

United States Marine Corps
Command and Staff College
Marine Corps University
2076 South Street
Marine Corps Combat Development Command
Quantico, Virginia 22134-5068

MASTER OF MILITARY STUDIES

A CRITIQUE OF THE U.S. ARMY FORCE REDESIGN OF CAVALRY FORMATIONS
WITHIN THE BRIGADE COMBAT TEAMS

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MAJOR M. RYAN HOWELL, ARMOR, U.S. ARMY

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Mentor and Oral Defense Committee Member: CHARLES D. MCKENNA
Approved: *Charles D. McKenna*
Date: 9 APRIL 2009

Oral Defense Committee Member: Craig A. Swenson PhD
Approved: *CAS*
Date: 9 April 2009

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Executive Summary

Title: A Critique of the U.S. Army Force Redesign of Cavalry Formations within the Brigade Combat Teams

Author: Major M. Ryan Howell, Armor, United States Army

Thesis: The transformation and modularization of the U.S. Army's BCT cavalry squadrons had a negative impact on their effectiveness because it reduced their ability to execute the full range of reconnaissance and security missions.

Discussion: After the first year of the war in Iraq, the U.S. Army transformed into modular BCTs. In this transformation, each BCT received a reconnaissance squadron. Not only are these squadrons required to execute traditional tasks assigned to maneuver battalions, but they still have their traditional missions of reconnaissance and security. The current design for these squadrons is flawed. These flaws created a capabilities gap, because now these squadrons cannot perform the full spectrum of reconnaissance and security missions. This paper does not delve into current tactics, techniques, procedures (TTPs) or missions that these squadrons are executing in Iraq and Afghanistan. However, this paper does address flaws in their table of organization, the doctrinal deficiencies found within these formations, and the flaw in the cavalry community's training of its leaders. Instead of trying to influence formations fighting on the battlefields today, this paper is designed to better enable the cavalry formations of tomorrow.

Conclusion: The current design of modular reconnaissance squadrons is flawed. If the squadrons remain this way, they will not be able to execute the missions needed to support the BCT commander as they are currently configured. BCT squadrons need modifications, leader training and doctrinal focus need updating, and the "cavalry" needs put to be back into the "CAV".

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Preface

Throughout its history, the U.S. Army's cavalry formations changed to keep up with the changing spirit and organization of the Army. With the Long War, the Army's cavalry formations transformed once again. Unfortunately, this transformation produced several flaws within these new squadrons and created a capabilities gap for the cavalry. I believed it was important to address these issues in a formal paper to propose that these flaws do not get overlooked in the high operational tempo that we are currently fighting in to defeat global terrorism. Soon the cavalry will get the call to fight an enemy in a high intensity, conventional fight or, more likely, a hybrid of guerilla and conventional combat. When this happens, they need to be ready. I do not believe they are currently designed to meet these future challenges.

In the process of putting this paper together, I would be remiss if I did not acknowledge the help of several influential people who helped out immensely. Dr. Doug McKenna, Dean of Academics at Marine Corps Command and Staff College (CSC), and Colonel Steve Cherry, USA, military faculty advisor at CSC, deserve the lion's share of the credit. They spent countless hours mentoring me, reviewing my drafts, and making sure I stayed focused on the prize. I also need to thank Lieutenant Colonels Dave Burton and Dave Major for their mentorship throughout this process too. Furthermore, I need to thank Dr. Donald Bittner, professor of military history and faculty advisor, for his countless conversations and discussions with me about the U.S. Cavalry of old and just our daily interactions and mentorship throughout my year at CSC. Next, a special thanks to my parents for putting their teacher's hats back on and helping me proofread this paper multiple times. Finally, and most importantly, to my wife Renee for her continued patience as I worked on this "labor of love" and as we continue to spend too much time separated in the name of duty.

A Critique of the U.S. Army Force Redesign of Cavalry Formations within the Brigade Combat Teams

“Altogether, cavalry operations are exceedingly difficult, knowledge of the country is absolutely necessary, and ability to comprehend the situation at a glance, and an audacious spirit, are everything.” --- Maurice de Saxe, *Mes Reveries*, 1792¹

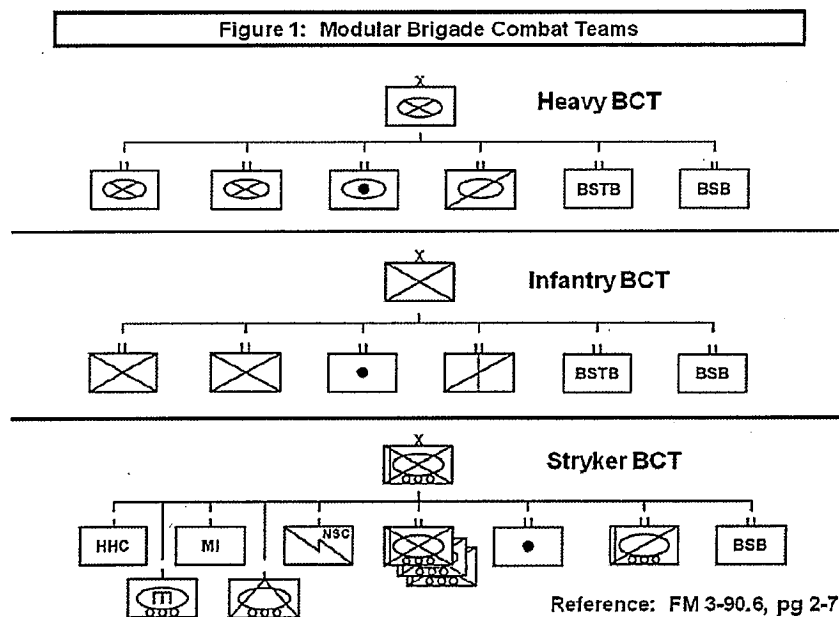
In 2004, General Peter J. Schoomaker, Chief of Staff of the U.S. Army, briefed the House Armed Services Committee that he would begin transforming the U.S. Army into a brigade-centric modular organization.² This marked the shift from the era that many called the division-centric “Cold War Legacy Force” into the era of the “Modular Brigade Combat Teams” (BCTs). This reorganization resulted in significant changes from previous cavalry formations, and reduced the effectiveness of current cavalry formations in several ways. First, the new modular cavalry formations have severe flaws in their design. Second, the current mindset, doctrinal foundation and leader training focus of these cavalry formations have severe flaws in some of its key concepts. Finally, and most importantly, these new formations cannot perform the full spectrum of reconnaissance and security missions that cavalry formations doctrinally executed in the past. The combined effect of these flaws is likely to cause a serious capability gap to develop within BCT cavalry squadrons. These changes signaled a significant shift in the doctrinal roles and missions of the majority of current U.S. cavalry formations (excluding the 3d Armored Cavalry Regiment). In sum, the transformation and modularization of the U.S. Army’s BCT cavalry squadrons has had a negative impact on their effectiveness.

The images of the cavalry riding in to save the day are quickly disappearing. It is more and more difficult for BCT cavalry squadrons to execute their doctrinal missions. This paper examines the flaws listed above in order to reveal the need to restructure modular cavalry

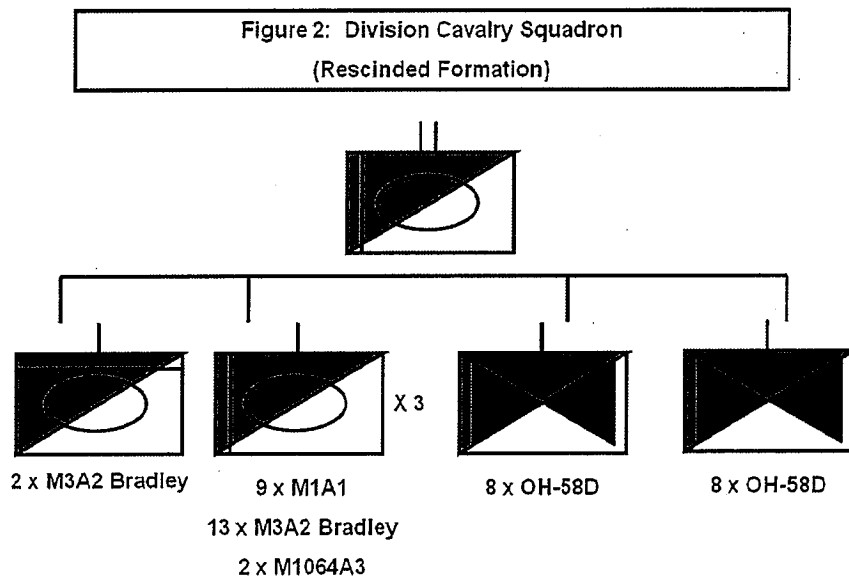
formations and to adjust the mindset associated with these formations to support the BCT commanders in the execution of their missions.

US Army Transformation and Modularization Overview

A brief history is necessary to explain the process of transformation that created this growing gap in cavalry capabilities. During the period 2004 to 2006, the Army began the process to transform its formations into three standard types of BCTs: Infantry Brigade Combat Team (IBCT), Stryker Brigade Combat Team (SBCT), and a Heavy Brigade Combat Team (HBCT).³ Inside each of these BCTs, the brigade commander would have the following types of organizations under his command: two maneuver battalions, a cavalry squadron, a support battalion, a field artillery battalion, and their associated headquarters elements (see Figure 1). All infantry, Stryker, and heavy brigades look the same, even though some infantry brigades are specialized to perform forced entry operations such as airborne and air assault missions. Regardless of the divisional patch that the Soldiers in the brigade might wear on their uniforms, the formations would be the same, allowing interchangeability and simplified task organizations whenever necessary.

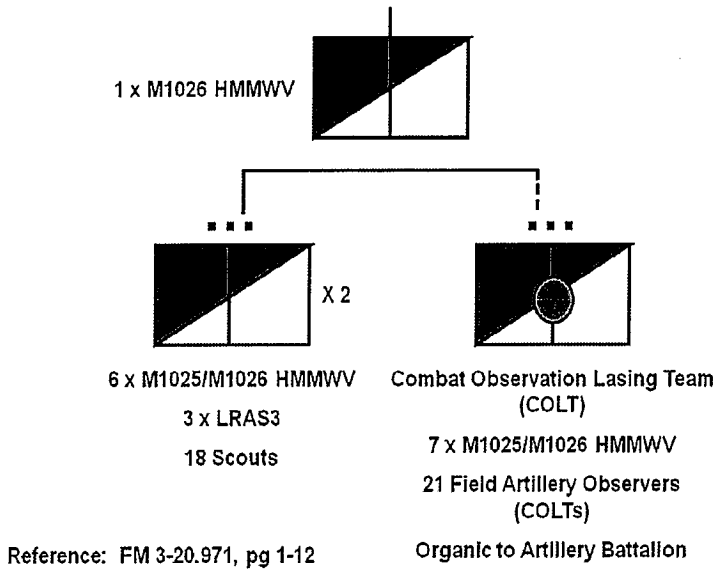


General Schoomaker selected the Third Infantry Division (3rd ID) to become the first unit transformed under the Army's new system of modularity.⁴ Prior to this transformation, the 3rd ID had the following cavalry assets: A single heavy division cavalry squadron controlled by the division commander composed of M1 Main Battle Tanks, M3 Cavalry Fighting Vehicles, self-propelled mortar vehicles, and OH-58D Kiowa Reconnaissance Helicopters⁵(see Figure 2); a brigade reconnaissance troop, per mechanized brigade, controlled by the brigade commander composed of lightly armored HMMWVs⁶ (see Figure 3); a mechanized battalion level scout platoon composed of lightly armored HMMWVs controlled by each battalion commander⁷(See Figure 4).

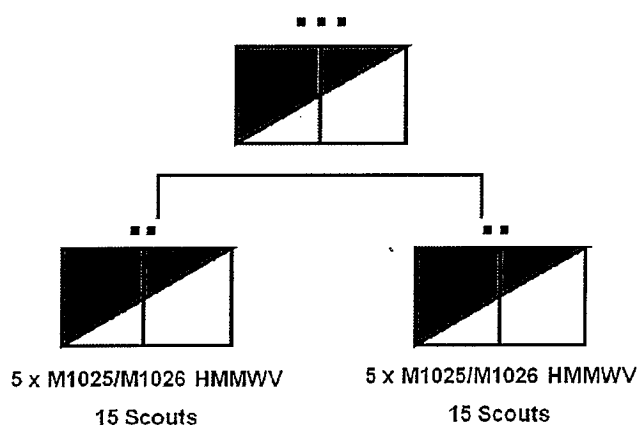


Reference: FM 17-95, pg 1-20

**Figure 3: Brigade Reconnaissance Troop
(Rescinded Formation)**



**Figure 4: Mechanized Battalion Scout Platoon
(Rescinded Formation)**



Reference: FM 17-98, pg 1-6

Initially, modularization of the BCTs appeared to be a good move for the cavalry community. Throughout the majority of the Cold War the mounted arm of the U.S. Army, armor branch, was postured to defeat the Soviet horde as it attacked through the Fulda Gap in Germany.

Approximately 60 percent of the officers assigned to armor branch served in a tank battalion, and the remaining 40 percent served in a cavalry organization. As the Cold War ended, the new threat posed by the Global War on Terror (GWOT) spurred the need for an armor branch with a different focus. With the modularization of the Army, each BCT received a cavalry squadron. Currently the majority of the assignments for armor branch are in cavalry organizations. Now 60 percent of these officers serve in cavalry units, and the remaining 40 percent serve in a combined arms battalion (CAB), a balanced task force with two tank companies and two mechanized infantry companies. Now armor officers have the opportunity of assignment to duty stations and units that were previously only open to their infantry brethren.⁸

Overview of BCT Cavalry Squadrons

As mentioned earlier, the U.S. Army has transformed its BCTs into an IBCT, a SBCT, and a HBCT. Unlike the Cold War legacy force structure, every BCT commander has an entire cavalry squadron assigned to his BCT. He owns them and can employ them any way he sees fit in order to support his scheme of maneuver. It is important to understand the organization of the respective cavalry squadrons to identify some of the capability gaps previously mentioned. In accordance with current Army doctrine, the names of all of the squadrons organic to BCTs are “reconnaissance squadrons” (a flaw and misnomer addressed later in the paper).

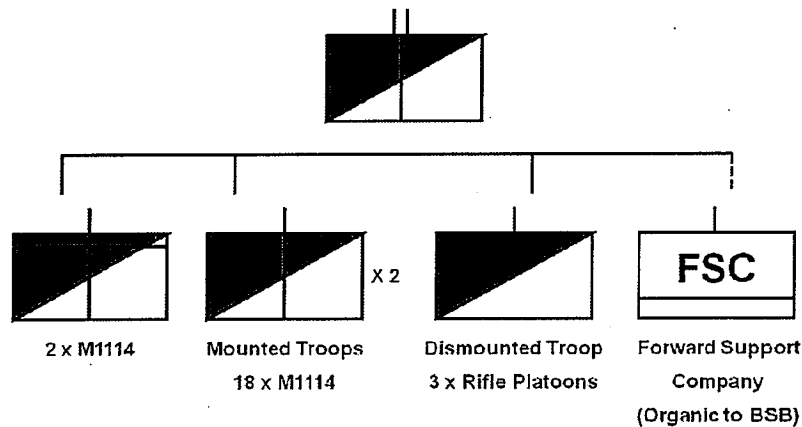
Additionally, it is important to understand the key difference in the way the Army doctrinally views these reconnaissance squadrons. They are not maneuver organizations in the traditional Army sense of the word. This is not to be confused with the fact that they do execute movement and maneuver against the enemy, and they do use the concepts of maneuver warfare to accomplish their missions and achieve the end state given to them by the BCT commander. The inherent purpose of these squadrons is to act as an enabling organization. That is, they exist

to support the maneuver of the line battalions, otherwise known as maneuver battalions. The squadrons execute reconnaissance and security missions to support the maneuver battalion's execution of their combat missions. Understanding this distinction will assist in understanding the thought process behind this modular cavalry transformation and it will help explain why certain squadrons only have certain capabilities.

The task organization of the IBCT reconnaissance squadron⁹ (see Figure 5) is as follows:

- Headquarters and Headquarters Troop (HHT)
- Two M1114 up-armored high mobility multi-purpose wheeled vehicles (HMMWV) mounted reconnaissance troops composed of military occupational specialty (MOS) 19D Cavalry Scouts
 - Three Scout Platoons composed of six M1114 HMMWVs
 - One section of two towed 120 mm mortar systems manned by 11C mortar indirect fire infantry soldiers
- One dismounted reconnaissance troop composed of MOS 11B Infantry Soldiers
 - Two infantry rifle Platoons minus the weapons squad
 - One infantry sniper squad
 - One section of two dismounted 60 mm mortars

Figure 5: IBCT Reconnaissance Squadron



Reference: FM 3-20.96, pg 1-12

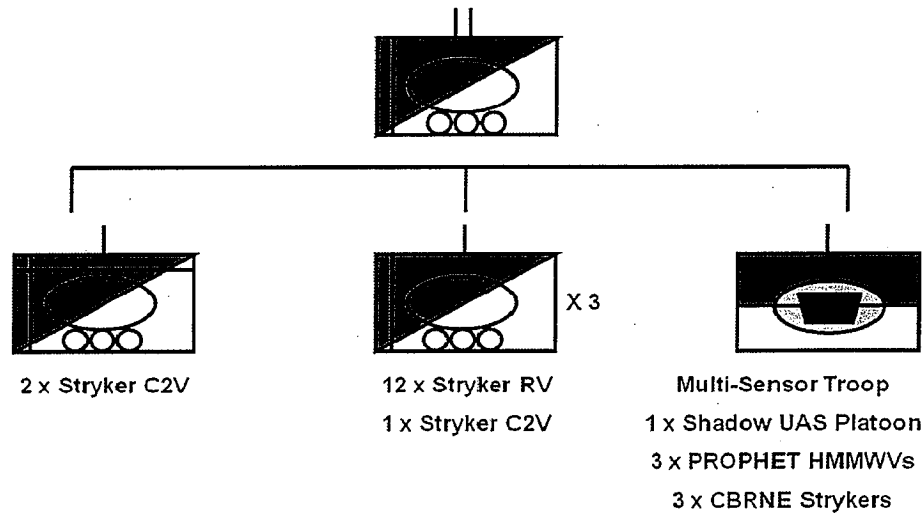
As stated earlier, whether the BCT belongs to the 82nd Airborne Division, the 101st Airborne Division (Air-Assault), or the 10th Mountain Division, all of the reconnaissance squadrons have the same modified table of organization and equipment (MTOE). The only infantry organization not affected by this change is the 75th Ranger Regiment.

The next kind of reconnaissance squadron is the SBCT reconnaissance squadron. This squadron is unique because it has a vast array of organic sensor platforms. The SBCT reconnaissance squadron¹⁰ (see Figure 6) is organized as follows:

- HHT
- Three Stryker reconnaissance variant (RV) reconnaissance troops composed of MOS 19D Cavalry Scouts
 - Three scout platoons composed of four Stryker RVs
 - One section of Stryker mounted 120 mm mortar systems with two 60 mm mortar systems organic to the section manned by 11C mortar indirect fire infantry soldiers
- One surveillance troop composed of multiple MOS

- One unmanned serial system (UAS) platoon, equipped with the Shadow tactical UAS, composed of military intelligence (MI) Soldiers
- One multi-sensor platoon equipped with PROPHET signal intercept HMMWVs and various unmanned ground sensors composed of MI Soldiers
- One chemical, biological, radiological, and nuclear (CBRN) reconnaissance platoon equipped with the Stryker CBRN variant

Figure 6: SBCT Reconnaissance Squadron



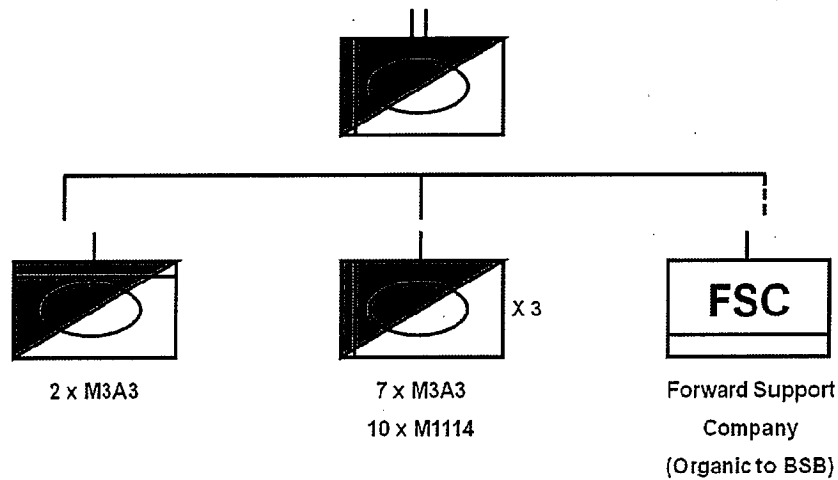
Reference: FM 3-20.96, pg 1-13

The last organization is the HBCT reconnaissance squadron. This squadron is the only one composed solely of 19 series cavalry scouts in the scout/reconnaissance platoons. The HBCT reconnaissance squadron¹¹ (see Figure 7) is organized as follows:

- HHT
- Three reconnaissance troops composed of M1114 HMMWVs and M3 Cavalry Fighting Vehicles, (CFVs; part of the Bradley Fighting Vehicle family).

- Two scout platoons composed of three M3 CFVs and five M1114 HMMWVs each
- One section of two self-propelled 120 mm mortar systems manned by 11C mortar indirect fire infantry soldiers

Figure 7: HBCT Reconnaissance Squadron



Reference: FM 3-20.96, pg 1-11

Although every BCT has its own reconnaissance squadron, no two squadrons look the same. The design of the squadrons is specific to the types of threats on the conventional battlefield they would ideally face. The IBCT is not the preferred formation to fight against an enemy heavy formation, just as the HBCT is not the preferred formation to fight against an enemy light formation. Now that a general understanding of the composition of each squadron is complete, let us examine the individual and collective flaws of these formations.

Flaws in the Modular Cavalry Formations

The current design of the cavalry formations, or reconnaissance squadrons, in the modular BCTs is flawed. The Army's primary doctrinal reference manual for these formations

is FM 3-20.96, *Reconnaissance Squadron*. This manual, published in 2006, states very plainly one of the key reasons behind the design of the modular reconnaissance squadron:

Although they possess sufficient armament and firepower for self-defense, they were not over endowed with weapons systems and armor protection for a distinct reason. The historical principle is that reconnaissance units that are sufficiently equipped to fight are routinely used for fighting instead of performing reconnaissance. In our nation's history reconnaissance and cavalry units that were impressively armed were routinely employed in direct combat roles. When reconnaissance units engage in direct combat missions, reconnaissance ceases. When reconnaissance ceases, the potential for achieving and capitalizing upon information dominance is degraded.¹²

The manual goes on to say that this is one of the key reasons why each BCT has a reconnaissance squadron. It takes into account their vulnerabilities to perform direct combat operations and requires the BCT commander to employ them in accordance with their outlined capabilities. FM 3-20.96 further states that the "fundamental purpose of the squadron is reconnaissance".¹³ Even accepting the fundamental purpose of the squadron, it is wrong to design the organization to achieve only that purpose. Flaws in the design of the squadron compromise its capability to perform other, crucial missions.

The first flaw in the design of the reconnaissance squadrons is the overall lack of dismounted scouts available to all of the modular cavalry formations. Scout platoons doctrinally fight with sections as the lowest element of employment. A section consists of two vehicles and their dismounted scouts riding inside of these vehicles. In a HBCT and IBCT, each scout platoon has 30 personnel assigned to the platoon. The preferred technique for fighting a HMMWV or a M3 CFV in combat requires that the platoon must leave three soldiers with the vehicle: a driver, a gunner, and a vehicle commander. A HBCT section consists of one M3 CFV and one HMMWV. Due to the current table of organization, each section only has two soldiers available for dismounting. With three sections (excluding the platoon leader, PL, and platoon

sergeant, PSG, command section) available to the heavy scout platoon, this does not give them a very robust dismount capability without degrading their vehicle capabilities. In the IBCT scout platoon of six HMMWVs, each truck has two soldiers capable of dismounting per vehicle. This means there are only four soldiers able to dismount per section. The SBCT scout platoons are even smaller. They have fewer vehicles, namely four Stryker RVs, and therefore they have fewer scouts in the platoon; 18 total (including the PL and PSG). This gives them two scouts per vehicle, and only four scouts per section to dismount.¹⁴

A recent directive by the Secretary of the Army has authorized an increase in each scout platoon of six additional soldiers in a Force Design Update (FDU). This FDU will greatly enhance each platoon's dismounted capabilities. Although the FDU received approval in 2006, the availability of these soldiers has not positively influenced scout platoons currently supporting Operations Iraqi Freedom (OIF) and Operation Enduring Freedom (OEF).¹⁵ This deficiency may slowly correct itself as the Army continues to grow and recruit more soldiers in accordance with the Congressional directive that allows the overall growth of the Army.¹⁶

The next design flaw particularly affects the IBCT reconnaissance squadron. The dismounted reconnaissance troop is unable to maintain the same mission tempo (the speed and amount of time dedicated to the reconnaissance mission) as the mounted reconnaissance troops. Furthermore, the IBCT squadron commander is unable to move all of his soldiers around the battlefield without augmentation from the BCT commander. If the squadron's mission requires a tempo where speed is more important than stealth and the level of detail of information gathered in the mission, the commander must decide on one of the following courses of action: limit the width and depth of his area of operations (AO), inform the BCT commander that he must have a more stealthy and slower tempo, or leave his dismounted troop out of this portion of

the squadron's mission. Two-thirds of the squadron is mounted, and will naturally have a faster mission tempo compared to the dismounted troop. A key element to cavalry missions is the tempo of the mission. It is essential that the squadron maintain the tempo established by the BCT commander in order to support his intent and facilitate the plan for the maneuver battalions. The dismounted troop is unable to move any faster than their feet and legs can carry them. Additionally, the squadron does not have any assigned transportation assets. This requires the Brigade Support Battalion (BSB) to augment the dismounted troop with some of their transportation assets. Now the issue arises that the dismounted troop can no longer maneuver using cargo trucks, thus requiring them to conduct a movement-oriented mission. This again does not help the commander to have a formation conducting an administrative movement around the battlefield instead of performing their assigned reconnaissance mission. Although the design behind the IBCT reconnaissance squadron had stealth in mind, the inability of the dismounted troop to maneuver in conjunction with the other two mounted troops negates any gains in stealth by the loss of tempo.

The SBCT reconnaissance squadron has an altogether different design flaw. Combined with the lack of soldiers in each scout platoon (as mentioned earlier), the squadron also has an abnormally small number of vehicles within the platoons. Each scout platoon consists of four Stryker RVs. This leaves the platoon with fewer maneuver options than the six-vehicle IBCT platoon and the eight-vehicle HBCT platoon. Either the platoon maneuvers in two sections of two RVs each, or the entire platoon of four RVs maneuvers together. This limits the amount of frontage that a SBCT reconnaissance squadron can conduct reconnaissance or security missions across in order to support the BCT. Instead of spreading six or eight vehicles across a platoon frontage, the SBCT platoon can only have a frontage covered by four vehicles. The concept

behind the SBCT reconnaissance squadron is to augment the limited number of vehicles with long-range optics and the multiple sensors and UAS inside of the sensor troop. This does not consider the simple fact that bad weather generally degrades the use of optics, sensors, and the ability to fly a UAS. Additionally, recent experiences from OIF show that BCT commanders are reluctant to give up their suite of sensors to the use of the squadron when they can move all of these assets under the direct control of the BCT headquarters. This is always the prerogative of the commander, and feedback from SBCT OIF veterans indicates that the most common practice is for the commander to place these assets under the direct tactical control (TACON) of the BCT headquarters.¹⁷ The SBCT reconnaissance squadron confronts the two-fold dilemma of fewer personnel and fewer vehicles to execute their assigned missions. For a squadron designed to support a dismount-heavy organization like the SBCT, their MTOE contains roughly the same number of personnel and vehicles normally found in a tank company (not an organization known for its use in doctrinal dismounted missions).

Additionally, the Stryker RV itself has a flaw in its design. The crew must expose themselves on top of the vehicle to fire the only heavy weapon system on the vehicle. The infantry variant's remote controlled weapon station allows the gunner to fire from within the vehicle. It has a stabilized platform with thermal optics for long-range precision fires. The RV crewmember must aim the weapon system by looking down the top of the machine gun and adjusting the fire as the bullets impact on or near the target. Not very accurate and definitely not very safe compared to the infantry variant.

Similar to the other squadrons in the modular BCTs, the HBCT reconnaissance squadron has two major design flaws with its modularization. The more glaring flaw is the fact that a scout platoon in a HBCT consists of a mixture of three M3 Bradley Cavalry Fighting Vehicles

(CFV) and five up-armored M1114 HMMWVs. The modular HBCT cavalry troop only has two platoons in each troop when the other two formations' mounted elements all have three platoons each. Therefore, the squadron that has the mission to fight against enemy heavy formations has the most crucial design flaws inside its organization.

In the HBCT reconnaissance squadron, as well as the HBCT CAB scout platoons, the composition of the MTOE is three M3 CFVs and five HMMWVs. This platoon composition, generally referred to as the "three-five platoon"¹⁸, has several design disadvantages built in. Again, a brief history is necessary to explain the reasoning behind these choices. During OIF I, the Army fielded the Long Range Acquisition Scout Surveillance System (LRAS3, pronounced "L-RAS"). This optic has capabilities similar to the forward-looking infrared radar (FLIR) on an Apache Helicopter, but mounted on a HMMWV platform. This sight gives a scout an amazing capability to acquire and, more importantly, to identify targets at distances up to 10 kilometers, which is well beyond the range of the enemy's direct fire weapon systems.¹⁹ Due to the outstanding capabilities of the LRAS3 system, every modular scout organization was equipped with this system. Every Stryker RV has an LRAS3 and each IBCT scout platoon has three LRAS3s per platoon.²⁰ Since the primary threat for an HBCT is a similar enemy formation, there was an obvious need for armor protection for the scouts. The only problem is the LRAS3 currently does not mount on a M3. Hence, the development of the three-five platoon concept became the building block of the HBCT platoon.

The standard organization for a three-five platoon section is one HMMWV and one M3 CFV per section. This gives the HBCT scout platoon three sections to maneuver and the remaining two HMMWVs belong to the PL and PSG for command and control. Again, this table of organization takes advantage of the CFV's firepower and armor protection and the

HMMWV's LRAS3 as a sensor/optical platform. Unfortunately, there is an issue with this relationship, and that is the simple logistical fact that a HMMWV is unable to recover a disabled or damaged CFV. The HMMWV weighs just over 12,000 pounds²¹ and the CFV weighs over 50,000 pounds.²² A disabled M3 in a mixed section causes the platoon to employ one of its other sections to recover the disabled vehicle (excluding the use of the troop's single M88A2 Heavy Recovery Vehicle).

Finally, the HBCT reconnaissance squadron has an additional flaw. Each troop only has two platoons to execute their missions, compared to the other formations in the BCTs. In fact, this is the only company-size organization that maneuvers with only two platoons. Naturally, the AO must be narrowed because the troop does not have the combat power to spread across the width and depth of the battlefield. As you multiply this fact by the number of troops, the HBCT squadron is limited in the execution of some its missions in support of the entire BCT.

The modular BCT cavalry formations have several serious, and glaring, design flaws which naturally create a capabilities gap. Since a BCT no longer has three maneuver battalions, the reconnaissance squadrons are asked to execute many traditional maneuver missions in addition to their assigned cavalry missions. If the formation's flaws make it difficult to perform their cavalry missions, then the squadrons truly have a disadvantage in executing traditional maneuver missions. The benefits in the creation of a reconnaissance squadron in each BCT are quickly overshadowed by the inherent flaws in the formations. These squadrons can support many maneuver battalions missions, but lack flexibility and robust capability to perform all required missions.

Loss of the Cavalry Mindset and Training Focus

Another effect of the flaws within these formations is the loss of the “cavalry mindset”. Simply, this means that the formation has lost some core competencies by virtue of the loss of traditional terminologies, key concepts in the doctrine, and in the minimal focus on officer and non-commissioned officer (NCO) training.

As the Army transformed, the cavalry allowed the erosion of several simple concepts steeped in the traditions and mindset of this historical community. The United States of America has always had some form of a mounted branch in the Army since 1775. As the nation matured, so did its mounted organizations. On 2 March 1833, the U.S. Congress created the United States Regiment of Dragoons. This was the beginning of the first permanent mounted arm in the U.S. Army. Over the next several years, the varying array of mounted troopers (Dragoons, Mounted Riflemen, and Cavalrymen) would participate in many battles and engagements. Finally, on 3 August 1861 the U.S. Congress mandated that all mounted regiments would reorganize into one unified arm called cavalry.²³

Just as the official title of cavalry was adopted within the U.S. Army at the beginning of the Civil War, the organizational mindset of cavalry (and partly the cavalry name too) disappeared at the beginning of the GWOT. Although the squadrons still have cavalry in their names (i.e., Third Squadron, First Cavalry Regiment or 3-1 CAV), they are now doctrinally referred to as reconnaissance squadrons. From December 2002 to September 2006, the United States Army Armor Center at Fort Knox, Kentucky, published a series of manuals governing the doctrinal employment of the newly formed modular cavalry formations. The titles of the manuals are *Reconnaissance Platoon*, *Reconnaissance Troop*, and *Reconnaissance Squadron*. Prior to the beginning of modularity, the Army used names in its manuals such as *Scout Platoon*,

*Cavalry Troop, and Cavalry Operations.*²⁴ In one fell swoop, the doctrinal name of the formations went from “cavalry” to “reconnaissance”. Now instead of their name reflecting a formation steeped in history, their names now reflect one of the two key missions that cavalry formations traditionally performed. Both the Army’s and Marine Corps’ multi-service manual and the joint publication on operational terms defines reconnaissance as a “mission undertaken to obtain...information”.²⁵ Furthermore, the pre-December 2002 governing manual, *Cavalry Operations*, states that the “fundamental purpose of cavalry is to perform reconnaissance and provide security in close operations”.²⁶ Somehow, the formation’s name and its primary focus for employment have transformed from a cavalry focus to a purely reconnaissance focus.

The two key concepts behind cavalry transformation described in FM 3-20.96, *Reconnaissance Squadron*, are Network Centric Warfare (NCW) and the “Quality of Firsts”.²⁷ NCW states that it serves as a link between computers and people across DOD in order to share information and collaboration so that commanders can ensure the timely employment of all appropriate combat multipliers during combat operations.²⁸ “NCW is a key component of DOD planning for transformation of the military”.²⁹

Colonel (Promotable) H.R. McMaster links NCW with the other key concept in his November 2003 statement in relation to the modular brigade (formerly called a unit of action or UA) transformation:

The Unit of Action offers a doctrinal remedy for its organizational weaknesses. That doctrine, however, based as it is on the same assumption of near-certainty in future war, is also fundamentally flawed. The Unit of Action will fight “unlike any other tactical force” because it will fight only when it chooses and only when the enemy is “most vulnerable.” Certainty in combat will allow the Objective Force to achieve a so-called “Quality of Firsts” such that the UA will “see first, understand first, act first, and finish decisively.” The UA offers a clean break with even the most recent experiences in land warfare in Afghanistan and Operation Iraqi Freedom.³⁰

Somehow these underpinning concepts for cavalry transformation, NCW and the “quality of firsts”, serve to reduce or negate Clausewitz’ famous factors of war’s fog and friction.³¹

General W. Scott Wallace, the V Corps Commander during the initial invasion of Iraq, added to this argument when he stated that every fight during the invasion of Iraq from the platoon to battalion level was a movement-to-contact.³² This further illustrates the point that in 2003 (before the weakening of the cavalry formations) U.S. forces invading Iraq did not have total situational awareness of their enemy. After all was said and done, the enemy, the terrain (including weather), and even friendly forces all combined to illustrate Clausewitz’ point, “Everything is very simple in war, but the simplest thing is difficult.”³³

The last arena where the cavalry mindset was undermined is in the training of future U.S. Army cavalry leaders. This is especially true in the area of institutional armor officer training. The United States Army Armor Center has the two schools with the primary responsibility for training all troop-level cavalry leaders in the U.S. Army. Platoon level leadership receives their training in the Scout Leader’s Course (SLC, soon to be the Army Reconnaissance Course). Troop level leadership receives their training in the Cavalry Leader’s Course (CLC).

On 11 December 2007, the U.S. Army released its update to Department of the Army Pamphlet 600-3, *Commissioned Officer Professional Development and Career Management*. In the section that deals with armor officer development, it specifically addresses assignments to cavalry organizations (by the way, the pamphlet calls them cavalry organizations and not reconnaissance squadrons). Inside this pamphlet, the Army laid out the following three key requirements for assignment to a cavalry organization:

- 1) Officers assigned to a 19C (cavalry) MOS coded position must complete either CLC or SLC.

2) Officers on assignment to a cavalry organization after the Captains Career Course should normally attend CLC prior to execution of this assignment.

3) Officers assigned to a cavalry platoon must attend SLC.³⁴

In short, the Army has directed that these armor officers must attend at least one, and ideally both SLC and CLC, before assignment to a cavalry organization. Based on the available assignments for company grade armor officers, 60 percent of armor Second Lieutenants graduating from their basic course and 60 percent of armor captains graduating from their Captains Course should attend either SLC or CLC. Unfortunately, this is not the case. According to training requirements for FY 2008, SLC was only required to train enough students to fill 64 percent of the scout platoons.³⁵ CLC's training requirement was only for 62 percent of the cavalry troops in the Army.³⁶ This is significantly short of the requirements outlined in the Army pamphlet. Obviously, not every scout platoon or cavalry troop is open for assignment at the same time. What this serves to illustrate is the point that if the institutional Army, the "schoolhouse", does not train these future cavalry leaders, then the requirement will fall in the lap of the squadron commander.

The "cavalry mindset" is slipping away, if not already gone. The name "reconnaissance squadron" is the wrong name for a formation that performs reconnaissance and security. NCW and the "quality of firsts" have too many false assumptions to be viable concepts for organizational transformation. Additionally, cavalry leader and officer training do not receive the emphasis that they deserve. Taken together, these flaws serve to widen further the capabilities gap of modern cavalry formations.

Reduced Capabilities to Perform Reconnaissance and Security Missions

The last, and arguably most glaring, capabilities gap within current modular cavalry formations is that they can no longer perform the full spectrum of their traditional missions of reconnaissance and security, and the squadrons cannot do so because of flaws in their organizational design.

For example, the HBCT reconnaissance squadron cannot conduct the assigned doctrinal mission of a reconnaissance in force; also described as an ability to fight for information. Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, defines a reconnaissance in force as “an offensive operation designed to discover and/or test the enemy’s strength or to obtain other information”.³⁷ The USMC and USA’s multi-service publication, FM 1-02, *Operational Terms and Graphics*, also adds the characteristics that the design of the mission is to test the enemy’s dispositions and reactions to friendly actions.³⁸ This mission is different from other missions because the sole focus is on the enemy, and not the terrain, infrastructure, or social/civil considerations. The HBCT reconnaissance squadron is obviously the most heavily armed and armored squadron of all of the modular squadrons. Even this squadron requires additional augmentation to execute this mission. From a combat power perspective, this requires the augmentation of the squadron with a formation of tanks in order to survive the intentional contact with a like enemy formation. Modular reconnaissance squadrons can perform the other three forms of reconnaissance: route, area, and zone but, as mentioned earlier, they cannot perform the last form, reconnaissance in force.

By continuing the example of the HBCT reconnaissance squadron, another capability gap exists in the squadron’s inability to perform the full spectrum of security operations. Security is a very valuable function that cavalry units have historically performed since their inception.

More importantly, this is the key difference between a reconnaissance formation and a cavalry formation. FM 3-90, *Tactics*, provides the best definition of a security operation:

A tactical enabling operation undertaken by a commander to provide early and accurate warning of enemy operations, to provide the force being protected with time and maneuver space within which to react to the threat, and to develop the situation to allow the commander to effectively use the protected force.³⁹

Doctrinally, the three primary forms of security are screen, guard, and cover. Categorizing screen, guard, and cover depends on the level of security provided and the amount of combat power that it takes to execute each mission. "Screen" provides the least amount of security and prevents observation of the protected force. "Guard" provides the next level of security, and prevents observation and direct fire by the enemy against the protected force. Finally, "cover" provides the greatest amount of security and prevents enemy observation, direct fire, and cannon artillery fires from affecting the protected force. Again, doctrinally the heaviest armed and armored squadron cannot perform a guard or cover without additional augmentation from within the HBCT. In fact, it requires the entire HBCT to execute a cover mission.⁴⁰

Under the current enemy force models defined in the contemporary operational environment, the HBCT reconnaissance squadrons cannot survive "cavalry contact". Simply stated, if the enemy knows that a HBCT's squadron does not have tanks in its formation, the enemy is likely to place tanks inside his counter-reconnaissance detachment. Therefore, when his formation makes contact with the HBCT squadron, he will have combat power overmatch; he can destroy the elements in contact with his detachment. The HBCT main body would then no longer have the security as defined above.

In addition to this, the HBCT reconnaissance squadron can no longer deceive the enemy's reconnaissance elements about the location, disposition, and intentions of the main body. The first time the enemy's reconnaissance elements identifies a tank, he knows that he has

found the main body. Again, without augmentations from the main body's combat power, the reconnaissance squadron is unable to provide proper security for the protected force.

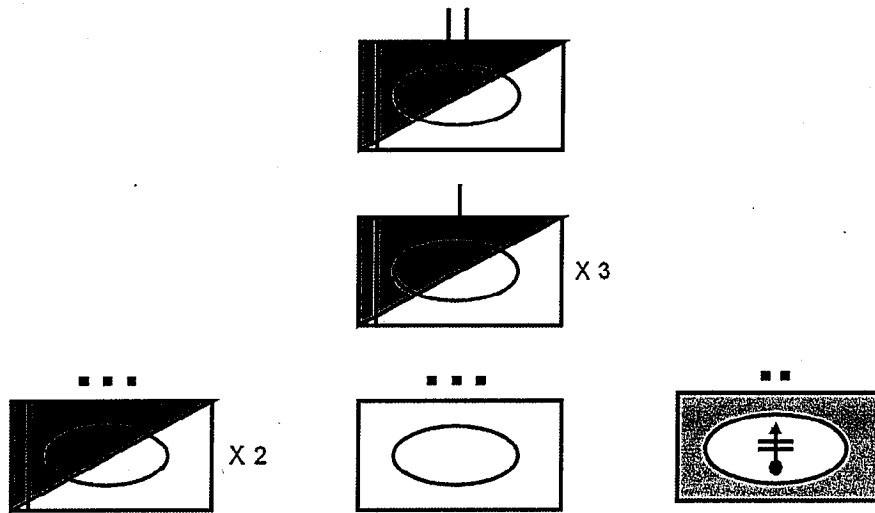
Since their inception, cavalry formations have performed reconnaissance and security missions to support the commander. The current modular reconnaissance squadrons cannot execute the full spectrum of their assigned missions, and they can no longer fully support maneuver commanders in the execution of their assigned missions.

Recommendations

Based on the three previously identified flaws in the modular force redesign of the U.S. Army's cavalry formations, several changes/modifications are necessary within this community. The Army operates in a resource constrained environment. These recommendations rely solely on the hypothesis that to execute the assigned cavalry missions properly, these formations need the following recommendations implemented. These recommendations are intended to address the identified design flaws, missing cavalry mindset and training focus, and to correct the inability to execute the full spectrum of reconnaissance and security missions:

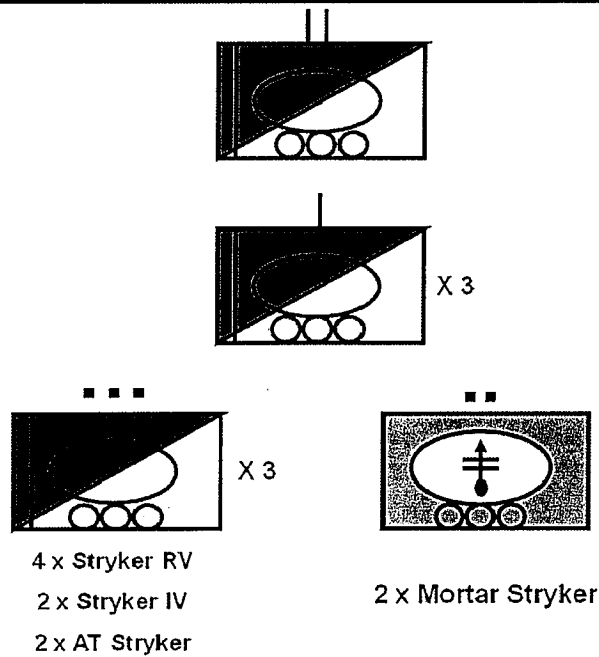
- Implement the approved FDU and give each scout platoon the six additional dismounted scouts
- If the design of these formations demands heavy reliance on their sensors, the "quality of firsts", then each squadron needs its own Shadow UAS controlled by the squadron commander; in addition to the ones that the brigade commander already controls
- Make the HBCT scout platoon a standard six CFV Platoon task organization (see Figures 9-12)
 - Supports self recovery operations if a vehicle is damaged or destroyed
 - Add four LRAS3 equipped HMMWVs to the troop headquarters until LRAS3 technology is incorporated into the CFV, and the commander can use these vehicles however he deems necessary to complete his mission
- Add a tank platoon to each HBCT troop (see Figure 9)
 - Gives the troop three maneuver elements
 - Supports reconnaissance in force
 - Enables the squadron to guard
 - Enables the squadron to deceive the enemy of the location of the BCT's main body and survive "cavalry contact"

Figure 9: Recommended Updates to HBCT Reconnaissance Squadron



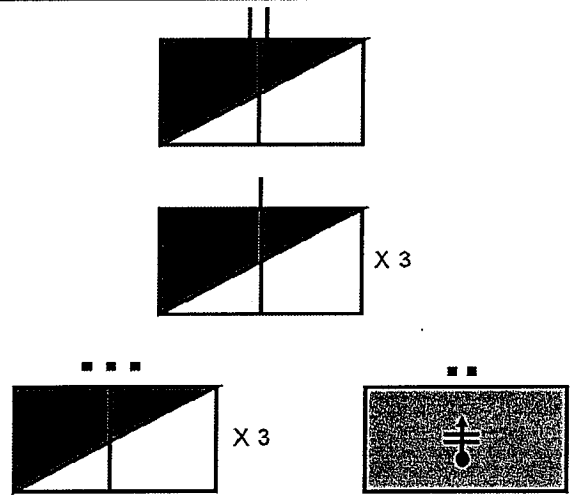
- Increase the size of the SBCT platoon to eight Stryker Vehicles: four reconnaissance variants (RV), two infantry variants (IV), and two anti-tank (AT) variants (see Figure 10)
 - Gives the platoon eight vehicles to execute reconnaissance and security missions
 - Gives the platoon four vehicles that can engage the enemy from a protected posture inside the vehicle (IV and AT variants)
 - Gives the platoon an AT capability to engage armored vehicles at the maximum effective direct fire range of current U.S. AT weapon systems

Figure 10: Recommended Updates to SBCT Reconnaissance Squadron



- Make all three troops in the IBCT squadron HMMWV mounted troops, and change all of the MOS to 19D scouts (see Figure 11)

Figure 11: Recommended Updates to IBCT Reconnaissance Squadron



- Change the name of the formations back to Cavalry
- Make SLC and CLC mandatory in accordance with the Department of the Army’s officer management pamphlet
 - Create an additional skill identifier to identify those Soldiers that complete SLC and CLC in order to identify Soldiers that complete this specialized training (similar to Airborne School, Reconnaissance and Surveillance Leader’s Course, etc.)

Conclusions

Modularization and transformation within the Army’s BCTs is all but complete. Without a doubt, the Army’s cavalry formations have undergone a dramatic transformation.

Unfortunately, a negative side effect of this transformation is a gap in the capabilities of these modular “reconnaissance squadrons” because they cannot perform the full spectrum of reconnaissance and security operations. Their tables of organization and designs are flawed.

The “quality of firsts” is currently unattainable on the modern battlefield. A sizeable number of future leaders in the cavalry community are not receiving the necessary and required training to prepare them for their likely assignments into these organizations. So where are we now?

Just as in every war, soldiers and leaders are finding ways to work around the system. Leaders are changing their task organization once they deploy to execute combat operations in order to internally correct some of these flaws. However, this does not alleviate the responsibility that the Army's armor community has to ensure that these formations, their training, and their doctrine support their success on the current battlefield, and more importantly, the battlefield of tomorrow. Napoleon Bonaparte said, "Without cavalry, all battles are without result."⁴¹ Without some adjustments to present cavalry formations, our future battles may not have the results that we desire.

NOTES

¹ FM 17-95, pg 1-1.

² Tom Shanker, "New Chief Sets Out to Redesign a Stretched-Thin Army", *nytimes.com*, January 28, 2004, <http://query.nytimes.com/gst/fullpage.html?res=9506EFDC1238F93BA15752C0A9629C8B63&sec=&spon=&pagewanted=all> (accessed 4 FEB 09).

³ Ibid.

⁴ Ibid.

⁵ FM 17-95, pg 1-20.

⁶ FM 3-20.971, pg 1-11.

⁷ FM 17-98, pg 1-6.

⁸ Armor Branch Brief, OCT 08 edition, slide 18.

⁹ FM 3-20.96, pg 1-12.

¹⁰ Ibid, pg 1-13.

¹¹ Ibid, pg 1-11.

¹² Ibid, pg 1-9.

¹³ Ibid.

¹⁴ ST 3-20.983, pg 2-15 and SLC TTP.

¹⁵ United States Army. *Army Structure Memorandum 09-13 Grow the Army (GTA) 4 October 2008 Final*. <http://www.us.army.mil/suite/doc/14300403>, pg 36 (accessed 21 MAR 09).

¹⁶ National Defense Authorization Act for FY 2006, sections 401-403, <http://www.dod.mil/dodgc/olc/docs/PL109-163.pdf> (accessed 21 MAR 09).

¹⁷ Personal experience from conversations with OIF veterans while serving as a CLC instructor.

¹⁸ FM 3-20.96, pg 1-12 and SLC TTP.

¹⁹ http://www.raytheon.com/capabilities/rtnwcm/groups/ncs/documents/content/rtn_ncs_products_lras3_pdf.pdf (accessed 1 MAR 09).

²⁰ ST 3-20.983, pg 2-5.

²¹ http://www.amgeneral.com/vehicles_hmmwv_models_expanded_details.php/mID/10 (accessed 4 FEB 09).

²² <http://www.fas.org/man/dod-101/sys/land/m2.htm> (accessed 4 FEB 09).

²³ Urwin, pg 112.

²⁴ FM 3-20.98, *Reconnaissance Platoon*; FM 3-20.97, *Reconnaissance Troop*; FM 3-20.96, *Reconnaissance Squadron*; FM 17-98, *Scout Platoon*; FM 17-97, *Cavalry Troop*; FM 17-95, *Cavalry Operations*.

²⁵ FM 1-02, pg 1-158.

²⁶ FM 17-95, 1-1.

²⁷ FM 3-20.96, pgs x-xii, MCCC PowerPoint presentation slides 6-14, and Wilson's article pg 1.

²⁸ Wilson, pgs 6-7.

²⁹ Ibid, pg 1.

³⁰ McMaster, pg 58.

³¹ Clausewitz, pgs 119-121.

³² Hollis interview with GEN Wallace.

³³ Clausewitz, pgs 119.

³⁴ DA PAM 600-3, pgs 63-64.

³⁵ Author's recollection as the OIC of CLC and SLC.

³⁶ Ibid.

³⁷ JP 1-02, pg 457.

³⁸ FM 1-02, pg 1-158.

³⁹ FM 3-90, pg Glossary-24.

⁴⁰ FM 3-20.96, pgs 4-8 – 4-16.

⁴¹ <http://www.military-quotes.com/Napoleon.htm> (accessed 4 FEB 09).

ACRONYM GLOSSARY

AO: Area of Operations
AT: Anti-Tank
BCT: Brigade Combat Team
BFV: Bradley Fighting Vehicle
BSB: Brigade Support Battalion
BSTB: Brigade Special Troops Battalion
CAB: Combined Arms Battalion
CBRN: Chemical, Biological, Radiological, and Nuclear; formerly NBC (Nuclear, Biological, and Chemical)
CFV: Cavalry Fighting Vehicle
CLC: Cavalry Leader's Course
DOD: Department Of Defense
FDU: Force Design Update
FLIR: Forward Looking Infrared Radar
FM: Field Manual
FSC: Forward Support Company
GWOT: Global War on Terrorism
IBCT: Infantry Brigade Combat Team
IV: Infantry Variant of the Stryker Vehicle
HBCT: Heavy Brigade Combat Team
HHT: Headquarters and Headquarters Troop
HMMWV: High Mobility Multi-Wheeled Vehicle
LRAS3: Long Range Acquisition Scout Surveillance System
MI: Military Intelligence
MOS: Military Occupational Specialty
MTOE: Modified Table of Organization and Equipment
NCW: Net Centric Warfare
OIF: Operation Iraqi Freedom
OEF: Operation Enduring Freedom
OPCON: Operational Control
PL: Platoon Leader
PSG: Platoon Sergeant
RV: Reconnaissance Variant of the Stryker Vehicle
SBCT: Stryker Brigade Combat Team
SLC: Scout Leader's Course
TACON: Tactical Control
UA: Unit of Action
UAS: Unmanned Aerial System; previously a UAV (Unmanned Aerial Vehicle)
USA: United States Army
USMC: United States Marine Corps

BIBLIOGRAPHY

MILITARY PUBLICATIONS

- U.S. Department of the Army, *Commissioned Officer Professional Development and Career Management*, DA PAM 600-3. Washington, DC: U.S. Department of the Army, 11 DEC 07.
- U.S. Department of Defense, *Department of Defense Dictionary of Military and Associated Terms*, JP 1-02. Washington, DC: U.S. Department of Defense, 21 SEP 04.
- U.S. Department of the Army, *Operational Terms and Graphics*, FM 1-02. Washington, DC: U.S. Department of the Army, SEP 04.
- U.S. Department of the Army, *Reconnaissance Squadron*, FM 3-20.96. Washington, DC: U.S. Department of the Army, SEP 06.
- U.S. Department of the Army, *Reconnaissance Troop: Recce Troop and Brigade Reconnaissance Troop*, FM 3-20.971. Washington, DC: U.S. Department of the Army, DEC 02.
- U.S. Department of the Army, *Tactics*, FM 3-90. Washington, DC: U.S. Department of the Army, JUL 01.
- U.S. Department of the Army, *The Brigade Combat Team*, FM 3-90.6. Washington, DC: U.S. Department of the Army, AUG 06.
- U.S. Department of the Army, *Cavalry Operations*, FM 17-95. Washington, DC: U.S. Department of the Army, 24 DEC 96.
- U.S. Department of the Army, *Cavalry Troop*, FM 17-97. Washington, DC: U.S. Department of the Army, 24 DEC 96.
- U.S. Department of the Army, *Scout Platoon*, FM 17-98. Washington, DC: U.S. Department of the Army, APR 99.
- U.S. Army Armor Center & School, *Reconnaissance Handbook*, ST 3-20.983. Fort Knox, KY: U.S. Army Armor Center & School, APR 02.

ARTICLES

- Grossman, Elaine M. "Critique of Army Redesign Proves Highly Contentious Inside Service." *Inside Washington Publishers*, 2 MAR 06. <http://defense.iwpnewsstand.com/>
- Hollis, Patrecia Slayden. "Trained, adaptable, flexible forces = victory in Iraq: Lieutenant General W. Scott Wallace CG of V Corps in Iraq during OIF – Interview." *FA Journal*, SEP-OCT 03. http://findarticles.com/p/articles/mi_m0IAU/is_5_8/ai_110732251.

BIBLIOGRAPHY

McMaster, H.R. "Crack in the Foundation: Defense Transformation and the Underlying Assumption of Dominant Knowledge in Future War." Student Issue Paper, Center for Strategic Leadership, U.S. Army War College, 2003. <http://www.csl.army.mil/>.

Shanker, Tom, "New Chief Sets Out to Redesign a Stretched-Thin Army." *New York Times*, 28 JAN 04.
<http://query.nytimes.com/gst/fullpage.html?res=9506EFDC1238F93BA15752C0A9629C8B63&sec=&spon=&pagewanted=all>.

Wilson, Clay. *Network Centric Warfare: Background and Oversight Issues for Congress*. CRS Report for Congress RL 32411. Washington, DC: Congressional Research Service, 2 JUN 04. http://www.defenselink.mil/nii/NCW/ncw_sense.pdf.

BOOKS

Clausewitz, Carl von. *On War*. Edited by Michael Howard and Peter Paret. Translated by Michael Howard and Peter Paret. Princeton, NJ: Princeton University Press, 1984.

Urwin, Gregory J.W., illustrated by Ernest Lisle Reedstrom, *The United States Cavalry: An Illustrated History 1776-1944*. Norman: University of Oklahoma Press, 2003.

WEBSITES

<http://www.stewart.army.mil/3didweb/History/Historyhome.asp>.

Armor Branch Brief OCT 08 found at the following site (accessed 4 FEB 08):
<https://www.hrc.army.mil/site/protect/active/oparmor/arnews.htm>.

http://www.amgeneral.com/vehicles_hmmwv_models_expanded_details.php/mID/10.

<http://www.fas.org/man/dod-101/sys/land/m2.htm>.

http://www.raytheon.com/capabilities/rtnwcm/groups/ncs/documents/content/rtn_ncs_products_1ras3_pdf.pdf.

OTHER

"Initial Impressions Report, 25th Infantry Division and 1st Cavalry Division, Observations from Modular Divisions in Operation Iraqi Freedom." SEP 07. Center for Army Lessons Learned, FT Leavenworth, KS. <http://call.army.mil>.

"Reconnaissance Squadron Organizations" PowerPoint Presentation from FT Knox Maneuver Captain's Career Course (MCCC), dated 5 DEC 06.