Bureau of Economic Research, 1999), 33.

[16] For commentary on how the General Staff Channel promoted mutual understanding, see: Megargee, 8-9. To understand how the dynamics of the General Staff Channel promoted trust see: Herbert Rosinski, *The German Army* (New York: Paraeger, 1966), 107.

[17] From Megargee, 8 –10.

By the mid-nineteenth century, the fruits of the Industrial Revolution found their way onto the battlefield as two unrelated technological trends overlapped: the railroad system and the rifle.[18] The larger armies used railroads to deploy and telegraphs to synchronize mobilization, and the use of telegraphs drove the trend of command and control towards centralization.[19] In contrast, the development of rifled firearms led to soldiers to disperse across the battlefield, resulting in less control at the tactical level.[20] The tension between centralized control for deployment and decentralized command on the battlefield overwhelmed the extant command practices of the European armies.

During the Wars of German Unification – 1866 and 1870 – Prussian Field Marshall Helmuth von Moltke (the Elder) responded to these challenges in three ways. First, von Moltke continued the established Prussian practice of assigning General Staff officers to postings as regimental staff officers throughout Prussian Army.[21] The General Staff officers' education gave them a common viewpoint, which cultivated widespread mutual understanding. Their shared experiences, which nurtured trust and mutual understanding, produced a group better characterized as a gathering of friends than a rigid hierarchy.[22] Second, von Moltke used the telegraph to build a daily picture of the disposition of German forces, to provide his subordinate operational commanders with a general concept of operations, and to ensure that the tactical actions contributed to the success of the campaign.[23] Having established a framework that promoted mutual understanding and trust, von Moltke relied on the established practice of

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[18] Martin Van Creveld, *Command in War* (Cambridge, MA: Harvard University Press. 1985), 105-107.

[19] The German General Staff, trans. F.C.H. Clark, *The Franco-German War, 1870-71,* Second Part, Third Volume, (Nashville, TN: The Battery Press, 1996), 179-187.

[20] In 1873 Austrian major, William von Scherff wrote The New Tactics of Infantry. In the book, von Scherff noted that the combatants of the Franco-Prussian War (1870-71) were more dispersed than combatants as late as the French Wars. Quoted in: James J. Schneider, *Vulcan's Anvil: The American Civil War and the Foundations of Operational Art*, (Ft Leavenworth, KS: School for Advanced Military Studies, May 10, 2004), 5.

[21] Michael Howard, *The Franco Prussian War* (New York: Routledge, 2001), 24-25.

[22] Van Creveld, *Command in War*, 141-142.

Vollmacht. He trusted subordinate commanders to make tactical decisions because he understood that he could do little to influence the tactical engagements.[24]

The German Army's experience with *Auftragstaktik* echoes the Prussian experience with *Vollmacht* – the trust and mutual understanding that are necessary for decentralized command and control are only possible if the underlying social structures are present. A year after the Germans signed the peace treaty General Hans von Seeckt took his place as the first chief of the general staff of the *Reichswehr*.[25] Von Seeckt used his position to fill the ranks of the new army's much smaller officer corps with the body of the old German Army General Staff.[26] This decision had two effects: First, it created a very uniform culture, which bolstered trust within the ranks of the new army.[27] Second, the decision ensured that officers' educational backgrounds and experiences were similar, which established a high level of mutual understanding in the German Army.

One of the first challenges facing the Reichswehr was examining the lessons of the First World War.[28] Five years of self-examination across fifty-seven areas of inquiry resulted in German Army Regulation 487, which emphasized decentralized operations, with officers and non-commissioned officers applying their judgment and using their initiative in an offensive, maneuver oriented framework.[29] Regulation 487 laid the groundwork for the 1936 publication of *Truppenfuhrung*, which translates as 'Leadership of Troops'. *Truppenfuhrung* formally introduced the German's mission-oriented command doctrine.[30] *Truppenfuhrung* laid the

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[23] Shimon Naveh, *In Pursuit of Military Excellence: The Evolution of Operational Theory*, (Portland, OR: Frank Cass Publishers, 1997), 58-59.

[24] Van Creveld, *Command in War*, 144.

[25] The *Reichswehr* is the name for the German Army following the First World War. Adolph Hitler rebranded the *Reichswehr* as the *Wehrmacht* in 1936.

[26] Williamson Murray and Allan R. Millett, *Military Innovation in the Interwar Period*, (New York: Cambridge University Press, 1998), 35-36.

[27] The *Reichswehr* officer culture was based on Prussian aristocratic values. From: Megargee, 6.

[28] Murray and Millett, 37.

[29] Ibid, 36-38.

[30] Van Creveld, *Fighting Power*, 36-37.

foundation for the German development of *Auftragstaktik*, which was the name coined at the end of the Second World War for the Germans' mission-oriented command practice.

The U.S. Army and Decentralized Battle Command Doctrine

The U.S. Army published its first decentralized command doctrine in the 1941 version of FM 100-5 (Operations), to provide doctrinal guidance for a force that had increased its ranks eight-fold through mobilization, and prepare the Army for the possibility of participating in the wars that were raging in Europe and the Pacific.[31] Without previous experience at formalizing battle command doctrine, the authors of FM 100-5 drew heavily from *Truppenfuhrung*, lifting entire passages from the German text.[32]

However, the *Reichswehr's* conception of war was different from the U.S. Army's conception of war. Thus, even though FM 100-5 stated, "simple and direct plans" and "initiative" allows the commander to impose his "will on the enemy" and "achieve decisive success" it failed to capture the essence of *Truppenfuhrung*.[33] The differences between *Truppenfuhrung's* decentralized command doctrine and FM 100-5's decentralized command doctrine reflect the U.S. Army's lack of familiarity with fostering a culture that enabled trust and mutual understanding, and its fixation on mechanistic, centralized procedures.[34]

Three key U.S. Army policies of the Second World War discouraged the practice of decentralized command doctrine and were emblematic of these centralized procedures. First, American fascination with Taylorism, an early Twentieth century management model, led the U.S. Army to adopt an individual replacement system in 1912.[35] The U.S. Army's individual

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[31] U.S. Department of War, FM 100-5, *Field Service Regulations: Operation*, (Washington DC: U.S. Department of War, 1941), 1. Reprint, Ft. Leavenworth, KS: Combat Studies Institute, 1992. Also available from http://cgsc.leavenworth.army.mil/carl/download/csipubs/fm100_5/toc.pdf

[32] Van Creveld, *Fighting Power*, 32.

[33] U.S. Department of War, 22.

[34] Van Creveld, *Fighting Power*, 33, 37.

[35] Donald E. Vandergriff, *The Path to Victory: America's Army and the Revolution in Human Affairs*, (San Martin, CA: Presidio Press, 2002), 87, 92, 98-100, 147, 159. Also see: John McCain and

replacement system diminished the effectiveness of units because it inhibited the formation of trust between Soldiers.[36] Second, the U.S. Army training model hindered the formation of trust and mutual understanding between Soldiers engaged in combat and newly received replacements because it did not tie training units to parent units, which contrasts with the German Army's training model where training units and combat units frequently exchanged cadres.[37] Third, Army doctrine – written for a conscript force – was prescriptive and focused on technical solutions.[38]

The U.S. Army's second example of decentralized command doctrine emerged in the 1980s, fueled by concerns that electronic warfare attacks could isolate U.S. Army units as they battled Warsaw Pact forces in Western Europe. General Donn Starry, commander of the U.S. Army Training and Doctrine Command, concluded that the World War Two German doctrine of mission-order tactics would provide isolated Army troops with direction while ensuring that their efforts continued to contribute to the higher commander's mission.[39]

The result was Airland Battle doctrine, articulated in the 1982 version of FM 100-5. The decentralized command approach underpinning Airland Battle doctrine emphasized exercising initiative within the context of the higher commander's intent.[40] In 1986, the updated FM 100-5 stressed minimizing control and using mission orders – American Army doctrine's first use of the term – to dictate what must be done without prescribing how to do it.[41]

However, throughout the next two decades four factors discouraged the widespread practice of decentralized command doctrine in the U.S. Army. First, FM 100-5 focused on

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others. *Odysseus in America: Combat Trauma and the Trials of Homecoming*, (New York: Scribner, 2002), 211, 221, 219, 291n, 226-228.

[36] Vandergriff, 56-57.

[37] Van Creveld, *Fighting Power*, 72-74.

[38] Vandergriff, 63, 291n. Van Creveld, *Fighting Power*, 38-40.

[39] John L. Romjue, "The Evolution of the Airland Battle Concept", *Air University Review*, (May-June 1984), 11.

[40] U.S. Department of the Army, FM 100-5, *Operations* (Washington DC: U.S. Government Printing Office, 1982), 7-3.

structure and content and did not discuss trust, commanders' intimate knowledge of subordinates, social norms, or expectations, thereby diluting the wholeness of the concept of *Auftragstaktik*.[42] Second, the individual replacement system continued to undermine cohesion between Soldiers, and as a result, it diminished unit performance. Third, throughout the 1980s and into the early 1990s Army training and education did not stress the principle of decentralized command.[43] Fourth, Army senior leaders in the 1980s and 1990s, who matured and thrived in a centralized command climate of the 1970s, were reluctant to embrace decentralized command doctrine.[44]

Consequently, from the early 1980s through the 1990s, commanders' practice of Army decentralized command doctrine varied. Unit performance during training rotations at the National Training Center (NTC) at Ft. Irwin, California demonstrated an inconsistent mastery of decentralized command doctrine.[45] In a study conducted with four active-duty U.S. Army maneuver battalions in 1999, researchers concluded that subordinate commanders understood the higher commanders' intent only 34% of the time.[46] U.S. Army unit performance and routines during combat operations and military operations other than war reflected the Army's poor collective understanding of the dynamics of decentralized command arrangements and illustrated frequent use of centralized command practices. [47]

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[41] U.S. Department of the Army, FM 100-5, *Operations* (Washington DC: U.S. Government Printing Office, 1986), 21.

[42] Lawrence G. Shattuck, "Communicating Intent and Imparting Presence," *Military Review* (March-April, 2000), 67.

[43] Thomas M. Jordan, *Is Decentralized Command and Control of Tactical Maneuver Units a Myth or a Reality?* (Ft. Leavenworth, KS: School for Advanced Military Studies, 1991), 35.

[44]*The Theory and Practice of Maneuver Warfare: An Anthology* ed. William S. Lind, (Novato, CA: Presidio Press, 1997), 217. See also: Shattuck, 66.

[45] Michael A. Burton, *Command and Control: Is the U.S. Army's Current Problem With Decentralized Command and Control a Function of Doctrine or Training?"*, (Ft. Leavenworth, KS: School for Advanced Military Studies, 1986), 1.

[46] Shattuck, 68-69.

[47] *The Theory and Practice of Maneuver Warfare*, 4-8. Kenneth Allard, *Somalia Operations: Lessons Learned*, on-Line document, (Institute for National Strategic Studies, January 1995), available at: http://www.au.af.mil/au/awc/awcgate/ndu/allard_somalia/allardch2.html. Accessed 6 December 2004. Also see: Han Bouwmeester, "*Command and Control Styles: A Comparison between the German and Dutch Army and the Big So What Nowadays*," (Ft. Leavenworth, KS: U.S. Army Command and General Staff College, November 12, 2003), 7.

The U.S. Army and Mission Command Doctrine

The post-Cold War era introduced major military-strategic change for the U.S. Army, and this drove extensive revisions of its doctrine. By the late 1990s, the Army faced many challenges to its extant command and control doctrine, which included peace operations, information operations, and digitization of U.S. military forces. In August 2003, the Army published FM 6-0, Mission Command: Command and Control of Army Forces to address these challenges. The manual has three primary purposes. First, it establishes mission command as the preferred concept of command and control for Army forces. Second, FM 6-0 lays a foundation for integrating command and control doctrine and procedures in all Army publications. Third, it helps Soldiers understand new concepts like digitization, information management, and information superiority and how they related to command and control.[48]

Unlike previous U.S. Army command doctrines, FM 6-0 recognizes two theoretical extremes of the command and control spectrum: detailed command and mission command. Detailed command "stems from the belief that success on the battlefield comes from imposing order and certainty on the battlefield. A commander who practices detailed command seeks to accomplish this by creating a powerful, efficient C2 system able to process huge amounts of information, and by attempting to reduce all unknowns to certainty".[49] In contrast, mission command emphasizes, "decentralized execution based on mission orders for effective mission accomplishment. Successful mission command results from subordinate leaders at all echelons exercising disciplined initiative within the commander's intent to accomplish missions".[50]

Recognition of factors that affect the formation of trust and mutual understanding in the practice of decentralized command, coupled with changes to U.S. Army personnel policy, distinguish the publication of mission command doctrine from the U.S. Army's earlier efforts to

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[48] FM 6-0, *Mission Command: Command and Control of Army Forces*, 1-15, 1-16.
[49] FM 6-0,*Mission Command: Command and Control of Army Forces*, 1-14 – 1-21.
[50] *FM 6-0, Mission Command: Command and Control of Army Forces*, 1-17.

implement the practice of decentralized command exclusively through the promulgation of doctrine. First, FM 6-0 discusses the importance of trust and mutual understanding to the practice of mission command. The publication also addresses the impact of time, training, and leadership skills on the formation of trust and mutual understanding, albeit in a cursory manner.

Second, unit-focused stability, which is a change to how the Army assigns soldiers to combat units, enables mission command by reducing personnel turbulence in units, which promotes trust and cohesion.[51] Unit-focused stability has two components: lifecycle management and cyclic management. Lifecycle management, which started in October 2003, synchronizes Soldiers' tours with maneuver brigade combat teams' 36-month operational cycles. By giving Soldiers more time with each other they develop stronger informal ties, which increases cohesion and enhances trust.[52] Additionally, commanders, and not personnel assignment managers, control personnel assignments within their units, which promotes trust. Finally, if units experience significant attrition, commanders receive "package" replacements of soldiers, and not individual replacements. Cyclic management is the proposed manning cycle for the support brigades – aviation, reconnaissance, maneuver enhancement, fires, and support – and the Units of Employment. This manning strategy focuses unit arrivals and departures to 1-2 months of a 12-month cycle, "normalizing" the training cycle for units. Cyclic manning enhances the continuity of operations and improves the quality of support to maneuver brigade combat teams.

FM 6-0 emphasizes that the U.S. Army's preferred command and control concept is mission command, but notes that the nature of the environment or task, the qualities of subordinate leaders, and the nature and capabilities of the enemy will dictate that commanders

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[51] Other U.S. Army personnel changes include the senior Army workforce (SAW) initiative and force stabilization.

[52] Frederick Wong, *A Formula for Building Cohesion*, On-line (Carlisle, PA: U.S. Army War College, 1985), 1. Also available from http://handle.dtic.mil/100.2/ADA158031 Also see: Jonathan Shay, *Trust Study, Final report, Appendix E: Cohesion*, on-line document, (United States Marine Corps, available at: http://www.belisarius.com/modern_business_strategy/shay/cohesion.pdf Accessed on December 7, 2004.

include detailed command measures into their practice of battle command.[53] In spite of its published doctrinal preference and corresponding changes to personnel policy, U.S. Army command practice continues to follow historical precedent as it continues to lean towards detailed command, regardless of the environment, task, or quality of subordinate leaders. The U.S. Army Training and Leadership Development Panel concluded that detailed command is persistent, even in the non-threatening environment of training exercises.[54] This observation carries over into the operational environment, where Army division headquarters in Iraq publish 'playbooks' that dictate how subordinate units should respond to routine events, despite the fact that the majority of ground force operations are conducted at the company-level or lower.[55] While these play books may accelerate subordinate leaders' responses in well-understood situations, they may discourage innovation in novel situations.[56]

Several factors contribute to the continued bias towards directive command in the Army. First, commanders tend to manage training from the top down, primarily due to resource constraints – most notably time. This reinforces junior officer perceptions that micromanagement is pervasive.[57] Second, the Training and Leadership Development Panel noted that there is less frequent contact between seniors and their subordinates, primarily during training events.[58] FM 6-0 emphasizes the importance of shared experiences in forming mutual understanding and trust,

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[53] FM 6-0,*Mission Command: Command and Control of Army Forces,* viii-xiii.

[54] U.S. Department of the Army, *Executive Summary of the Army Training and Leadership Development Panel*, (Washington DC: U.S. Department of the Army, 2001), OS-2.

[55] S. David Nichols, Center for Army Lessons Learned, to Jeff Hannon, School for Advanced Military Studies, December 13, 2004. Email in the hand of Jeff Hannon. "The first playbooks were published by 1st ID and 4th ID back in the summer of 2003. Other units liked them and soon followed suit. The idea was to capture in flow chart form how units would respond to routine events."

[56] In *Command in War* Martin van Creveld observes that the "virtues of formal communications systems – standardization, brevity, and precision – cannot be denied; those very virtues, however, also make such systems more subject to interruption and less flexible as a vehicle for original ideas than their unchanneled, redundant, and imprecise informal counterparts." The American divisional playbooks represent are a variation of the formal communications channel that van Creveld is describing. *Command in War*, 273.

[57] U.S. Department of the Army, *Executive Summary of the Army Training and Leadership Development Panel,* OS-2, OS-10.

[58] Ibid, OS-2.

particularly during training. The Training and Leadership Development Panel report states that these shared experiences are frequently missing, and when the shared experiences are present they are often marked by senior officers who are more directive in their leadership (micromanagement), thus explaining the seeming disconnect between more infrequent contact and micromanagement.[59] The impact of this trend is a failure to promote cohesion and inhibited trust. Third, despite the implementation of unit-focused stability, the remnant of the individual replacement system and mismatches between the lifecycles for maneuver brigade combat teams and their support elements continues to create turbulence in units, albeit at a reduced level. Nonetheless, when coupled with expectations for high achievement, unit turbulence frequently encourages senior officers to be directive in their leadership approach. [60] Collectively, these observations and trends have led many U.S. Army officers to perceive that micromanagement has become part of the Army culture, and the result is that diminished trust among the Army's Soldiers. One consequence of the U.S. Army leadership's failure to foster trust is a diminished capacity for exercising mission command.[61]

Summary

The Prussian and German armies' development of *Vollmacht* and *Auftragstaktik*, respectively, "was not a set of procedures, but a philosophy, a social norm."[62] In contrast, the U.S. Army's methods for implementing decentralized battle command approaches focused on promulgating doctrine and did not emphasize the cultural and institutional factors that foster the necessary trust and the mutual understanding for decentralized command arrangements. In spite of the limitations of its command and control practices, the U.S. Army has delivered many battlefield successes. However, the accelerated tempo of contemporary operations dictates a

[59] Ibid, OS-9.
[60] Ibid.
[61] Ibid.
[62] J.L. Silva, "Auftragstaktik," *Infantry* (September-October, 1989), 6-9.

greater reliance on the initiative of subordinates. The publication of FM 6-0, complemented by unit-focused stability, enables the practice of decentralized command, but in spite of its published doctrinal preference for mission command, U.S. Army command practice continues to lean towards detailed command, regardless of the environment, task, or quality of subordinate leaders. The UE_X structure and the underlying operational concepts may enable the practice of mission command through distributed resources and operational concepts.

CHAPTER THREE

THE SECOND PILLAR: THE UNIT OF EMPLOYMENT$_X$

The Unit of Employment$_X$ (UE_X) is the Army's primary tactical and operational war fighting headquarters. It is a modular, command and control headquarters intended to operate across the spectrum of conflict.[63] It is part of a larger restructuring process that is converting the Army from a division-based force to a brigade-based force. This initiative is taking place because of four reasons.

First, the increased lethality of the U.S. Army means that they can generate greater effects with smaller forces. To offset this, America's adversaries are dispersing. Therefore, there is a reduced probability that U.S. Army forces will face a large, conventional land force. Second, the dispersed enemy results in operations similar to Iraq, which are noncontiguous. This environment requires forces that are more self-reliant and a command and control system enabled by advanced capabilities. Third, with a reduced threat from large, conventional land forces the Army faces more small-scale contingencies and expeditionary problems. This requires Army forces that are more responsive and tailorable than legacy divisions. Fourth, the Army is enhancing its responsiveness by leveraging joint and coalition assets, which is possible down to

[63] *Unit of Employment Operational Concepts White Paper, version 3.5*, 74.

the tactical level; however, this arrangement requires a command and control structure capable of collaborating with sister services and the forces from other nations.[64]

For the UE_X, the shift to a brigade-based force means that it will have no fixed structure beyond its headquarters. It will control six basic types of brigade formations: maneuver brigade combat teams; aviation brigades; reconnaissance, surveillance, targeting, and acquisition (RSTA) brigades; maneuver enhancement brigades; fires brigades and sustainment brigades.[65]

UE_X Enhancements to Mission Command

Twelve factors in the conversion to the objective force enhance mission command. They cover doctrinal, organizational, training, material, leadership, personnel enhancements that improve the environment for mission command in three ways: they enhance trust, advance mutual understanding, or they are general improvements that allow the force to exploit mission command.

Four factors in the objective force conversion enhance trust, which is a key enabler of mission command. The most significant change affecting trust is unit-focused stability, which is a change to how the Army assigns soldiers to combat units.[66] By stabilizing unit personnel manning for 36-month operational cycles, soldiers have more time to develop cohesion, which enhances trust. The second factor that promotes trust is the continuation of U.S. Army mission command doctrine. Mission command emphasizes fixing decision thresholds at the lowest reasonable level, which encourages trust in subordinates. Third, the realignment of responsibilities detailed under the operational concept discourages micromanagement and necessitates a higher degree of collaborative planning between the UE_X and its subordinate units,

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[64] *Unit of Employment Operational Concepts White Paper, version 3.5, 14-15.*

[65] *Unit of Employment Operational Concepts White Paper, version 3.5*, 74. The maneuver brigade combat team is a standing combined arms formation intended to conduct close combat in offensive and defensive operations. The other five brigades perform supporting functions across the UEx AO.

[66] Other U.S. Army personnel changes include the senior Army workforce (SAW) initiative and force stabilization.

which facilitates the trust requisite for mission command. Formerly, division commanders envisioned operations in terms of battalions, and then issued orders to brigades assigned to command those battalions. This was "thinking two levels down." By contrast, the perspective of UE_X operations is different, requiring the commander to envision corps-scale operations, in terms of their scope. The commander envisions operations in term of brigades, which are now the subordinate echelon. Because there is no intervening echelon the commander's conveys his vision directly to the executing echelon. This works well only if the UE_X commander maintains perspective on the overall UE_X situation, and avoids directing the conduct of engagements.[67] Fourth, unit of employment concepts, which the Army will refine into doctrine, emphasize mission orders. The mission order concept, which emphasizes brevity, should not include the kind of detail that was present in old 100 page division orders.

Six factors improve mutual understanding in the UE_X restructuring. First, "Good Enough Battle Command" can enhance mutual understanding by providing more information without increasing reporting requirements.[68] "Good Enough Battle Command" originated with Army Chief of Staff General Peter Schoomaker's list of 17 focus areas, specifically the requirement to use the lessons learned from Afghanistan and Iraq to field 'good enough' networks to all Army combat forces.[69] Second, UE_X resources include the ability to field dedicated liaison teams.

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[67] *Unit of Employment Concepts White Paper*, version 3.5, 16-17.

[68] In Command In War Martin van Creveld's historical analysis of battle command produces five 'rules' for decentralized command systems. One of these is "the need for a regular reporting and information-transmission system working both from the top down and from the bottom up." (270). Van Creveld cautions that the "number and extent of the routine reports demanded from subordinate headquarters should be limited to the indispensable minimum and be framed in such a way as to appear relevant to those headquarters' own needs." (272) Automated Army Battle Command System (ABCS) like Blue Force Tracker fulfill van Creveld's reporting requirement across the force without tying leaders to their radios or computers. From: Van Creveld, 270-272.

[69] The "Good Enough Battle Command" system contrasts with the Army's previous battle command plan, which called for fielding a premium Army Battle Command System (ABCS) to two heavy divisions and one heavy cavalry regiment only. The "Good Enough" approach also calls for a much more rapid fielding of digital command and control capability: the goal is to field the system so that all units having some form of digital command and control capability within two years, and all Army units possessing a standardized version by the end of 2007. See: Patrick Chisholm, "'Good Enough' Battle

These teams can enable mutual understanding by serving as directed telescopes for the UE_X commander. Third, the UEX command group exercises battle command on the move, a capability that allows the commander to supplement his understanding of the situation by moving to key areas on the battlefield without the disadvantage of losing connectivity with his staff. As he refines his understanding of the situation, the commander can update the staff, which enhances mutual understanding between the subordinate brigades and the UE_X headquarters. Fourth, with the strengthened social ties afforded by unit-focused stability, Soldiers strengthen their informal communications, which promotes mutual understanding. Fifth, emerging unit of employment concepts, which the Army will mature into doctrine, highlight the importance of brigade commanders maintaining mutual understanding so that they can anticipate each other's support without the constant input of the UE_X headquarters. When the UE_X commander directs supported and supporting command relationships, the supporting brigade provides full support without waiting for strings of detailed fragmentary orders from the UE_X. This also holds true for functional and multi-functional brigades accomplish missions based on the UE_X commander's intent.[70] Sixth, the emphasis on mission orders means that the operations order and its supporting annexes can no longer be the mechanism to detail the situation. The common operational picture (COP), formed by the elements of the 'good enough battle command' system, becomes the mechanism for building mutual understanding.

Two factors that improve the UE_X's ability to exploit mission command include unit modularity, which converts the maneuver brigade combat teams into self-contained fighting units, and enhanced joint integration. Previously, under the division-based structure, subordinate brigade commanders found their freedom of action diminished because they relied on the division to parcel out scarce resources that were critical to mission success. Examples include military

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Command," *Military Information Technology Online Edition*, on-line reference (August 17, 2004) Available at: http://www.mit-kmi.com/archive_article.cfm?DocID=576 Accessed December 16, 2004.

[70] *Unit of Employment Operational Concepts White Paper, version 3.5*, 17.

police, chemical, reconnaissance, logistical, and signal units. The scarcity of these assets and others often necessitated the division's control, which frequently injected a level of detailed command into an otherwise dynamic form of battle command. The distribution of many of these capabilities to the maneuver brigade combat teams as part of the U.S. Army's move to a brigade-based force diminishes the need for the division to exercise detailed command and is a historical hallmark of armies that have practiced decentralized command.[71] The concept of self-contained units extends to the maneuver brigade combat teams' ability to leverage joint integration with reduced coordination with higher echelons.

UE_X Impediments to Mission Command

Seven factors in the conversion to the objective force complicate the use of mission command. They cover doctrinal, organizational, training, material, leadership, personnel and facility changes that disrupt the environment for mission command. Analysis of these factors is broken into two categories: factors that diminish trust and factors that confound mutual understanding.

Six factors can diminish the trust between the UE_X and its subordinate units, which reduces the ability for U.S. Army forces to exercise mission command. First, the UE_X and its subordinate units appear to be resourced for control, not mission command, which encourages detailed command, where decision thresholds remain elevated.[72] Second, some key enablers

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[71] "[O]rganizations that make such low-decision thresholds possible [provide] self-contained units at fairly low level." This is the second of Martin van Creveld's 'rules' for decentralized command systems. From: Van Creveld, *Command in War*, 270.

[72] *Without* its life support and other organic enablers, the UE_X headquarters numbers 487 personnel. While the scope of UE_X operations is larger than division operations, a battalion's-worth of personnel whose sole purpose is to enable the commander's command and control appears to be excessive. From: U.S. Department of the Army, *UEx TOE version 7.2*, dated November 8, 2004, on-line document. Available at: https://call2.army.mil/transformation/modular_conversion/documents/UEx/UEx114_files/ Accessed December 8, 2004. By contrast, von Moltke's General Staff, which controlled almost a half million troops arrayed at distances exceeding 200 miles during the Franco-Prussian War, numbered a mere 135 officers. Additionally, the limited observations regarding command and control drawn from initial insights memoranda from the first maneuver brigade combat teams' (formerly units of action) rotations at the National Training Center suggest that the uniform answer to command and control shortfalls is to add

remain scarce even after divisions convert to the UE_X structure, and therefore these assets may stay under UE_X control. Examples include joint fires, engineer assets, human intelligence assets, and various logistical resources. As noted in the discussion regarding modularity, the control of scarce assets creates the potential for a degree of detailed control, which diminishes trust and opposes the advantages afforded by the modularity initiative. To preserve the dynamics created by the mission command doctrine, UE_X commanders should know what scarce assets they control and find ways to prevent tying the maneuver brigade combat teams' mission accomplishment to these enablers.

Third, unless the UE_X commander carefully trains, mans, and resources his 'directed telescopes' – the liaison teams and other trusted agents – their role could be disruptive to the subordinate units. Fourth, the vestigial stove pipes created in the "Good Enough Battle Command" initiative could result in increased reporting requirements since the Army continues to use 11 different ABCS systems that are not fully integrated. This over reporting because of the inefficiencies of the extant digital battle command system tends to diminish trust.[73] The challenge for the UE_X commander is to understand where these breaks in the digital battle command system are and to instruct his staff to cross-level information or alternately discern what reporting is critical to the success of the UE_X and subordinate brigades. Fifth, the Mobile Command Group use of 'battle command on the move' suggests the potential for the UE_X commander to micromanage his subordinates' operations by roaming the battlefield, either in person or virtually through the network. FM 6-0 notes that this ability to 'reach down and control the actions of any individual soldier at any time' misuses technology, which can diminish trust. The challenge for the UE_X commander is to avoid this trap and to use 'battle command on the move' to aid in understanding his subordinates' situation more quickly and in more detail, which

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more leaders or staff officers. From: U.S. Department of the Army, Task Force Modularity, *Task Force Modularity Initial Insights Memorandum, National Training Center Rotation 04-05*, (Ft Leavenworth, KS: TRADOC Analysis Center, April 29, 2004), 10.

in turn permits him to refine his visualization of the operation and take advantage of unanticipated opportunities.[74]

Sixth, Unit of Employment operating concepts break the long-established relationships between division headquarters and their subordinate brigades. Emerging Unit of Employment concepts state that readiness cycles and not functional or geographic considerations – e.g. airborne brigades were aligned with airborne divisions, and all brigades residing on a post answered to a common division headquarters – are the primary determinant for maneuver brigade combat teams' command relationships with higher headquarters for training, readiness and leader development. The focus on readiness cycles creates a 'force pool' for the higher headquarters, and though the brigades are available for employment, they "will not all have the same employing (gaining) headquarters, nor will they necessarily have a habitual association with the employing headquarters."[75] Additionally, different life cycles between the maneuver brigade combat teams and the supporting elements, including the UE_X, is potentially disruptive as maneuver brigade combat team commanders find themselves working with three or more sets of staff officers and a similar number of support brigade commanders during their tenure. The result is that the UE_X commanders may have to use different tools than their division commander-predecessors did to form cohesion and foster trust in their units.

Finally, limitations with the current Army Battle Command System initiative – "Good Enough Battle Command" – may inhibit the formation of mutual understanding. The 11 ABCS systems retain many aspects of their stovepiped architecture, and this can potentially cloud the common operational picture, which may hinder mutual understanding. One example is the integration of the All Source Analysis System (ASAS) – the ABCS component that populates the common operating picture with assessments of enemy activities – into the "Good Enough Battle

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[73] Van Creveld, *Command in War*, 270-272.
[74] FM 6-0, *Mission Command: Command and Control of Army Forces*, 1-20.
[75] *Unit of Employment Operational Concepts White Paper, version 3.5*, 44-46.

Command" structure. The ASAS architecture is a top fed 'red COP' that responds to national level systems and fused intelligence from the higher to lower levels.[76] During Operation IRAQI FREEDOM, the top fed architecture of the 'red COP' often proved unable to meet the pace of military operations. Commanders frequently commented that they saw little value in the 'red COP', and instead relied on reporting from subordinates to build their intelligence pictures. This disjointed method of assessing enemy strength, locations, and future activities complicated efforts to develop an accurate theater-wide assessment of the threat situation.

Summary

Introduction of the brigade-based force and the UE_X headquarters enhances the Army's ability to practice mission command doctrine for two overarching reasons. First, the twelve factors covering changes to doctrinal, organizational, training, material, leadership, and personnel policies address many of the long-standing shortcomings that prevented the widespread use of decentralized command in the U.S. Army. These twelve changes enhance trust, advance mutual understanding, and decrease the need for the UE_X to use detailed command. Second, five of the seven factors that can diminish the trust and mutual understanding necessary for mission command are recognized and addressed in doctrine or the UE_X operating concept. This includes the challenges posed by the continued scarcity of key resources and how that prompts the practice of detailed command; the difficulty of training the UE_X commander's 'directed telescopes'; and the pitfalls posed by information systems and 'battle command on the move.' Lingering concerns include the size of the UE_X headquarters, which encourages the practice of detailed command, and the mismatch between the lifecycles between the maneuver brigade combat teams and the support elements, which diminish cohesion and ultimately trust. Therefore, the overall assessment is that the move to a brigade-based force, with the UE_X as the primary warfighting

[76] Chisholm.

headquarters, enables the U.S. Army's practice of mission command doctrine. As the UE_X participates in more joint operations, it will use Joint Operations Concepts, which incorporate network centric warfare as part of their foundation. Therefore, it is necessary to assess how NCW will affect the UE_X's ability to exploit mission command.

CHAPTER FOUR

THE THIRD PILLAR: NETWORK CENTRIC WARFARE

The command arrangements examined earlier in this study developed because of the exigencies of conflict. This pattern contrasts with the development of network centric warfare (NCW), which finds its roots in the American business sector. Proponents of NCW contend by applying models of changed technology and economics "[n]etwork-centric operations deliver to the U.S. military the same powerful dynamics as they produced in American business". [77] Because NCW is an emerging concept, the Department of Defense Dictionary does not include a formal definition, but texts published by the Department of Defense Command and Control Research Program (DoDCCRP) describe three distinguishing features of NCW.[78]

[77] Arthur K. Cebrowski and John J. Garstka, "Network-Centric Warfare: Its Origin and Future", *Naval Institute Proceedings*, (Newport, RI: 1998), 1. Also available online at: http://www.usni.org/Proceedings/Articles98/PROcebrowski.htm

[78] The DoD dictionary does not include a formal definition for the term "network centric warfare" nor does it list the acronym "NCW". The initial versions of all four Joint Operating Concepts (JOC) reference the characteristics and advantages networked operations, but do not provide a clear definition of the concept. The writings from the Department of Defense Command and Control Research Program provide the most lucid descriptions of the NCW concept. U.S. Department of Defense, Joint Staff, *Department of Defense Dictionary of Military and Associated Terms (JP 1-02)*, (Washington DC: Joint Staff Operational Plans and Joint Force Development Directorate (J-7), September 5, 2003). Also available online at: http://www.dtic.mil/doctrine/jel/doddict/acronym/n/index.html and http://www.dtic.mil/doctrine/jel/doddict/data/n/index.html. Also see: U.S. STRATCOM, *Strategic Deterrence Joint Operating Concept*; U.S. JFCOM, *Major Combat Operations Joint Operating Concept*; U.S. NORTHCOM, *Department of Defense Homeland Security Joint Operating Concept*; U.S. JFCOM, *Stability Operations Joint Operating Concept.*

Network Centric Warfare

First, decision makers, sensors and platforms are wired in a network that allows the decision makers to share, access, and protect information to establish and maintain an information advantage over the enemy. Second, shared information permits the force to develop high quality shared understanding and potentially to self-synchronize.[79] Third, proponents of NCW contend that a force with these three features will produce increased combat power by synchronizing effects, accelerating the speed of command, increasing lethality, survivability and responsiveness.[80]

Understanding network centric warfare also entails understanding its mental models. To describe the relationships between information and warfare, the Joint Staff Information Superiority Metrics Working Group developed a mental model that characterizes warfare in the context of three domains: physical, information, and cognitive.[81] The physical domain is where military operations take place: ground, sea, air, and space. The information domain is where information resides. People create, manipulate, and share information in this domain. The cognitive domain lies in the minds of the participants. It is where values, perceptions, and understanding exist. People make decisions in the cognitive domain. Finally, the cognitive domain is where armies win and lose battles and countries win and lose wars.[82]

NCW proponents contend that the concept applies to all levels of war, but that its most promising benefits emerge at the operational level.[83] Because the UE_X is the U.S. Army's primary higher tactical and operational warfighting headquarters, it will likely be the focus Army fielding initiatives supporting the NCW concept. The nature of NCW suggests that while it can

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[79] David Alberts and others, *Understanding Information Age Warfare*, 57-58. See also: David Alberts and others, *Network Centric Warfare: Developing and Leveraging Information Superiority*, 2.

[80] David Alberts and others, *Understanding Information Age Warfare*, 58.

[81] John Gartska, "Network Centric Warfare: A Description of Emerging Theory", *PHALANX: Bulletin of Military Operations Research*, (December, 2000), 5. Also available online at http://www.mors.org/publications/phalanx/dec00/dec00.htm

[82] David Alberts and others, *Understanding Information Age Warfare*, 10-14.

accelerate the pace of mutual understanding, the level of understanding is not as deep as its advocates suggest. Additionally, the networked environment provides commanders with means that are more varied and more frequent opportunities to interact with their subordinates, which can alternately bolster and hamper trust. Examining how NCW will affect the UE_X's practice of mission command highlights its possible advantages and limitations.

How Network Centric Warfare Affects Trust

Research gauging interactions between people in networked environments suggests that network centric warfare might diminish the trust between Soldiers, which is a key enabling factor in mission command. Diminished trust in a network centric environment can come from two sources: the character of the network environment, and from leaders who misuse the technology.

First, network environments hamper the formation of interpersonal trust for all participants in the network because they have limited means of ascertaining identity, and more importantly, personal reliability.[84] Because trust underpins the ability of a force to practice mission command, this suggests that a force employing network centric warfare might be less capable of practicing mission command than a non-networked force. However, the U.S. Army has extensive experience coping with the challenges of confirming identity and reliability in settings that parallel a network centric warfare environment.

As an example, when a forward observer conducts a call for fire, he uses a radio network to process the call for fire with the fire direction center. The Soldiers in the fire direction center may have never met the forward observer, but they can verify the identity of the forward observer by requesting that he authenticate the call for fire request. By relying on established procedures that capture the information required to process the call for fire, the forward observer in effect

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[83] Ibid, 58.

[84] Hans Geser, *Towards Cybersociety and 'Vireal' Social Relations*, on-line reference, (Sociological Institute of the University of Zurich, 2002), Available at: http://socio.ch/intcom/t_hgeser13.htm#4.7 Accessed December 9, 2004.

establishes his reliability with the Soldiers in the fire direction center. In this case, the authentication process and the standard call for fire procedures enhance the trust between the forward observer and the Soldiers in the fire direction center. The potential shortfall with this approach to processing a call for fire is that the Soldiers sacrifice speed if the personnel are not trained how to authenticate or how to request a call for fire using doctrinal procedures.

In a network centric environment standardizing user identification – in effect creating network 'call signs' – aids Soldiers in establishing the identity of other Soldiers. Soldiers verify identity through the rigorous application of information assurance principles, which ensures secure access to the network.[85] The use of standard doctrinal terms and standard operating procedures enhances reliability in a network centric environment. Much like the example of processing a call for fire, training is the key to using procedures to verify identity and to ensure reliability while retaining the advantage accelerated pace of operations afforded by network centric warfare environment. FM 6-0 notes that training is also a key enabler of trust.[86]

The second potential source for diminished trust in a networked environment comes from leaders who misuse the information systems technology. Leaders in a network centric environment must pay particular attention to their actions, because the ability to 'reach down and control the actions of an individual soldier' diminishes trust.[87] For example, decisions are made and executed quickly because flattened hierarchies that are inherent in networked environments and network centric warfare emphasize speed of command. Decisions made more quickly may result in more mistakes, some of which could have strategic consequences.[88] When subordinates'

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[85] Carnegie-Mellon Software Engineering Institute, on-line reference (Carnegie-Mellon University, December 2, 2004), available at: http://www.cert.org/info_assurance/principles.html#p5 Accessed January 6, 2005.

[86] FM 6-0, *Mission Command: Command and Control of Army Forces*, 2-10, 2-11.

[87] FM 6-0, *Mission Command: Command and Control of Army Forces*, 1-19 – 1-20.

[88] Erik Dahl, "Too Good to Be Legal? Network Centric Warfare and International Law," *Journal of Public and International Affairs*, (Spring 2004), 54. Also available online at: http://www.princeton.edu/~jpia/pdf2004/Chapter%203.pdf

decisions have strategic implications, commanders tend to micromanage operations to prevent unwanted effects.[89] This results in diminished trust between leaders and their subordinates.

FM 6-0 recognizes the potential for leaders to misuse digital systems to interfere in the affairs of their subordinates.[90] However, while U.S. Army command and control doctrine is clear about limitations and risks associated with digital technologies, most Army leaders remain ignorant about the effective use of advanced command and control systems, largely because training has not kept pace with technology.[91] Training Army leaders to cope with the challenges posed by network centric warfare extends beyond technical training; it entails reinforcing leaders' trust-based competencies, which in turn allows them to create trust-based organizations.[92] The outcomes of this training are leaders who trust 'strategic corporals' to accomplish the mission based on their intent, and organizations that tolerate the exceptional circumstance when their leaders assess that the moral component of command "make it important to reach down and provide personal direction to the soldier in the foxhole."[93]

How Network Centric Warfare Affects Mutual Understanding

Mutual understanding resides in the cognitive domain; it does not reside in the information domain. While literature on network centric warfare is expansive on how forces move and share information, it is not clear from the writings on network centric warfare how shared information becomes shared awareness (mutual understanding).[94] Understanding the

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[89] Thomas Malone, "Is Empowerment Just a Fad? Control, Decision Making, and IT." *Sloan Management Review*, (Winter 1997), 26.

[90] FM 6-0, *Mission Command: Command and Control of Army Forces*, 1-19 – 1-20.

[91] U.S. Joint Forces Command, "Kosovo After-Action Report to Congress, Executive Summary," *Joint Center for Lessons Learned Quarterly Bulletin*, III (Norfolk, VA: 2001), 3

[92] Christopher Kemp, *Trust-The Key to Leadership in Network Centric Environments*, (Carlisle, PA: U.S. Army War College, July 2003), 14-18

[93] Ibid, 13.

[94] NCW literature uses the term 'shared awareness' to describe a state that exists in the cognitive domain when two or more entities are able to develop a similar awareness of a situation. This is similar to mutual understanding, which is one of this study's evaluation criteria taken from FM 6-0 and defined as "complete knowledge shared in common among individuals." From: David Alberts and others, *Understanding Information Age Warfare*, 26.

effect of the cognitive domain on mutual understanding is important to evaluate claims that network centric warfare enhances mutual understanding, which is a fundamental enabler of mission command. Four ideas explain how social and psychological factors affect mutual understanding in networked environments.

One of the underlying premises of network centric warfare is that changes to the economics of information offer an opportunity to military forces. Before the Information Age, people were forced to choose between high quality information exchange with very limited reach (e.g., face-to-face discussion aided by maps) or lower quality information exchange with a wider reach (e.g., memos, dispatch).[95] The Information Age has changed that; rich information – in the form of video teleconferencing or other media – can be available to any user on the network.[96] However, just because the economics of information has changed does not mean that human behavior has changed. Research shows that the primary determinant of information richness depends primarily on preexisting social ties.[97] Thus, groups with weak social ties tend to exchange information that is comparatively poorer in quality than groups with strong social ties.

A second consideration for assessing network centric warfare's potential for enhancing mutual understanding concerns information overload. Often the network's capacity for passing information is greater than the participants' capacity for processing it. Once people have reached this saturation point, their processing capacities shrink, and this inhibits the creation of mutual understanding in groups.[98]

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[95] Ibid, 46.

[96] 'Richness' describes the quality of information.

[97] Caroline Haythornthwaite, *Tie Strength and the Impact of New Media*, on-line reference (2001), Available at: http://alexia.lis.uiuc.edu/~haythorn/HICSS01_tiestrength.html Accessed on: December 7, 2004.

[98] Thomas P.M. Barnett, "Chapter 15, The Seven Deadly Sins of Network Centric Warfare", *Information Age Anthology Vol. III*, ed. David Alberts and Daniel S. Papp, (Washington DC: Department of Defense Command and Control Research Program, 2001), 500-501. See also: E. Jansen, *The Officers of the Future: Thinking Through the Revolution*. (Monterey, CA. Naval Postgraduate School. 2003), 13. Cited in James B. Kinniburgh, *Who Networks? The Social Psychology of Virtual Communities*, (Monterey, CA: Naval Postgraduate School, 2004), 114.

A third consideration addresses the effects of perceptual biases. As people struggle with the influx of information, perceptual biases – formed by individuals' unique education and experience – filter that information.[99] While this phenomenon is not unique to network centric warfare, NCW's focus on information dominance makes it more susceptible to the effects of perceptual biases, and the accelerated pace of network centric operations will make the effects of perceptual biases felt more rapidly.[100]

Lastly, cognitive biases alter understanding. After people process information, cognitive biases tend to confound mutual understanding. Each person possesses biases that compel him to evaluate information, assess probabilities, and attribute causality in different ways.[101] The problem for network centric warfare is that participants in a networked environment best mitigate cognitive biases through direct social interaction, not network mediated communications.[102]

The UE_X, Mission Command, and Network Centric Warfare

The preceding analysis shows that NCW can alternately enable or diminish the effectiveness of mission command by affecting trust and mutual understanding. The study of the UE_X structure in chapter three showed that, overall, the UE_X emerging doctrine, organizational structure, material improvements, and personnel policies improves the U.S. Army practice of mission command. The UE_X's use of network centric warfare lies at the crossroads of these paths.

Overall, the UE_X emerging concepts recognize that network centric warfare is limited in clarifying the commander's understanding of his subordinates' circumstances. Therefore,

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[99] Arden B. Dahl, *Command Dysfunction: Minding the Cognitive War* (Maxwell AFB, AL: School for Advanced Airpower Studies, 1996), 14-15

[100] H.R. McMaster, *Crack in the Foundation: Defense Transformation and the Underlying Assumption of Dominant Knowledge in Future War*, (Carlisle, PA: U.S. Army War College, July, 2004), 88.

[101] Dahl, 16-18.

commander's must "trust their subordinates and their reactions to specific situations."[103] Emerging UE_X concepts align with the observation made by this study that the fog of war will persist even in a network centric environment.

There are aspects of the UE_X design and its doctrine that contribute to the persistent nature of the fog of war. First, the distributed operations of the UE_X staff can aggravate distortions to the accuracy of the common operational picture (COP) created by perceptual biases. As each participant struggles with the influx of information, perceptual biases, which are each individual's unique education and experience, actually filter information.[104] Over time, the UE_X staff, operating from distributed nodes, garners different experiences, which may widen the gap of perceptual biases between the nodes. This results in members of the network operating from different nodes, whether they are members of the UE_X modular command posts or the Soldiers from subordinate brigade headquarters, looking at the same common operational picture and making different inferences. Over time, this will likely become more, and not less acute as experiences among the various nodes continue to diverge.

Moreover, the concept that calls for the ad hoc employment of the UE_X, the subordinate maneuver brigade combat teams, and the subordinate support brigades suggests that the UE_X commander and his staff will not benefit, at least initially, from a strong relationship with their counterparts in the subordinate units. As noted above, this weak social structure may weaken further as the UE_X commands and controls distributed operations. Finally, members of the UE_X's various command posts, drawn from the garrison general staff structure, will likely consist of ad hoc teams because the staff will make the transition from the general staff structure in garrison to the functionally organized staff structure during deployment.

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[102] Fang Wu and Bernardo A. Huberman, *Social Structure and Opinion Formation*, on-line reference (2004), 1. Available at: http://econwpa.wustl.edu/eprints/comp/papers/0407/0407002.abs Accessed December 12, 2004

[103] *Unit of Employment Operational Concepts White Paper, version 3.5*, 17.

[104] Dahl, 14-15.

Several organizational facets of the UE_X headquarters will interact with network centric warfare tenets and capabilities to improve the UE_X's ability to conduct mission command. First, by reducing command echelons the UE_X improves mutual understanding and trust. Subordinate maneuver brigade combat team commanders and their staffs are not as insulated from the UE_X commander's decision-making process as they were in a division-based headquarters, because the network centric environment facilitates simultaneous and even collaborative planning, which enables trust. Second, the reduced layers of command give subordinate commanders' reporting more immediacy and increase the likelihood that the information is passed unedited.[105] Third, the UE_X liaison teams will enhance mutual understanding by providing the UE_X commander with the resources and the doctrinal structure to build a 'directed telescope' that gathers information from the subordinate units' areas of responsibility without undue distortion. However, the UE_X commander must design and resource his directed telescopes in such a way as not to intimidate subordinate commanders. This observation suggests that the U.S. Army must develop doctrine and training to complement its personnel and material contributions for developing directed telescopes. A less thorough solution could result in a directed telescope that can inhibit subordinate commanders' initiative or a directed telescope that can color the truth.[106]

Lastly, the proposed span of command, which is articulated in emerging UE_X concepts, dictates that the Unit of $Employment_X$ commanders cannot become engrossed in the details of any one part of their full spectrum operations. The breadth and the depth of the information will compel them to retain an operational perspective. This broad perspective requires the UEX commander keep four things in balance. First, the UE_X commander must focus on the overall operation or campaign and the shaping operations that enable the various combinations that will achieve the intended outcome. This means that the UE_X commander and his staff must continue to visualize on the relationships among the decisive operations, shaping operations, and

[105] Van Creveld, *Command in War*, 269.

sustaining operations. Second, the UE_X commander must remain detached from the details of the operation to recognize opportunities and threats. Assuming this, when the UE_X commander recognizes the opportunity for exploitation, he will have retained sufficient detachment to direct shaping operations that preserve the opportunity. When the commander perceives a significant threat to the force, he and his staff redirect subordinate units and joint resources to counter the threat and to create a new, perhaps unforeseen opportunity. This kind of detachment requires visualization beyond the engagement level, and this should temper the UE_X commander's desire to misuse the instrument of network centric warfare. Third, because the UE_X operates at the high tactical and operational levels of war, the commander must visualize pending transitions and follow-on operations to posture the force for operations distributed in time and space. Finally, as able commanders throughout history have done, the UE_X commander must consider when and where his personal presence, enabled by the mobile command group, makes the most significant contribution to the success of the operation.[107]

One of the most important network centric concepts that can enable the practice of mission command is the mission capability package. A mission capability package consists of a concept of operations and an approach to command and control, along with tailored organization, doctrine, education and training, systems, and weapons and platforms.[108] The mission capability package concept contends that the only workable implementation solution is a holistic solution, because it explicitly encourages and facilitates tuning all of the elements necessary to develop and deploy an operational concept designed to leverage new capabilities. The mission capability package concept echoes the broad-based approaches that the Prussian and German armies used in developing their decentralized command doctrines, and it offers the U.S. Army a model for integrating the broad changes necessary to use mission command. While the Army's

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[106] Ibid, 272.
[107] *Unit of Employment Operational Concepts White Paper, version 3.5*, 17.
[108] David Alberts and others, *Understanding Information Age Warfare*, 239-284.

development of the UE_X has acknowledged some of the wisdom of the mission capabilities package concept, many of the aspects of UE_X fielding continue to be developed in isolation, a trend that does not bode well as the Army approaches the point where it may have to integrate network centric warfare into its force structure.

Summary

Network centric warfare endeavors to leverage the advantages produced by the information architectures built by American businesses in the late Twentieth Century. NCW proponents contend that it applies to all levels of war, but its most promising benefits emerge at the operational level, which is the domain of the UE_X headquarters. The nature of networked environments can diminish the trust necessary for mission command and may not enhance mutual understanding as extensively as NCW proponents suggest. U.S. Army doctrine acknowledges the likelihood that a networked environment can reduce trust and offers recommendations for mitigating the affects of these situations. In noting that the fog of war will persist in a networked environment, UE_X employment concepts obliquely anticipate the effects on mutual understanding caused by cognitive biases. UE_X employment concepts propose that the UE_X will form rapidly and operate in a distributed fashion, which can exacerbate the effects of the cognitive biases, and consequently, mutual understanding. This study contends that the flattened hierarchy of the UE_X and the NCW concept of mission capability packages can balance the tendency of networked environments to diminish trust and confound mutual understanding in two ways. First, the flattened hierarchy of the UE_X provides more direct communications between commanders at different echelons, and the resulting increase in span of control compels the UE_X commander to maintain his focus beyond the engagement-level. Second, the mission capability package concept offers the U.S. Army a model for integrating the broad changes necessary to use mission command.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

Network centric warfare can bolster and hamper UE_X commanders' practice of mission command doctrine. NCW's demonstrated potential in joint warfighting experiments has led to its incorporation in emerging Joint Operations Concepts.[109] Increasingly, the U.S. Army is opting to incorporate systems like "Good Enough Battle Command" and enabling concepts like the common operating picture as it transforms its command and control practices. Together, these confirm that the Army is moving towards incorporating NCW into its core doctrine, and the UE_X will likely be the focal point of NCW integration into the Army. However, there are four challenges that UE_X leaders must overcome to realize the unfettered potential of mission command doctrine as NCW practices interact with extant Army culture and the UE_X structure.

First, the U.S. Army continues to emphasize transforming itself through doctrinal and material solutions and to overlook the importance of culture and institutions in fostering the trust and mutual understanding required to practice mission command. Second, while some aspects of transitioning from a division-based force to a brigade-based force promote the practice of decentralized command, other aspects of the transition to a brigade-based force can impede the practice of decentralized command. Third, networked environments diminish trust because establishing identity and reliability is difficult in networked environments and because leaders can disrupt normal lines of responsibility through the misuse of information systems. While the Army has wrestled with these problems before, most Army leaders remain ignorant about the effective use of advanced command and control systems, largely because training has not kept pace with technology.[110] Lastly, UE_X leaders should note that the fog of war persists in network

[109] The requirement for U.S. forces to operate in a networked environment is articulated in four recently published Joint Operating Concepts. See: U.S. Strategic Command, 26; U.S. Joint Forces Command, *Major Combat Operations Joint Operating Concept*, 11; U.S. Northern Command, 5; U.S. Joint Forces Command, *Stability Operations Joint Operating Concept*, 34.

[110] U.S. Joint Forces Command, "Kosovo After-Action Report to Congress, Executive

centric warfare environments, which inhibits mutual understanding. Doctrine and UE_X employment concepts explain the persistence of the fog of war, but do not venture to identify its possible sources.

Conclusions

Historically, U.S. Army command and control practice generally has favored detailed command for four reasons. First, the Army lacks experience with decentralized command doctrine. Second, this inexperience has hobbled the Army from understanding the importance of institutions and traditions in establishing an environment that fosters the trust and mutual understanding that enable decentralized command. J.L. Silva emphasized the importance of culture when he wrote that the Prussian and German armies' development of decentralized command approaches "was not a set of procedures, but a philosophy, a social norm."[111] Third, American practices like the individual replacement system and training models based on Taylorism further erode trust and mutual understanding. The primary lesson drawn from comparing the U.S. Army's experience with decentralized command doctrines against the Prussian and German experiences is that doctrine is not sufficient to foster the trust and mutual understanding required for the practice of mission command; institutions form culture, and culture fosters trust and mutual understanding.

The U.S. Army's move to a brigade-based structure and corresponding transformation initiatives may indicate that the service is shifting away from the tendency to focus on doctrinal and material solutions as the primary instruments for transforming the service. The twelve factors that enhance trust, advance mutual understanding, and decrease the need for the UE_X leadership to rely on detailed command cover a broad array of areas: doctrine, organization, training, material, leadership, and personnel policies. As an example, the changes to personnel

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Summary", 3.
[111] Silva, 6-9.

policy dictated by unit-focused stability enhance unit cohesion, which fosters trust. However, concerns linger about excessive size of the UE_X headquarters, which encourages the practice of detailed command, and the mismatch between the lifecycles between the maneuver brigade combat teams and the support elements, which diminishes cohesion and ultimately diminishes trust.

Network centric warfare can diminish the U.S. Army's ability to use mission command in two ways. First, establishing identity and reliability is difficult in networked environments. Second, network centric warfare feeds the illusion of certainty by providing commanders with the tools to accelerate the decision and execution cycle. Commanders can cut through layers of hierarchy and directly influence the actions of their subordinate leaders' Soldiers. Both of these effects diminish trust, which enables decentralized command. U.S. Army doctrine acknowledges the likelihood that a networked environment can reduce trust and offers recommendations for mitigating the affects of these situations. However, most Army leaders remain ignorant about the effective use of advanced command and control systems, largely because training has not kept pace with technology.[112]

Lastly, UE_X leaders should note that the fog of war persists in network centric warfare environments, which inhibits mutual understanding. U.S. Army doctrine and UE_X employment concepts discuss the persistence of the fog of war, but do not venture to identify its possible sources. One way of explaining the persistence of the fog of war is to understand that its effects may transfer from the information domain, where the lack of information created the uncertainty, to the cognitive domain, where perceptual and cognitive biases as well as information overload create the uncertainty.

The challenges of the contemporary operating environment place a premium on the abilities of subordinate commanders to act quickly and independently. Network centric warfare

[112] U.S. Joint Forces Command, "Kosovo After-Action Report to Congress, Executive

stresses speed of command, and mission command doctrine emphasizes the importance of exercising initiative. The UE_X lies at the crossroads of these two imperatives for Twenty-first Century battle command.

Recommendations

This study offers nine recommendations, and the intent of these recommendations follows two general threads. First, three of the recommendations refine the UE_X structure or, more broadly, the U.S. Army culture to strengthen social networks, which in turn aids in cultivating and preserving trust. Second, five of the recommendations improve mutual understanding through training, material solutions, leadership development, or personnel policy. One recommendation – the last one – actually bridges the two and lays the groundwork for enhanced mutual understanding and trust.

While this study organizes the recommendations along the doctrine, organization, training, material, leadership, personnel, and facilities (DOTMLPF) model, there are no recommendations that fall into the doctrine or facilities areas. Therefore, the recommendations cover organization, training, material, leadership, and personnel, with the focus of the recommendations on leadership development and personnel policies.

The first recommendation focuses on the organizational structure of the UE_X staff. It calls for reconciling the differences between the UE_X garrison staff structure, which follows the current general staff structure, and the UE_X deployed staff structure, which mirrors the six operational functions: maneuver, intelligence, command, protection, fires, and sustainment. Making the switch from the general staff structure to the functional staff structure during deployments creates an unnecessary challenge for the Soldiers and leaders, often during the especially stressful period early in a crisis. What is more important, the UE_X staff transition from

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Summary", 3

a general staff to a functional staff disrupts the informal social structures formed in garrison; these informal social structures are a key instrument for fostering trust within the staff, and have historically been a key strength in decentralized command arrangements.[113] The preferred course of action is to realign the UE_X staff under the operational functions for both the garrison environment and while deployed for training and operations. This measure can mitigate the effects of eroded trust during a particularly vulnerable time for the UE_X: the early stages of a crisis operation.

The second recommendation focuses on training Soldiers and leaders in the contemporary Army Battle Command Systems (ABCS) and the follow on systems fielded by the Army. To improve mutual understanding, participants in a network centric environment should evaluate the wholeness of the common operational picture by starting with the content and examining it for its accuracy, fidelity, and timeliness. It is difficult to do this if members of the network community do not understand where the information originated. It is also difficult for users to evaluate the fidelity of information if they do not understand how the network manipulates it. Therefore, this study contends that Soldiers working in a network centric environment must train on the systems. This is especially true for the UE_X commander and his staff, since information passed over the network will heavily color their understanding of the common operational picture. This training must go well beyond current Pentagon proposals, which includes a three-day course focused on military officers. The stated aim of the proposed Pentagon course is helping officers unfamiliar with network centric warfare understand its tenets, lexicon, concepts and context. Proponents of this training approach state that this course will provide officers with the tools to act as change agents. This study maintains that the underlying thrust of the proposed Pentagon course is closer to indoctrination and less aligned with training or

[113] Van Creveld, *Command in War*, 270-272.

educating the officers how to operate and succeed in a NCW environment.[114] Concrete suggestions include mandatory ABCS training for all officer and non-commissioned officer education courses; uniform inclusion of Army ABCS systems in Soldiers skill training manuals; and a sharp increase in the ABCS training resources available to units, including more trainers and automation systems.

The third and fourth recommendations are two material solutions. One proposal mitigates the tendency of current ABCS systems to cloud mutual understanding through their stovepiped architecture. The second material solution proposes an alternative network architecture model that can improve mutual understanding in a more robust framework than the current top-down system.

First, the U.S. Army should move from the fielding of a "good enough" battle command system to developing a fused battle command system that minimizes stove piped architecture and incompatible data feeds. Currently, to minimize incompatible data feeds, Army battle command systems (ABCS) are uniformly managed from the top down, and this tends to marginalize or even discount inputs from subordinate units, depending on the rule sets established by the system administrators, which are not necessarily informed by the commander's visualization of the battlespace. For example, in the network architecture for Global Command and Control System-Army there is one system designated as the top common operational picture ("Top COP"), which is typically managed from the ARFOR headquarters. The Top COP dictates the picture used to form mutual understanding across the force. The top-down approach both diminishes mutual understanding and trust in two ways. One, the common operational picture produced by the Top COP does not necessarily reflect the reality encountered by subordinate units. Two, subordinate unit commanders and their staffs quickly learn that their inputs to the COP must navigate a

[114] Greta Wodele, Pentagon Plans 'Network Centric" Education for Leaders, on-line reference (GovExec.com, April 12, 2004) Available at: http://www.govexec.com/dailyfed/0404/041204tdpm1.htm Accessed: November 21, 2004.

labyrinth of technical and administrative procedure to gain recognition as valid inputs. As noted earlier in this study, shortcomings observed during operation Iraqi Freedom with the enemy component of the COP formed by the Army's tactical-level intelligence automation tool, ASAS (All Source Analysis System) illustrate the perils of a top-down managed picture.

An alternative network architecture to the current top-down approach can provide more fidelity for the COP. In contrast to the current Army battle command systems, a peer-to-peer managed system can both increase the confidence of subordinate echelon users in the fidelity of the COP and lower bandwidth requirements. Peer-to-peer describes a network where each workstation can perform both client and server tasks; there is no technical requirement for a central server. One advantage includes lower bandwidth requirements, because software resident on each system only selects the information that each unique user requires. A second advantage is that the network bolsters confidence in the information as users see their input reflected in the common operating picture. A third advantage is that unfiltered information creates a potentially richer understanding of the battlespace. However, this is also a potential disadvantage, because in a pure peer-to-peer architecture there is no central mechanism to deconflict and interpolate multiple similar, but not necessarily identical, inputs from subordinates. What is in effect a profusion of reports can diminish mutual understanding. Finally, the distributed nature of peer-to-peer networks challenges information security, and consequently information assurance. Presently, the Army is exploring the usefulness of peer-to-peer networking, but it is not clear how this initiative ties into the broader context of network centric warfare.[115]

The fifth, sixth, and seventh recommendations concentrate on leadership development. One leadership development recommendation enhances mutual understanding, whereas the other two leadership development proposals deal with trust.

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[115] "US army aims to take P2P into battle", *ZDNET UK website*, on-line reference, Available at: http://news.zdnet.co.uk/hardware/emergingtech/0,39020357,2094181,00.htm Accessed December 9, 2004.

In her *Military Review* article, "Battle Command: Will We Have It When We Need It?", Deborah Reisweber writes that the rapidly emerging threats of Twenty-first century conflict dictate that the U.S. Army move away from a 'first battle' mindset and identify skilled battle commanders early in their careers to afford them the opportunity to practice and mature. With this as a backdrop, Reisweber notes that the traits of historically successful battle commanders are known: they are cognitive complexity and behavioral complexity.[116] In the context of this study, cognitive complexity allows experienced battle commanders to form a rich understanding of the environment, complete with cues and understanding of probabilities. Behavioral complexity allows these experienced battle commanders to convey this complex understanding of the battlespace to their subordinates through the commander's intent, key decisions they believe they will have to make, their information requirements, assumptions, planning guidance, and other tools. Together, cognitive and behavioral complexities enable mutual understanding. Reisweber suggests that these traits are likely open to testing, and the goal for testing is to identify individuals who possess these traits, and in turn afford them the opportunity to practice and mature.

In addition to developing leaders with the cognitive complexity to understand situations and the behavioral complexity to convey that understanding to their subordinates, the U.S. Army's leadership development programs must focus on developing trust-based competencies. This study has repeatedly demonstrated the importance of trust as an enabler of mission command doctrine and it has shown how network centric warfare challenges the formation of trust. Trust is formed through three practices: participation, feedback, and empowerment.[117] The practice of participation first recognizes the Soldier as a knowledgeable participant in the decision-making process rather than a person who needs to be directed. The feedback practice entails accepting

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[116] Deborah Reisweber, "Battle Command: Will We Have It When We Need It?" *Military Review*, (Ft. Leavenworth, KS: USACGSC, September-October, 1997), 49-52.

[117] Ronald C. Nyhan, quoted in Kemp, 9.

information from all sources – formal and informal – and it enriches mutual understanding by refining the common operational picture. The empowerment process acknowledges that the organization benefits when Soldiers reap the benefits of their decisions but also share in the responsibility for their decisions as well.[118] Overall, developing trust-based leadership competencies focuses on inculcating skills in leaders that allow them to use participation, feedback, and empowerment intuitively to foster trust in their units.

Leaders who use the three practices – participation, feedback, and empowerment – can build trust-based organizations. This is particularly important for UE_X commanders, whose role as operational-level commanders necessitates that their subordinates can accomplish missions without interference.[119] A UEX commander may endorse the idea of permitting the "strategic corporal" to make decisions consistent with commander's intent, but in a network centric warfare environment the moral weight of some decisions can require the UEX commander to "reach down and provide personal direction to the soldier in the foxhole."[120] In these instances, the UE_X commander may circumvent the intermediate layers of command and control between his headquarters and the soldier. As FM 6-0 notes, the UE_X commander's behavior in this case could elicit negative reactions by both the intermediate leaders and the strategic corporal. However, if the UEX commander has invested time and effort, and cultivated trust and mutual understanding with his subordinates, they will understand that there must have been an exceptional reason for changing the conventional decision-making practices.[121]

There is a cautionary note for leadership development. Current trends indicate that the future for leader development through education is not promising. For more than a decade, the U.S. Army has continued to invest more money to develop material solutions, and has simultaneously reduced funding to education and leadership development programs. Part of this

[118] Ibid, 9-10.
[119] Ibid, 13.
[120] Ibid.

explains the Army's slowness in adapting its education and leadership development programs to the challenges of the contemporary operating environment.[122]

The eighth and ninth proposals concentrate on Department of Defense and U.S. Army personnel policies to round out the recommendations. This study recommends two additional changes to personnel policies to complement the initiatives already started with unit-focused stability. First, changes to Department of Defense mandatory retirement policies can improve mutual understanding. Second, revisions to unit-focused stability policies can improve both mutual understanding and trust.

The first personnel policy change calls for amending Department of Defense mandatory retirement policies, something that has already been addressed on a small scale. In April 2004, U.S. Secretary of Defense Donald Rumsfeld submitted a request to Congress to change many Department of Defense personnel policies; among these were requests to change the mandatory retirement age of a small number of senior non-commissioned officers and flag officers.[123] Secretary Rumsfeld's request acknowledges tacitly that time is a significant factor in forming experience, which is consonant with Deborah Reisweber's findings that battle command skills are a function of not only raw talent, but years of practice, experience and maturation".[124] The Army must find a means to develop leaders capable of complex thought, and the youth culture, with its focus on the twenty-year retirement, runs counter to national policy related to aging and is not in the Army's interests.[125] Implementing this measure can enable mutual understanding by providing prospective senior leaders with more time to nurture cognitive complexity, which

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[121] Ibid, 13-14.

[122] U.S. Department of the Army, *Executive Summary of the Army Training and Leadership Development Panel*, OS-6

[123] Jim Garamone, "Rumsfeld Says Country Facing Two Options in War on Terror" online reference (August 25, 2003), available at: http://www.dod.gov/news/Aug2003/n08252003_200308254.html Accessed December 3, 2004.

[124] Reisweber, 49.

[125] Vandergriff, 243.

allows leaders to form a rich understanding of the environment, and behavioral complexity, which lets leaders convey this complex understanding of the battlespace to their subordinates.

The last recommendation suggests that refining the U.S. Army personnel policies that underpin unit-focused stability can improve the ability of the UE_X to practice mission command by enhancing mutual understanding and trust. The move to unit-focused stability does address many long-standing concerns about how Army personnel policies have affected unit cohesion in the past, most notably during the Vietnam War. However, the different life cycles of the maneuver brigade combat teams, which are set at three years, and the support brigades and the UE_X headquarters, which are set at one year, continue the disruptive influence of the individual replacement policy in two ways. On a larger scale, the UE_X commander can encounter difficulties with forging the bonds of trust and developing a mutual understanding with his subordinate brigade commanders – maneuver and support – because his staff will be forming and rebuilding every year. On a smaller scale, the support brigades and the UE_X headquarters will remain less able to use mission command because they will be constantly cycling through train up and stability periods every year, thereby rebuilding formal and informal relationships and reestablishing foundations for trust and mutual understanding. This study recommends moving the life cycle target for UE_X headquarters and support brigades to two years to mitigate the shortfalls caused by the mismatch in life cycles between the maneuver brigade combat teams and their support elements.

History shows that the U.S. Army can fight and defeat its opponents using centralized command concepts. However, the challenges of the contemporary operating environment place a premium on the abilities of subordinate commanders to act independently and more quickly than their opponents act. Mission command provides a foundation for freedom of action, network centric warfare provides a framework for rapid decision-making, and the UE_X headquarters and its modular brigade combat teams provide commanders with the organizational structure and resources to translate accelerated, low-level decision making into action. To retain these

advantages, Commanders must remain aware of the impediments to mission command, which can come from U.S. Army culture and policies, some UE_X employment concepts, and the concept of network centric warfare.

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