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14. ABSTRACT

Despite the changing characteristics of conflict, cavalry maintains an enduring role, which consists of a trinity of purposes, balances a context dilemma of three competing factors, and has a series of enduring tactical concepts, which cavalry continually perform. Successful cavalry operations encompass a balanced application of the cavalry trinity with the cavalry context dilemma. Through theoretical analysis, this discourse will firstly redefine the role of cavalry, outlining the revised cavalry trinity of purposes, while also exploring the context for cavalry missing in Australian doctrine. This study exposes the competing factors of an economy of force nature and a desire for disproportionate effects, which are underpinned by the cavalry force's capabilities (technology and tactics). To frame cavalry's tactical and technological demands for the future, historical analysis through several case studies in the saddle and mechanised era are conducted to ensure that tactics and technological amendments meet fundamentally enduring tactical concepts, purposes, and contexts.

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MASTER OF MILITARY STUDIES

TITLE: ACHTUNG – BOXER! HOW TO EMPLOY CAVALRY IN THE MID-TWENTY-FIRST CENTURY.

SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
MASTER OF MILITARY STUDIES

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Executive Summary

Title: Achtung – Boxer! How to employ cavalry in the mid-twenty-first century.

Author: Major Joshua E. Higgins, Australian Army

Author's Note:

This essay is for the layman who thinks cavalry is a horse-mounted solder from antiquity.

This essay is for the cavalryman who has ever struggled to explain his/her job to a colleague.

This essay is for the COAC student who has just drawn a broad set of 'screen' lightning bolts and thrown the cavalry forward, with no other task or further consideration.

This essay is for the commander who has had cavalry attached and wondered, "How do I use them?"

Thesis: Despite the changing characteristics of conflict, cavalry maintains an enduring role, which consists of a trinity of purposes, balances a context dilemma of three competing factors, and has a series of enduring tactical concepts, which cavalry continually perform. Successful cavalry operations encompass a balanced application of the cavalry trinity with the cavalry context dilemma.

Discussion: Through theoretical analysis, this discourse will firstly redefine the role of cavalry, outlining the revised cavalry trinity of purposes, while also exploring the context for cavalry missing in Australian doctrine. This study exposes the competing factors of an economy of force nature and a desire for disproportionate effects, which are underpinned by the cavalry force's capabilities (technology and tactics). Historical analysis subsequently demonstrates that optimal cavalry operations ensue when the cavalry force correctly balances the cavalry trinity with the context dilemma, seeking the simultaneous achievement of each of the three purposes, whereas an unbalanced approach spells disaster. This understanding, represented in Figure 1, provides the platform for a comparative analysis supporting future cavalry development – ensuring that tactics and technological amendments meet fundamental enduring tactical concepts, purposes, and contexts, rather than serve the 'good ideas fairy' of incoherent capability augmentation. Doing so maintains cavalry's integrity while also providing a coherent method of future capability acquisitions and training developments.

Conclusion: The offered cavalry role provides a more thorough and appropriate synthesis of the enduring aspects of cavalry. Cavalry forces achieve this role by successfully balancing the cavalry context dilemma while also retaining the three enduring purposes of orientation, dislocation, and disruption. In providing a portal to examine the technological and tactical requirements of cavalry in the present, the past determines the folly of removing the enduring role of cavalry, while also demonstrating the disproportionate effects achieved through their retention. B-CRV implementation demands technological and tactical progression of thought to ensure the capability reaches maximum potential. To negotiate the minefield of "good idea procurement" modern adaptations of old lessons provide a logical framework to evolve cavalry to the changing characteristics of war while retaining adherence to enduring roles. If the ARA can heed the ghosts of the past, it provides the platform for a dangerously potent cavalry.

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THE OPINIONS AND CONCLUSIONS EXPRESSED HEREIN ARE THOSE OF THE INDIVIDUAL STUDENT AUTHOR AND DO NOT NECESSARILY REPRESENT THE VIEWS OF EITHER THE MARINE CORPS COMMAND AND STAFF COLLEGE OR ANY OTHER DOMESTIC OR INTERNATIONAL GOVERNMENTAL AGENCY. REFERENCES TO THIS STUDY SHOULD INCLUDE THE FOREGOING STATEMENT.

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Preface

As an eleven-year-old child, there I sat, confident and proud; my pawns entrenched in a two-up, one-back position and my bishops and rooks moving into depth positions from which they would defeat my father's dispersed force in a matter of moves with long-range attacks. Within an instant, however, it was over. His knight, which had been quietly amusing itself on the side of the board, snuck through my pawn barrier and crashed into my depth pawn position, immediately threatening my king. I gulped and hurriedly moved my king to safety. Next, he took my rook, and it all began to unravel. My queen, hampered by my own forces impeding her movement, watched on helplessly as he carved a swathe through several pawns and a bishop from undefendable angles. A few moves later, I was put out of my misery. Despite retaining half my forces, it was checkmate – primarily thanks to that grinning horse. That strange piece became my focal point of study for many a chess game of the future. My father and I have not played since; six years later, I joined the cavalry.

The current decade represents an evolutionary period for the Australian Army similar to that of General Creighton Abrams' "Big Five" evolution of the US Army at the end of the 1970s.[1] With Central Command Area of Operations counterinsurgency wars winding down, the Army refocuses its capability and intellectual evolution to adapt to the enduring nature and changing characteristics surrounding mid-twenty-first century conflict. With Australian cavalry's recently procured Boxer Combat Reconnaissance Vehicle (B-CRV) as part of Project Land 400 Phase 2 (L400-2) as the first-in-line, the cavalry has an opportunity to form the intellectual vanguard for Australia's negotiation of two competing issues that shape contemporary conflict.

First, the Australian Army must consider the morphing nature of the chessboard of conflict. The black and white symmetrically-edged board of the twentieth-century has dissipated, replaced by a polygon chessboard with greying squares towards the outer rim. This board forces armies to operate in both the grey zone and recognised conflict spectrum, with technology and tactics evolving beyond twentieth-century moulds. Should the Army replace the Australian Standard Light Armoured Vehicle (ASLAV) with the B-CRV along

[1] General Creighton Abrams' five pieces of technology restored battlefield primacy against a revised theatre of conflict: utility and attack helicopters, a new main battle tank, a new Infantry Fighting Vehicle, and an air defence missile. Robert H. Scales, *Certain Victory: The US Army in the Gulf War* (Washington, D.C.: Office of the Chief of Staff, US Army, 1993), 20.

existing lines of operational and tactical use, this risks an incomplete evolution. The challenge here is to determine which stimuli are enduring, and which are not in conflict. This author offers clarity by explaining what remains constant and what changes regarding cavalry's use as a piece of the Australian war chest while avoiding tactical-level discussion on the number of vehicles, length of training courses, or career course milestones, which better ensue within a revised doctrine publication.

Second, the Australian Army must negotiate its middle power budget and nuanced geopolitical desires embedded in Australia's grand strategy, which are juxtaposed with the capability implementation programs that are underway and slow to change. Acknowledging the chessboard's pieces grow ever more expensive, the Australian Army cannot afford to get this wrong. Blindly mimicking large-army acquisitions, mimicking ally tactical or operational concept restructures, or offsetting training solely against an assumed future belligerent is a fool's errand that increases the risk of a force incapable of effective joint operations. The Army's challenge is to use what it has optimally and shape precious acquisition accordingly. This author attempts to avoid unjustified technology fascinators by aligning future procurement lines to the enduring role of cavalry, thereby supporting a force capable of fighting on the grey, white, and black squares of the polygon chessboard.

Introduction: The Knight on The Polygon Chessboard

I knowe the knights walke in this game too well, Hee may skip ouer mee, and where am I then?

Thomas Middleton.[2]

The rollout of B-CRV into Australian cavalry units provides an enormous opportunity for the Australian Army to re-evaluate its understanding and use of cavalry forces. Doing so prevents intellectual stagnation from twenty years of stimuli in the previous war, while also evolving operational and tactical concepts that match the technology and tactics toward a future conflict. Optimal cavalry use demands commanders of cavalry overcome the instruments of friction that threaten success: insufficient cavalry doctrine, an inadequate understanding of cavalry force design following two regimental restructures in a decade, and inadequate tactical adaptation to the new B-CRV platform. Success requires that cavalry forces and their commanders understand cavalry's role, as this forms the lynchpin of successful employment.

Despite the morphing chessboard of war, cavalry maintains an enduring role, which consists of a trinity of purposes, balances a context dilemma of three competing factors, and has a series of enduring tactical concepts that cavalry continually performs. Successful cavalry operations encompass a balanced application of the cavalry trinity with the cavalry context dilemma.

Through theoretical analysis, this discourse will firstly redefine the role of cavalry, outlining the revised cavalry trinity of purposes, while also exploring the context for cavalry missing in Australian doctrine. This study exposes the competing factors of an economy of force nature and a desire for disproportionate effects, which are underpinned by the force's capabilities (technology and tactics) – a cavalry context dilemma. Historical analysis subsequently demonstrates that optimal cavalry operations ensue when the cavalry force correctly balances the cavalry trinity with the context dilemma, seeking the simultaneous

[2] Thomas Middleton, *A Game at Chesse*, ed. R.C. Bald (Cambridge: Cambridge University Press, 1929), 80.

achievement of each of the three purposes, whereas an unbalanced approach spells disaster. This understanding provides the platform for a comparative analysis supporting future cavalry development – ensuring that tactics and technological amendments meet fundamental enduring tactical concepts, purposes, and contexts, rather than serve the 'good ideas fairy' of incoherent capability augmentation. Only then will the cavalry personify the smiling horse that taught this author a lesson twenty-four years prior.

PART I. UNDERSTANDING THE SMILING HORSE.

One note on photographs: images of the mechanized cavalrymen doing their job are scarce. This is not surprising given that they were often closer to the enemy than anybody else.

Harry Yeide.[3]

I.1. Isn't cavalry supposed to ride horses? – Obstacles to understanding.

Australian doctrine insufficiently supports an optimal cavalry understanding. The Australian Army defines the cavalry role as "to locate, dislocate and disrupt the enemy through the conduct of offensive, defensive, reconnaissance and security activities both mounted and dismounted."[4] This definition generates confusion for cavalry forces and their commanders in several ways. First, the cavalry definition is absent the three ingredients that make up an optimal doctrinal definition: tactical concepts (the what), purpose (the why), and context (the competing factors) in which to ensure efficient employment – all of which exist in comparative definitions such as the infantry or the Special Air Service Regiment.[5] Rather

[3] Harry Yeide, *Steeds of Steel. A History of American Mechanized Cavalry in World War II*, (Minneapolis: Zenith Press, 2008), 10.

[4] Recent iterations of the publication have removed the mention of "dismounted" in the doctrinal statement. As this removal historically followed the transition of the cavalry scout role to the Army Reserve in quick succession, this was a case of the tail wagging the dog. Cavalry forces, like any other, conduct both mounted and dismounted operations as the terrain and situation dictate. The consideration of cavalry forces as light-tank crews tethered to vehicles is not consistent with effective cavalry operations. Commonwealth of Australia, *LWP-CA MTD CBT 3-3-6 Cavalry Regiment*, (Australian Army, 2014), 1-4.

[5] SASR special forces conduct protracted, difficult and challenging (context) small-team operations (tactical concepts) involving high-level precise military skills, (context) often in remote areas and with little tactical-level support." And later: SASR provide "special-operations capabilities in support of the Australian Defence Force (purpose). This includes providing unique capabilities to support sensitive strategic operations (purpose)." Similarly, the role of Royal Australian Infantry Corps is to seek out and close with the enemy (concepts), to kill or capture him, to seize and hold ground (purpose), and to repel attack by day or night (concept and context), regardless of season, weather, or terrain (context). Army, "Special Air Service Regiment," *Army*, accessed 08

than list tactical concepts, purpose, and then context, the Australian definition lists available purposes (locate, dislocate, and disrupt) and tactical concepts (offensive, defensive, reconnaissance, and security activities).[6] It does not describe the higher context, despite cavalry tactics necessitating an understanding of this context, nor does it address the context in which cavalry operates, thereby depriving readers of the critical context that binds a task to a purpose. It also notably omits stability operations and transition tasks, both of which are essential tactical concepts to cavalry employment.[7] Doing so simplifies the scope of cavalry operations and disconnects the definition from the chapters of its doctrine.

Second, unlike disruption or dislocation, the verb "locate" is non-doctrinal.[8] Consequently, cavalry commanders frequently interpret this term as a direct replacement for the tactical task of "reconnaissance," which causes a second-order problem. By replacing "locate" with "reconnoitre," this misnomer elevates a tactical concept (reconnaissance) into a purpose for conducting operations. Such elevation risks a wasteful use of cavalry to perform reconnaissance for its own sake.

Third, the Australian definition is complex, demanding an advanced understanding of manoeuvre warfare theory–most notably the concepts of dislocation and disruption–which is not remedied by a comprehensive study in ab initio officer or junior non-commissioned Officer (JNCO) training.[9] While the terms appear in several publications without definition, including the revised *LWD 3-0 Operations (2018)*, only the superseded, operational-level

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March 2020, https://www.army.gov.au/our-people/units/special-operations-command/special-air-service-regiment; Army, "Royal Australian Infantry Corps," *Army*, accessed 08 March 2020, https://www.army.gov.au/our-people/corps/royal-australian-infantry-corps.

[6] Commonwealth of Australia, *LWP-CA MTD CBT 3-3-6 Cavalry Regiment*, 1-4.

[7] Stability Operations and transition tasks have an entire section each within *LWP-CA MTD CBT 3-3-6 Cavalry Regiment*.

[8] Neither the Australian Defence Force Glossary nor the Army's warfighting doctrine defines the verb.

[9] Dislocation, disruption, and related ideas such as centre of gravity and critical capabilities are not taught in detail until sergeant subject courses and the Combat Officers Advanced Course. For a critique of the Australian Army's poor understanding of Decisive Events (which often incorporate dislocation and disruption) see Luke Dawson and Benjamin Gray, "Australian Tactical Design: Development and Use of Decisive Events," Grounded Curiosity (blog), January 4, 2018, https://groundedcuriosity.com/australian-tactical-design-development-and-use-of-decisive-events/.

LWD 3-0 Operations (Developing Doctrine) publication defines these terms.[10] The latter defines dislocation as "the result of actions to render the enemy's strength irrelevant by not allowing its employment at a critical time or place."[11] Similarly, disruption is "the result of a direct attack that neutralises or selectively destroys key elements of the enemy's capabilities… Disruption aims to reduce the enemy's cohesion and will to fight by neutralising or destroying parts of his force in a manner that prevents the force from acting as a coordinated whole."[12] Such a definition does not address the competing treatments of both dislocation and disruption by Richard Simpkin, J.F.C Fuller, Robert Leonhard, and David Funk, who grant a holistic understanding of these concepts by introducing ideas such as energy, momentum, and asymmetry.[13] Consequently, the majority of cavalry forces are unable to understand their allocated role beyond a rote definition until the sergeant or combat team level officer instructional milestones.

Lastly, the current Australian cavalry regimental structure has recently evolved to a multiplatform construct, challenging an extant myth that 'cavalry' was a vehicle type and not a tailored force. The sole prevalence of ASLAV within cavalry regiments in the past two decades is the likely culprit for this misnomer, reinforced by the most current ratified cavalry publication displaying an obsolete single platform regiment structure based on ASLAV.[14]

Consequently, a revised cavalry definition must address three critical areas to lay the foundation for successful doctrine revision and proper employment. First, it must contain

[10] Commonwealth of Australia, *LWD 3-0 Operations (Developing Doctrine)*, (Australian Army, September 19, 2008), 25.
[11] Ibid.
[12] Ibid.
[13] Commonwealth of Australia, *LWD 3-0 Operations (Developing Doctrine)*, 25; Richard E. Simpkin, *Race to the Swift: Thoughts on Twenty-First Century Warfare*, (London: Brassey's Defence Publishers, 1985), 139-40; Robert R. Leonhard, *The Art of Maneuver: Maneuver Warfare Theory and Airland Battle*, (New York: Ballantine Books, 1991), 66,73; David E. Funk, "Tactical Dislocation: Force XXI Doctrine or Just Another Pretty Theory?" (Monograph, United States Army Command and General Staff College, 1997), https://www.ausa.org/sites/default/files/SR-1998-CPMW-Tactical-Dislocation-Force-XXI-Doctrine-or-Just-Another-Pretty-Theory.pdf, 23-24.
[14] The Cavalry Regiment (2014) publication is a pre-Plan Beersheba document, while the Armoured Cavalry Regiment publication is not published.

correctly defined purposes. Specifically, this must entail the replacement of the word "locate.". Doing so enables understanding of the three enduring purposes of cavalry operations – henceforth known as the cavalry trinity. Second, like other doctrinal examples, this definition must also include the unique context of cavalry operations, a dilemma of competing factors that shape, hinder, and enhance cavalry operations – henceforth known as the cavalry context dilemma (see Figure 1). Understanding and then negotiating this dilemma provides a potent engine for the successful execution of cavalry operations. Lastly, the definition must be holistic, encompassing all of the enduring components of cavalry's role, thereby ensuring definition longevity. The United States Marine Corps (USMC) reconnaissance doctrine, the United States Army cavalry and reconnaissance doctrine, and historical synthesis provide the research engines to rectify these shortfalls.

I.2. Saddle up – Defining the cavalry trinity and context dilemma to frame a revised definition.

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.[15]

The verb "orient" and noun "orientation" provide a suitable replacement for the ambiguous "locate" expressed in Australian doctrine, as "orient" and "orientation" both appear in Australian doctrine and also represent a closer alignment to the purpose of cavalry reconnaissance and combat operations.[16] Cavalry "reconnoitre" to orient the commander – colloquially recognised as "providing time and space for the commander to make a decision."[17] Additionally, cavalry forces seek to misorient the enemy commander through a

[15] Maurice de Saxe, *Reveries on the Art of War,* ed. Thomas R. Phillips, trans. Thomas R. Phillips (New York: Dover Publications Inc., 2007), 67.
[16] Commonwealth of Australia, *LWD 3-0 Operations (2018),* (Australian Army, 2008), 25, 45, https://www.army.gov.au/sites/default/files/lwd_3-0_operations_full.pdf?acsf_files_redirect.
[17] Jonathan Ozols, Tim Hurley, and Grant Chambers, "The preparation and employment of the ACR based Cavalry Group" (unpublished essay, last modified November 29, 2018), Microsoft Word File.

combination of main force shielding and disproportionate decisive action, justifying "orient" and "orientation" of both friend and foe.[18]

US cavalry doctrine hints at the purpose of orientation by indicating cavalry "set conditions for successful operations of the unit for which they are conducting reconnaissance and security tasks. These roles are not necessarily missions themselves, but translate into mission statements."[19] USMC Light Armored Reconnaissance Battalion (LAR) doctrine additionally indicates that LAR is "responsible for combined arms reconnaissance and security missions in support of the Ground Combat Element."[20] [N.B. While the USMC officially considers the LAR as infantry, LAR's employment specifications, doctrine, and personnel acknowledge an inherent cavalry role.][21] This emphasis placed on linking cavalry operations in support of another unit provides the bridge between purpose and context, while also demonstrating that cavalry orient beyond just the enemy. Cavalry, therefore, takes orientation from the enemy and friendly forces, as well as the terrain (inclusive of physical, human, and informational terrain). Importantly, this synthesis also hints at the overlap that occurs between cavalry tactical concepts – where force orientation, adversary cohesion degradation, and enhanced understanding coincide – a critical idea discussed later in the historical analysis.

By solidifying this definition, cavalry's three purposes of orientation, dislocation, and disruption form a trinity that shapes appropriate cavalry use. Figure 1 articulates this cavalry trinity, showing how the three cavalry purposes lie between receipt of mission and the formulation of tactical concepts. Embedded within this trinity, importantly, is the missing

[18] Ibid.
[19] Headquarters Department of the Army. *FM 3-98 Reconnaissance and Security Operations, (*Washington: DC: Headquarters Department of the Army, July 01, 2015), 1-3.
[20] Headquarters United States Marine Corps, *MCTP 3-10D Employment of the Light Armored Reconnaissance Battalion,* (Washington DC: Headquarters US Marine Corps, April 4, 2018), 1-1.
[21] While Michaels acknowledges the difference in force structure between the USMC and US Army cavalry, he clarifies that the roles and tactical concepts associated with the LAR battalion were those consistent with cavalry in all but official name – including members of the unit referring to themselves as cavalry. G.J. Michaels, *Tip of the Spear. U.S. Marine Light Armor in the Gulf War*, (Annapolis: Naval Institute Press, 1998), 7-8.

link within Australian doctrine, and that which differentiates cavalry from other arms – the cavalry context dilemma. This context impacts the transition from purpose identification through to task selection and execution, therefore becoming essential to cavalry operations.

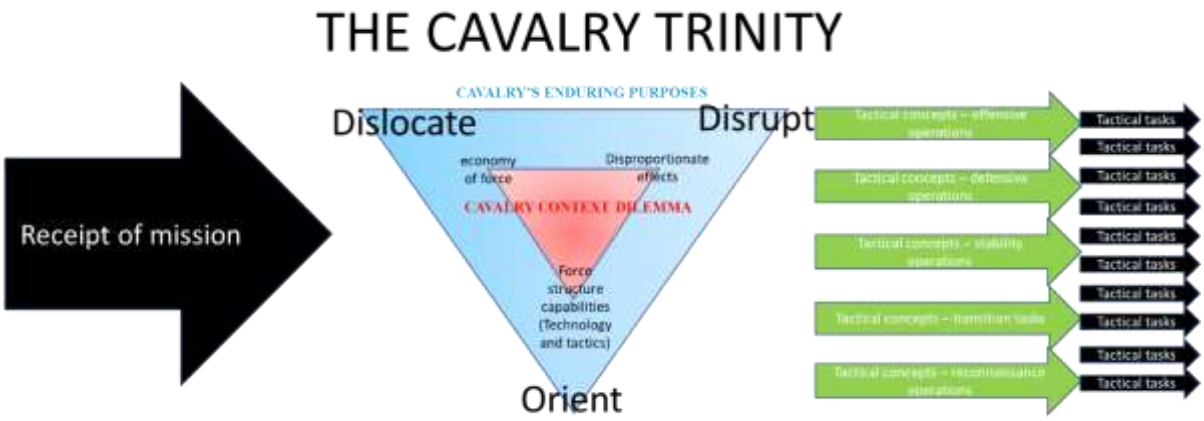

Figure 1: The cavalry trinity.

The cavalry context dilemma contains three parts that formulate the unique nature of cavalry operations. First, cavalry performs operations with a constant desire for an economy of force. While absent from Australian doctrine, William Stuart Nance, Harry Yiede, and M.H. Gillie's historical syntheses all reinforce this desire within cavalry operations.[22] Similarly, USMC LAR doctrine addresses this factor by defining its mission to "conduct reconnaissance, security and economy of force operations, and within its capabilities, limited offensive or defensive operations that exploit the unit's mobility and firepower."[23] Both 'within capabilities' and 'economy of force' not only differentiate cavalry's context from infantry but also forewarn that where infantry consistently seeks combat, cavalry tends to perform combat in the pursuit of other objectives. Examples such as reconnaissance or coup

[22] William Stuart Nance, *Sabers through the Reich: World War II Corps Cavalry from Normandy to the Elbe, (Kentucky:* University Press of Kentucky, 2017), 1-8, 263; Harry Yeide, *Steeds of Steel,16-19, 23*; M.H. Gillie, *Forging the Thunderbolt. History of the U.S. Army's Armored Forces, 1917-45*, (Mechanicsburg, Pennsylvania: Stackpole Books, 2006), 41-44.
[23] Headquarters United States Marine Corps, *MCTP 3-10D Employment of the Light Armored Reconnaissance Battalion*, 1-1.

de main logically shape the practitioner towards employing cavalry for disproportionate effects.

Second, sound cavalry employment pursues disproportionate effects. USMC LAR's doctrinal inclusion of "exploit the unit's mobility and firepower" hints cavalry pursues unequal outcomes with capable firepower and tempo. These themes match Gervase Phillips and William Stuart Nance's scholarly appraisal that cavalry missions occur beyond local 'tactical' responsibilities during reconnaissance and covering force operations, such as in the Franco Prussian and Second World Wars.[24] Scholars Paul Handel and Joseph Barto validate cavalry's disproportionality by showing cavalry's possession of multiple infantry support weapon skills, thereby providing increased flexibility.[25] As historian Mark Lardas notes, "Putting soldiers on horses does not make them cavalrymen."[26]

While US Army cavalry doctrine avoids the word disproportionate, it still considers a blended inclusion of economy of force with disproportionate effects by indicating that cavalry frequently creates surprise through stealth or deception.[27] While deception is not unique to cavalry, cavalry's frequent deception participation is evident. Hannibal's 217 BC camouflaged cavalry at Trasimene, Napoleon's 1805 Black Forest cavalry feint, Sir Garnet Wolseley's 1882 advance to Tel el-Kebir, the Commonwealth's 1917 Battle of Beersheba, General Allenby's 1918 Megiddo operation, and Operation Bertram's use of both dummy and real vehicles in 1942 all demonstrate classic examples of cavalry achieving

[24] As an example, the 4th Mechanised Cavalry Group in the Second World War (the size of an American Regiment) was relieved by an entire Infantry Corps on two occasions in 1944. Gervase Phillips, "'Who Shall Say that the Days of Cavalry are Over?' the Revival of the Mounted Arm in Europe, 1853-1914." *War in History* 18 (1) 2011: 19. doi:http://dx.doi.org.lomc.idm.oclc.org/10.1177/0968344510382606. https://search-proquest-com.lomc.idm.oclc.org/docview/853608218?accountid=14746; William Stuart Nance, *Sabers through the Reich*, 264; Headquarters United States Marine Corps, *MCTP 3-10D Employment of the Light Armored Reconnaissance Battalion,* 1-1.

[25] Qualifications include anti-armour, automatic grenade launcher, advanced communications, micro-sized unmanned aerial vehicle use, and reconnaissance. Joseph C. Barto III, *First In, Last Out – The History of the 2D Squadron, 4th Cavalry*, (USA: Pickle Partners Publishing, 2014), Kindle Edition, Loc 294, 316, 339,
Paul Handel, *Fifty Years of the Royal Australian Armoured Corps, 1948 to 1998*, (Puckapunyal, Victoria: Royal Australian Armoured Corps Memorial and Army Tank Museum, 1998), 28.

[26] Mark Lardas, *Roughshod Through Dixie. Grierson's Raid 1863*, (Oxford: Osprey Publishing, 2010), Kindle Edition, 73.

[27] Headquarters Department of the Army. *FM 3-98 Reconnaissance and Security Operations.* 4-97.

disproportionate effects with economical force arrays.[28] In these instances, smaller or less capable cavalry forces misoriented, dislocated, and disrupted disproportionate enemy forces by engaging in advantageous combat or avoiding untimely combat. While this relationship between an economy of force and disproportionality is essential, it remains underpinned by one crucial factor – the force structure's capabilities.

Third, the commander's understanding of the cavalry force's capabilities concerning assigned missions underpins sound cavalry employment. While this factor is essential for all troops, cavalry's is critically vital as cavalry's economy of force nature and desire for disproportionate effects significantly elevate risk to force and mission. A symptom of this factor's prevalence includes scholars and military personnel debating over cavalry unit structure discussions, arguing over light versus heavy cavalry platforms, and mandating specific main-gun size and armour protection capabilities.[29] Noting the B-CRV's rollout has commenced, military scholar Daniel Gouré's indication that successful platform integration is only balanced by understanding and fusing the full ability of a force's unique training and technological capabilities is ever relevant.[30] As the historical analysis will later show, cavalry failure often incorporates the dilemma failing via this factor.

An expanded role encompassing the full range of tactical concepts remediates the final Australian doctrinal shortfall. As scholars demonstrate that cavalry conduct

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[28] Barton Whaley, Practice to Deceive. Learning Curves of Military Deception Planners, (Annapolis: Naval Institute Press, 2016), 8-10, 77-80; Thaddeus Holt, *The Deceivers. Allied Military Deception in the Second World War*, (London: Orion Books, 2005), 240-5; Brian J. Drohan, "From Beersheba to Megiddo" in *Weaving the Tangled Web. Military Deception in Large-Scale Combat Operations* (Fort Leavenworth, Kansas: Army University Press, 2018), 27-45; Nic Fields, *Lake Trasimene 217 BC. Ambush and annihilation of a Roman Army* (Oxford: Osprey Publishers, 2017), Kindle Edition Loc 1228-1314; David G. Chandler, *The Campaigns of Napoleon*, (New York: Macmillan Publishing, 1966), Kindle Edition, 147.

[29] John J. McGrath, *Scouts Out!*, 198-200; Matt Gonzales, "Marine Corps plans to replace LAV with new, 'transformational' ARV," Marines, April 16, 2019, accessed March 01, 2020, https://www.marines.mil/News/News-Display/Article/1817404/marine-corps-plans-to-replace-lav-with-new-transformational-arv/; Matthew Dooley, "Ignoring History: The Flawed Effort to Divorce Reconnaissance from Security in Modern Cavalry Transformation," (master's thesis, U.S. Army Command and General Staff College, 1994), 95-108.

[30] Daniel Gouré, "Winning Future Wars: Modernization and a 21st Century Defense Industrial Base," Military Strength Topical Essays, *Heritage.org*, October 04, 2018, accessed March 01, 2018, https://www.heritage.org/military-strength-topical-essays/2019-essays/winning-future-wars-modernization-and-21st-century.

reconnaissance, security operations, economy of force missions, stability operations, and coordination and liaison duties (including enabling and transition tasks), these concepts must appear in a revised definition.[31] While this synthesis elevates the importance of coordination and liaison duties buried within doctrinal annexes, it also demonstrates the simultaneity and overlap of reconnaissance and security actions to generate shaping and disproportionate effects.[32] The conduct of reconnaissance-in-force, reconnaissance-by-fire, and reconnaissance-pull demonstrate this simultaneity in action. Frequent historical precedence also binds the components of each of the three definitions together, showing that each is correct in its own right, providing a platform for a revised definition. A concise definition that synthesises the tactical concepts, purpose, and context together is:

By the conduct of reconnaissance, security, transition, and disproportionate economy of force-driven offensive, defensive, and stability operations, cavalry forces support the commander through orientation, dislocation, and disruption.

This proposal requires a historical validation. To prove cavalry's enduring role, successful cavalry operations must demonstrate the pursuit of a nested cavalry trinity of tactical concepts, purpose, and context. The trinity's presence during cavalry's horseback years, after the interwar changeover years, and during the twentieth century's vehicle-mounted evolution confirm this enduring role, as well as demonstrate the value of its retention.

[31] William Stuart Nance, *Sabers through the Reich*, 263; Harry Yeide, *Steeds of Steel,19*-20, 29-32; M.H. Gillie, *Forging the Thunderbolt*, 41-44; Heinz Guderian, *Achtung – Panzer!*, trans. Christopher Duffy (London: Cassell Military Paperbacks, 1999), 163-5.
[32] William Stuart Nance, *Sabers through the Reich, 1-2.*

PART II – PROVING THE ENDURING ROLE OF CAVALRY.

"Heavy rains and mists prevented the air force from observing. The British carried on with their cavalry – the Turks, without cavalry, were helpless."

Malcolm Wheeler-Nicholson.[33]

II.0. The cavalry has arrived – When cavalry successfully nests the trinity.

To provide examples of cavalry's enduring role, optimal cavalry operations must achieve a nested cavalry trinity. Similarly, cavalry failures must contain a disconnect of the cavalry trinity. Within this trinity, cavalry's three purposes are the most elusive but essential binding agent for successful cavalry operations as they bridge tactical concepts to context. Consequently, the identification of these three purposes makes their pursuit the most critical component of testing cavalry's enduring role – and the focal point of this discourse. In the saddle-era, United States Army Colonel Benjamin Grierson's Civil War raid demonstrated a successful trinity application within a total war. The interwar years show that despite significant technological change, the trinity remained consistent. Furthermore, several US cavalry units in Vietnam demonstrated a successful trinity application within a hybrid war. Finally, US cavalry in the Gulf War exemplified the retention of achieving the cavalry trinity in a limited war.

II.1 Grierson's run – Cavalry orients, dislocates, and disrupts in total war.

United States Army Colonel Benjamin Grierson's Cavalry raid from La Grange, Tennessee to Baton Rouge, Louisiana from 17 April to 02 May 1863, demonstrated the extraordinary value of cavalry pursuing operational and tactical-level orientation, dislocation, and disruption of the enemy through shaping and combat actions. By early 1863, the well-defended Port of Vicksburg, on the Mississippi river, stood as the critical strongpoint for the Confederate States of America (CSA) in maintaining lines of communication and supply to

[33] Malcolm Wheeler-Nicholson, *Modern Cavalry: Studies on Its Role in the Warfare of To-Day with Notes on Training for War Service*, (New York: The MacMillan Company, 1922), 154. Citations refer to the Scholars Choice 2017 edition.

its eastern and western states. For Union forces, Vicksburg was the final lynchpin for securing the Mississippi river, effectively splitting the CSA in two.[34] With limited forces available (see Figure 2), Grierson and the Army of West Tennessee faced an uphill challenge.

As his Army of West Tennessee marched south down the western side of the Mississippi (see Map 1), Lieutenant General Ulysses S. Grant sought an unopposed or lightly defended crossing point as a precondition for his ensuing assault onto Vicksburg. Recognising the strength of regional CSA forces, Grant ordered Colonel Benjamin Grierson's cavalry to raid (a tactical task within the tactical concept of offensive operations) east of the Mississippi to physically dislocate CSA defenders away from his crossing point and weaken the CSA defensive locations around Vicksburg.[35] Doing so would misorient the enemy commander to the incorrect objective, consequently facilitating dislocation and disruption. Grierson's raid extraordinarily achieved both operational and tactical orientation, disruption, and dislocation, paving the way for later Union success at Vicksburg.

Operationally, Grierson's raid achieved all three cavalry purposes. He misoriented and dislocated thousands of CSA troops from Mississippi, Tennessee, Alabama, and Louisiana under CSA Lieutenant General John C. Pemberton, who was in pursuit of his 1700-strong understrength brigade.[36] Critically, Grierson's raid (see Map 2) lured CSA Lieutenant Colonel C.R. Barteau's 2nd Tennessee Cavalry forces away from Grant's crossing site. This enabled Grant to cross, encircle, starve, and prevent reinforcement of the beleaguered

[34] Mark Lardas, *Roughshod Through Dixie*, 30-31.

[35] While Lardas indicates the original main effort was to facilitate the river crossing and capture of Port Hudson, with Vicksburg as a subsequent objective, he does indicate that the strategic objective did not change throughout. Similarly, Smith indicates the raid contained two primary objectives – destroy the Southern Railroad of Mississippi, and also to facilitate Grant's crossing. Mark Lardas, *Roughshod Through Dixie*, 24; Timothy B. Smith, *The Real Horse Soldiers, Benjamin Grierson's Epic 1863 Civil War Raid Through Mississippi*, (California: Savas Beatie, 2018), Kindle Edition, xviii.

[36] Grierson's orbat should have contained 3600 men at full strength, however he only possessed 1750. Similarly, while debate rages between historians as to the number of CSA forces rediverted to intercept Grierson, it is accepted that the number was substantial. It also drew Infantry units from Vicksburg, Jackson, and Port Hudson. For more see Paul C. Jussel, "Operational Raids: Cavalry in the Vicksburg Campaign, 1862 – 1863," (master's thesis, U.S. Army Command and General Staff College, 1979, 71-73, Defense Technical Information Center, https://apps.dtic.mil/dtic/tr/fulltext/u2/a227562.pdf; Dee Brown, *Grierson's Raid*, (New York: Open Road Integrated Media, 2012), Kindle Edition, 18; Timothy B. Smith, *The Real Horse Soldiers*, 352.

Vicksburg defenders before their surrender on 04 July 1863.[37] Importantly, Vicksburg and Port Hudson's fall, five days later, ceded strategic control of the Mississippi to Union forces, dislocating CSA forces from critical operational-level Trans-Mississippi supply stocks that historians identify as one of the vital turning points of the war.[38] Without this necessary dislocation, Grant would have faced a similar amphibious and land operational scenario that previously resulted in defeat. Consequently, Grierson's raid possessed immense importance for Union operational and strategic success, operationally disrupting the CSA, and exposing its weak industrial base later exploited by Sherman's march to the sea. Without Grierson's concurrent ability to dislocate and disrupt, this operation would not have been possible.

Grierson's destruction of fifty miles of critical railroad infrastructure along the three lines leading to Vicksburg (the Southern Railroad from Meridian to Vicksburg, the New Orleans and Jackson line from Memphis to Mississippi, and the Mobile and Ohio line) operationally disrupted CSA supply basing. The destruction of rail lines, locomotives, and over a hundred rolling stock resulted in the New Orleans to Jackson railroad ceasing to function for the remainder of the war. Additionally, other networks only received minor repairs as the CSA struggled to contain the haemorrhage.[39] Such destruction struck at the heart of the CSA's ability to maintain a capable fighting force in the Western campaign, exacerbated further by Grierson's torching of CSA clothing factories at Greensborough and Bankston that provided critical shoes and blankets to CSA forces.[40] While the operational achievements overshadowed the tactical success, the prevalence of tactical-level dislocation, in conjunction with disruption reinforces the value of cavalry maintaining this ability.

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[37] Mark Lardas, *Roughshod Through Dixie,* 14.

[38] McPherson and Davis indicate this was, in conjunction with Gettysburg, the war's crucial turning point. James M. McPherson and George Henry Davis, Battle Cry of Freedom: The Civil War Era, (New York: Oxford University Press, 1988), 665; American Battlefield Trust "10 Facts: The Vicksburg Campaign," American Battlefield Trust, accessed January 20, 2020, https://www.battlefields.org/learn/articles/10-facts-vicksburg-campaign.

[39] Lardas says that the locomotives were so valuable, JEB Stuart hauled a captured one via oxen to Confederate encampments. Mark Lardas, *Roughshod Through Dixie,* 70; Timothy B. Smith, *The Real Horse Soldiers,* 252-253; Dee Brown, *Grierson's Raid,* 110-111.

[40] Dee Brown, *Grierson's Raid,* 78.

Grierson achieved tactical-level dislocation on multiple occasions during the raid. First, Grierson's dispatch of Colonel Edward Hatch and the 2nd Iowa Regiment and field gun east to destroy the Mobile and Ohio Railroad (a secondary objective) drew the remainder of available CSA cavalry with it.[41] This diversion misoriented and dislocated CSA cavalry in pursuit of Hatch's force, enabling Grierson's main force of two regiments to continue to penetrate south toward the main objective at Newton's Station.[42] Consequently, CSA cavalry, unable to maintain contact with Grierson's force from the north, ensured the dislocation of their southern encamped, slow-moving, but powerful infantry and artillery forces who were unable to reconnoitre and occupy a suitable blocking position to fix Grierson's force for subsequent destruction.[43] Meanwhile, Grierson commenced disruption operations in the CSA deep space.[44] This diversion also prevented the forewarning of the local Mississippi militia brigades, capable of identifying and eroding the cavalry force through persistent skirmishing into ineffectiveness, causing a slower but effective end to the raid's duration.

Second, Grierson's frequent capture and replacement of lame and tired mounts with fresh CSA ones during the raid dislocated the CSA cavalry from a critical source of individual capability overmatch – faster and superior-bred horses.[45] While superficially trivial, this undermatch was a contributing factor to CSA cavalry victories during the first half of the war. In the context of waning CSA stocks by 1863, it became of operational importance as the war continued. Grierson's replenishment continually propped up the force structure capabilities of his units by managing fatigue and increasing mobility, thereby allowing for greater risk to pursue disproportionate effects and stave off the economy of force concerns generated by the depth of his raid. Balancing this dilemma through mobility superiority and effective forward screening, Grierson effectively reoriented on several

[41] Ibid, 22.
[42] Timothy B. Smith, *The Real Horse Soldiers*, 132-138; Mark Lardas, *Roughshod Through Dixie,* 74.
[43] Mark Lardas, *Roughshod Through Dixie,* 18.
[44] Ibid.
[45] Timothy B. Smith, *The Real Horse Soldiers*, 352; Mark Lardas, *Roughshod Through Dixie*, 31.

occasions with superior situational awareness to avoid CSA ambushes near McAdory's Station.[46] As the raid wore on, Grierson was also able to disrupt intelligence efforts to locate him.

Third, Grierson dislocated CSA forces attempting to establish contact with his raiding party by seeding false narratives (via ruses) to Confederate prisoners who were allowed to 'escape', as well as civilian personnel when passing through known belligerent areas.[47] These methods also distracted CSA forces from Grant's main force. Civilian interaction importantly provides an essential clue in cavalry's pursuit of future operations in densely populated areas – a requirement for human intelligence (HUMINT) collection and deception dissemination to orient and misorient. Together, these abilities provide the practitioner with an opportunity for simultaneous orientation, dislocation, and disruption.

Lastly, Grierson's mastery of concentration and dispersion, as well as perfidious deception achieved dislocation. His scouts, dressed as CSA militia (the Butternut Guerrillas under Sergeant Richard Surby), dislocated the superior Confederate information gathering efforts afforded through garrison outposts and what would amount to, in modern parlance, southern civilian HUMINT networks.[48] First-hand accounts demonstrated the successful duping of Confederate military and civilians during portions of the raid, disrupting CSA efforts to find and target Grierson, while also assisting his resupply through foraging.[49] The CSA's ability to orient, despite human terrain dominance, was ineffective.

Grierson's pursuit of the trinity within the saddle era demonstrated the existence of the enduring role of cavalry. Grierson's raid had the presence of all three cavalry purposes. Additionally, Grierson's ability to achieve strategic effects with an understrength force confirms an interrelationship of economy of force with disproportionate effects. Superior

[46] Timothy B. Smith, *The Real Horse Soldiers*, 289-291.
[47] Dee Brown, *Grierson's Raid*, 86, 172.
[48] The CSA found it difficult to determine the size and main effort of Grierson's raid. Timothy B. Smith, *The Real Horse Soldiers*, 189.
[49] Dee Brown, *Grierson's Raid*, 85-86.

tactics and horse mounts (technology) underpinned Grierson's balanced approach. But was this role inherently linked to the platform, or was it genuinely enduring? The interwar years provide the solution to this question; cavalry's role was enduring, and it transcended platform or mount type, despite significant stress testing by technology and intellectual stagnation.

II.2 Are we riding or driving? – Cavalry's trinity despite significant technological change.

Despite significant technological stressors of the end of the saddle era, which initially unbalanced the cavalry context dilemma, cavalry maintained its trinity during the interwar years through a multiplatform approach to cavalry operations. Notwithstanding, the transition was not easy for cavalry forces. In the US, change was initially farcical, with horse cavalry deployed unrealistically against machine-gun wielding armoured vehicles and infantry on several interwar trials, with skewed results.[50] Least memorable, the 1929 Divisional Field Manoeuvres and portions of the 1934 Kansas manoeuvres pitched horse cavalry in both offensive and defensive operations in a similar fashion to the Polish 1939 operations that were a disaster for the Polish against the Wehrmacht.[51] Despite McGrath, Morton, and Yeide indicating that US congressional and service demands desired mechanisation from 1927, change was slow.[52] Vehicle-mounted cavalry was hampered by doctrine lag, the Great

[50] Harry Yeide, *Steeds of Steel, 15, 17, 19, 21;* Robert S. Cameron, *Armor in Battle. Special Edition for the Armored Force 75th Anniversary*, (Fort Benning, Georgia: US Army Armor School, n.d.), 8; William Stuart Nance, *Sabers through the Reich,* 14; Matthew Darlington Morton, *Men on Iron Ponies. The death and rebirth of the modern U.S. Cavalry*, (Illinois: Northern Illinois University Press, 2009), *19-23.*

[51] *FM 100-5 Field Service Regulations, Operations* still recognised horse cavalry as a type of cavalry in 1944. However, the defeat of Poland in 1939 signified the death blow for the horse cavalry community. Matthew Darlington Morton, *Men on Iron Ponies,* 8, 222.

[52] United States Army, *Field Service Regulation 1923,* (Washington: Government Printing Office, 1924), 18; Matthew Darlington Morton, *Men on Iron Ponies,* 6-8, 18-19; John J. McGrath, *Scouts Out! The Development of Reconnaissance Units in Modern Armies*, (Fort Leavenworth: Combat Studies Institute US Army Combined Arms Center, 2011), 51-52; Harry Yeide, *Steeds of Steel*, 17-18, 22-23; George Hofman, *Through Mobility We Conquer: The Mechanization of US Cavalry*, (Kentucky: University Press of Kentucky, 2006), Kindle edition, Loc 2751.

Depression's downturn, insufficient tactical training, Luddite cavalry officers, and a lack of equipment to reach its full potential in barracks.[53]

Similarly, during some interwar trials at Camp Knox, exercise participants constrained vehicle-mounted cavalry forces to reconnaissance duties due to insufficient radios, insufficient turreted weapons, and insufficient cavalry scout numbers.[54] Both commanders of horse and vehicle-mounted cavalry failed to understand their force structure capabilities, resulting in an unbalanced dilemma and sub-optimal cavalry employment.[55] Notwithstanding, together, both forces provided the trinity as vehicle-mounted forces began a replacement of horse cavalry via motorised and mechanised means. But how would the cavalry divide its role amongst distinct platforms to ensure the dilemma was balanced?

Recognising the limitations of formative cavalry vehicle platforms, acquisition officers ensured vehicle-mounted cavalry's development balanced the force structure technology demands (in this instance mobility, speed, and armoured protection trade-offs) toward an economy of force mindset and a desire for extraordinary effects.[56] Motorised cavalry (armoured and scout car variants) provided early disproportionality and economy of force tenets to cavalry operations. Troop A, 1st Armoured Car Squadron's 1928 experiments and 1929 field evaluation demonstrated motorised cavalry's successful contribution to reconnaissance, holding and delaying actions (part of the tactical concept of defensive operations).[57] Backed by the 1930s operational concept development under cavalry general Major General Guy V. Henry Jr., motorised cavalry units organised and executed deep

[53] Ibid.
[54] Gary W. Palmer, *The United States Cavalry. Time of Transition 1938-1944 Horses to Mechanization*, (San Diego: Voyak Publications, 2013), Kindle Edition, 233-279; Matthew Darlington Morton, *Men on Iron Ponies, 8-11,* 21; William Stuart Nance, *Sabers through the Reich, 19*-21; Harry Yeide, *Steeds of Steel,* 22-23;
[55] Morton accuses some horse cavalry practitioners of pursuing technologies with a bias for ensuring the retention of horse cavalry. Matthew Darlington Morton, *Men on Iron Ponies, 14-15.*
[56] Morton personifies this division via the thesis of Major Robert W. Grow during several *Cavalry Journal* submissions. Matthew Darlington Morton, *Men on Iron Ponies,* 39.
[57] Matthew Darlington Morton, *Men on Iron Ponies,* 18-21.

operations and operational-level reconnaissance (despite their relatively small size) on the 1932 war games, showing motorised cavalry's employment for extraordinary effects.[58]

The superior speed of early motorised cavalry also outpaced mechanised infantry, which preserved the cavalry's ability to seize fleeting opportunities against a vehicle-mounted adversary through offensive, defensive, transition, and security tactics. Colonel Adna Chaffee Jr's 7th Cavalry Brigade personified this during the September 1939 Plattsburg field manoeuvres. Chaffee's force, outfitted for reconnaissance, conducted a short-notice 120-mile envelopment manoeuvre by night without lights, dislocating and disrupting the enemy tactical and operational defensive arrays, securing the operational objective, and soundly defeating their opponent.[59] Similarly, Colonel Palmer's use of an armoured car platoon during the 1936 Camp Custer manoeuvres to reorient to an open flank by outpacing infantry rapidly, and subsequently destroying the enemy's rear artillery positions, demonstrated motorised cavalry's ability beyond reconnaissance.[60] Motorised cavalry performed its fair share of the trinity, but its off-road mobility weakness threatened a holistic coverage that horse cavalry had maintained previously. Mechanised cavalry clanked to the rescue.[61]

Mechanised cavalry (tankette and light tank) excelled at off-road reconnaissance (including reconnaissance in force and reconnaissance by fire), guarding (particularly against armoured forces), pursuit in complex terrain, counter reconnaissance, and deception operations, consolidating the enduring task repertoire maintained by horse cavalry through previous millennia.[62] Lieutenant General George S. Patton Jr., Colonel Joseph Stilwell, and

[58] Ibid, 30-31,
[59] John Cranston, "1940 Louisiana Maneuvers Lead to Birth of Armored Force," *Armor*, (May-June, 1990), 30-33,https://www.benning.army.mil/Armor/eARMOR/content/issues/1990/MAY_JUN/ArmorMayJune1990web.pdf.
[60] Matthew Darlington Morton, *Men on Iron Ponies,* 35-6.
[61] Harry Yeide, *Steeds of Steel,* 14-15.
[62] Men On Iron Ponies, 22-25, 221, 226; Robert Edwards, *Scouts Out*, 19, 27; Roman J. Jarymowycz, *Tank Tactics: From Normandy to Lorraine*, (Colorado: Lynne Rienner Publishers, 2001), 212.

Major Mark Clark demonstrated the successful transition of these tasks to vehicle-mounted cavalry on the 1940-41 Louisiana manoeuvres by a series of bold and well-coordinated offensive, defensive, transition, and reconnaissance tasks.[63] As a theorist, Patton mandated mechanised cavalry forces achieve tactical and strategic impact simultaneously, cementing disproportionality as a critical factor of mechanised cavalry.[64] Italy's crushing defeat of the Ethiops in 1935 provides an example of light tanks (cavalry) and tankettes delivering this blow to hapless, unprotected, infantry.[65] Nevertheless, mechanised cavalry was not without its limitations. Slower top speed, loud movement, and an increased fuel consumption rate ensured cavalry's multiplatform approach.[66]

Working in unison, the combined motorised and mechanised cavalry provided the holistic consummation of horse cavalry tactical concepts. Furthermore, vehicle-mounted cavalry's achievement of disproportionate effects while maintaining a relatively small size compared to infantry demonstrated the enduring cavalry context dilemma in both theoretical unit design and practical manoeuvres. With vehicle-mounted cavalry capable of multirole combat and reconnaissance in an economy of force and disproportionate setting, with well-understood force structures, cavalry practitioners looked to the sky for reconnaissance competition.

While the development of the aeroplane briefly challenged the US cavalry's holistic responsibility of reconnaissance during the 1920s, it failed to achieve holistic success.[67] Patton's post-1918 warning of the limited persistence of the aeroplane stifles serious

[63] Mark Perry, "Louisiana Maneuvers (1940-41), Historynet, accessed March 01, 2020, https://www.historynet.com/louisiana-maneuvers-1940-41.htm.
[64] George Hofman, *Through Mobility We Conquer*, Loc 952
[65] M.H. Gillie, *Forging the Thunderbolt*, 91-2.
[66] Matthew Darlington Morton, *Men on Iron Ponies*, 165; George Hofman, *Through Mobility We Conquer*, Loc 692, 804-869; John J. McGrath, *Scouts Out!*, 100, 107.
[67] Matthew Darlington Morton, *Men on Iron Ponies*, 17; John J. McGrath, *Scouts Out*, 49-51.

consideration of air holistically replacing ground cavalry roles. [68] General Omar Bradley validated this criticism following the 1940 Louisiana manoeuvres, where the air element managed two of thirty-four scheduled air missions.[69] War scholars Gordon Rottman and Malcolm Wheeler Nicholson reinforce the limitations of aircraft by demonstrating that it could not reconnoitre by night, could not conclusively identify camouflaged vehicles and positions by day, and could not maintain persistent observation due to cloud cover and rain during several campaigns of the First and Second World War, most notably in Palestine in 1916-18.[70] Nicholson further discredits air power's ability to perform the suite of cavalry tactical concepts and their subordinate tasks by citing aircraft's inability to take prisoners, examine the dead and wounded for intelligence, and judge enemy morale.[71] Again, the US was not alone in this realisation. The Germans had similar ideas.

Germany was unwilling to replace cavalry for the same reasons. In 1935, the Germans highlighted two of six roles of the Luftwaffe as conducting "combat and other action in support of ground troops" and "actions to interdict routes of enemy communications."[72] While the Germans recognised the early communications and mobility misalignment of vehicle cavalry, which in some instances had promoted research of other forces such as air, their provision of radios within armoured vehicles (also subsequently implemented by the Allies) rectified range and effectiveness limitations.[73] This inclusion granted command and control dominance over aircraft that struggled to communicate and provide effective strafing

[68] Patton indicated that the aeroplane lacked persistence in storms, darkness, [and] forests. George S. Patton Jr., *Cavalry and Tanks in Future Wars. Collections of Writings by Geoge S. Patton Jr.* (Maryland: Dale Street Books, 2017), Kindle Edition, Loc 681; Matthew Darlington Morton, *Men on Iron Ponies,* 22.
[69] Gary W. Palmer, *The United States Cavalry. 745-764.*
[70] Malcolm Wheeler-Nicholson, *Modern Cavalry,* 152, 155-156.
[71] Matthew Darlington Morton, *Men on Iron Ponies,* 93-94; Malcolm Wheeler-Nicholson, *Modern Cavalry,* 152, 155-156; Gordon L. Rottman, *World War II Combat Reconnaissance Tactics,* (Oxford: Osprey Publishing, 2007), 4-5.
[72] These are two of the six tenets mentioned in *The Conduct of Air Operations (Luftkriegsfuhrung) 1935.* James Corum, *The Roots of Blitzkrieg,* 167.
[73] Guderian recognized the importance of radios and aircraft limitations by 1934. Similarly, Morton indicates that cavalry maintained some contribution to strategic reconnaissance in 1928. Heinz Guderian, *Achtung – Panzer!,* 138, 164-5; Matthew Darlington Morton, *Men on Iron Ponies,* 18, 164; Karl-Heinz Frieser, *The Blitzkrieg Legend. The 1940 Campaign in the West*, (Annapolis: Naval Institute Press, 2005), 237-8, 241-42.

for ground combat forces, notably during the Condor Legion's experiences in several battles of the Spanish Civil War.[74] Writ large, the aeroplane's role consequently solidified as close air support a long-range non-persistent reconnaissance supplement and a strategic bombing asset.[75] Mechanised and motorised cavalry collectively remained the primary proponent of tactical, operational, and strategic reconnaissance – until Special Operations Forces consumed strategic reconnaissance with cavalry tactics.[76] The trinity was safe.

The Second World War validated vehicle-mounted cavalry's complete absorption of the horse cavalry trinity, thereby proving an enduring role within cavalry operations. While the aeroplane briefly has challenged cavalry's reconnaissance dominance, its relegation to a non-persistent support arm persists today through the medium of manned and unmanned systems. Importantly, the production of both types of mounted cavalry, combined with solely supplementary effects by aircraft, gives credence to cavalry's balance of the dilemma. With the decline of total war, cavalry's enduring role requires examination in hybrid and limited wars. The unforgiving jungles of Vietnam provided cavalry's hybrid war test.

II.3 Rumble in the jungle – Cavalry orients, dislocates, and disrupts in a hybrid war.

I was mistaken in the belief that modern armor had only a limited role in the fighting in Vietnam.

General William C. Westmoreland.[77]

General Westmoreland's quote personifies the common misnomer that airmobile operations superseded armoured warfare after the Second World War. The United States Army's cavalry employment during Operation CEDAR FALLS (8-26 January 1967 – see Map 3) in Vietnam demonstrated cavalry's enduring role in a hybrid war. Although the operation received due strategic criticism for its heavy-handedness, as well as its

[74] Michael Alpert, *Franco and the Condor Legion. The Spanish Civil War in the Air*, (London: Bloomsbury Academic, 2019), Kindle Edition, Loc 2667.
[75] James Corum, *The Roots of Blitzkrieg*, 166-8; Heinz Guderian, *Achtung – Panzer!*, 207.
[76] Cavalry continue to support special operations forces during strategic reconnaissance. See Chapter 7 of *LWP-CA MTD CBT 3-3-6 Cavalry Regiment.*
[77] William C. Westmoreland, *A Soldier Reports*, (Garden City: Doubleday and Company, 1976), 178.

consequences contributing to North Vietnamese exploitation of Cambodian staging areas and recruitment of disenfranchised, relocated civilians, cavalry's contribution remained important.[78] Cavalry forces achieved disproportionate effects through simultaneous orientation, dislocation, and disruption during the US II Field Force (II FFV) Corps-level reconnaissance-in-force operation to permanently disrupt the Viet Cong 'Iron Triangle' stronghold. As the first significant coalition offensive ground operation of the Vietnam War, II FFV committed several cavalry organisations to the multidivisional operation, 25km north of Saigon.[79] Cavalry employment achieved immediate operational-level effects through battlefield intelligence collection, as well as validating the 'search and destroy' mission type – a mission designed to achieve orientation with dislocation or disruption by incorporating reconnaissance with combat actions.

II FFV's cavalry achieved disproportionate effects before H-Hour. A cavalry and infantry demonstration of 'uncoordinated routine clearance operations' (Operation FITCHBURG and NIAGARA FALLS) in the nearby villages dislocated Vietnamese Operational-level ISR capabilities by masking the movement of blocking forces to CEDAR FALLS' 'anvil' assembly areas. This action then facilitated a rapid 'hammer' clearance operation from H-Hour. Consequently, the North Vietnamese were unable to remove or destroy operational-level intelligence products or pre-empt and interdict the highly vulnerable airmobile blocking and clearance force insertion during the mission.[80] The Viet Cong in the vicinity of the main assault landing zone were too stunned to react.[81] This dislocation led to significant operational-level gains for the US forces during and after the operation, with

[78] Rod Paschall, "Search and Destroy in the Iron Triangle," *Vietnam*, 25, no. 2 (08, 2012): 29, https://search-proquest-com.lomc.idm.oclc.org/docview/1266510256?accountid=14746.
[79] Rod Paschall, "Search and Destroy in the Iron Triangle."
[80] Bernard William Rogers, *Cedar Falls and Junction City. A turning point*, (Washington DC: Department of the Army, 1989), 37, https://history.army.mil/html/books/090/90-7/CMH_Pub_90-7.pdf.
[81] Shelby L. Stanton, *The Rise and Fall of An American Army: U.S. Ground Forces In Vietnam, 1963-1973*, (New York: Ballantine Books, 1985), Kindle Edition, Loc 2277.

cavalry's flexibility for reconnaissance and multirole combat and stability operations proving extraordinarily useful.

During the operation, 4th Cavalry Regiment's squadrons (attached in squadron-size formations to several Infantry brigades, see Figure 3), and E Troop, 17th Cavalry Regiment (attached to 173rd Airborne Brigade) conducted a synchronised divisional-level reconnaissance-in-force operation. The mission included marches from Brigade assembly areas, before a transition to simultaneous screening and blocking positions west of the Saigon River and East of the Thi Tinh River. These operations shielded and oriented their respective main forces during the march. Due to their success in generating surprise, they dislocated enemy withdrawal routes while shielding the main infantry force for the conduct of the decisive clearance operation.[82] Cavalry's low signature that it established through its smaller size was a crucial ingredient to achieving surprise, validating conclusions that cavalry's unique structure and training were causal to misorienting and dislocating the enemy. Practically, its integral attack aviation, flamethrower, and 'tunnel rat' trained scout personnel enabled the cavalry's success, providing a highly effective economy of force balancing act to the understrength dismounted aspect of cavalry.[83]

Together, 4th and 17th Cavalry units successfully achieved the trinity of cavalry's purposes as the supporting force, demonstrating cavalry's disproportionate ability to achieve effects when commanders focused resources elsewhere. Their brethren in the 11th Armoured Cavalry Regiment simultaneously proved cavalry's achievement of similar outcomes as the supported force.

11th Armoured Cavalry Regiment (11 ACR), an independent unit within the main assault force, conducted a mounted and dismounted clearance operation in CEDAR FALLS

[82] As an example, 1st Squadron southern blocking force destroyed thirty sampans, achieved 5 EKIA, and took two prisoners during the rapid occupation and establishment of the block. Bernard William Rogers, *Cedar Falls and Junction City*, 25, 36.
[83] Bernard William Rogers, *Cedar Falls and Junction City. A turning point*, 60.

(see Map 3), resulting in the capture of the most significant intelligence breakthrough of the war. As part of the clearance force, 11 ACR (see Figure 4) identified 177 enemy facilities and captured half a million pages of documents.[84] These documents outlined cryptographic information, as well as command structures and battle plans for the entire North Vietnamese Army (NVA) and Viet Cong (VC) hierarchy.[85] This find enabled the Republic of Vietnam (RVN) counterintelligence personnel to identify spy networks, thereby disrupting VC campaign effectiveness in the Saigon region.[86] Long-term, it also critically weakened the Viet Cong Saigon-based forces before the Tet General Uprising, with communist documents admitting the operation was a disaster for the VC, a point frequently overlooked by historians who cite the 9th Viet Cong Division's ability to avoid decisive battle at Cedar Falls as a milestone of US failure.[87]

While critics may attempt to discard this success as 'luck', cavalry's predisposition for disproportionate effects via its multiskilled order of battle and purposeful mission design of reconnaissance-in-force operations and 'search and destroy' tactics (a combination of reconnaissance and offensive tactics) moot this critique. The regiment's ability to transition to intelligence collection in support of orientation, when tasked initially with a disruption mission, demonstrated a sound understanding of the force structure capabilities in pursuit of disproportionate effects. Facilitated by their 4th Cavalry Regiment brethren who established blocking positions with economy, stealth, and speed, 11 ACR's application of the cavalry

[84] Ibid, 154.
[85] Cavalry personnel, like the infantry, deployed 'tunnel rats' to search underground. Donn A. Starry, *Mounted Combat in Vietnam*, (Washington DC: Department of the Army, 1989), Kindle Edition, Loc 1201-1216, 1219; Bernard William Rogers, *Cedar Falls and Junction City*, 77, 103.
[86] Rod Paschall, "Search and Destroy in the Iron Triangle," 33.
[87] Ibid; Stanton criticises the operation as a failure due to the 9th Division eluding battle and returning to the region later. Shelby L. Stanton, *The Rise and Fall of An American Army: U.S. Ground Forces In Vietnam, 1963-1973*, 2277.

trinity demonstrated why cavalry is greater than the sum of separate reconnaissance and multirole combat forces, which critics cite as the alternate to cavalry forces.[88]

Operation CEDAR FALLS demonstrated the trinity's achievement at the operational and tactical level, achieving a successfully balanced cavalry context dilemma against North Vietnamese Military Region IV control.[89] Using their economy of force and sound force structure capabilities of technology, surprise, and speed, the 4th and 11th Cavalry demonstrated mastery of the cavalry context dilemma in their pursuit of the trinity. The jungles of Vietnam, for all their obstacles, failed to deny cavalry the role that had accompanied them for millennia. With cavalry's enduring role evident in total and hybrid war, cavalry's enduring role in limited war solidifies the overall enduring role.

II.4 Recon and reload – Cavalry orients, dislocates, and disrupts in a limited war.

As the US Army evolved from Vietnam via the procurement of the "Big Five" technologies in the 1980s, cavalry's enduring role faced a technological test. The US 2nd Armored Cavalry Regiment's (2 ACR) performance in Operation DESERT STORM demonstrated cavalry's enduring role in a limited war. With a numerically inferior force (see Figure 5), 2 ACR masterfully achieved the cavalry trinity of orientation, dislocation, and disruption, while neatly balancing the cavalry context dilemma. It facilitated operational and strategic effects that were critical to the coalition's strategic success.

The 2nd Armored Cavalry Regiment, as the VII Corps's cavalry force, demonstrated disproportionate value with its rapid ability to transition between a tactical-level mission seeking friendly corps-level orientation and primary combat, resulting in operational-level disruption and strategic dislocation. The regiment commenced the operation as the corps-level covering force, committing to a two-hundred-kilometre advance-to-contact to identify

[88] Vincent A. Thomas, "A Dying Beed: The United States Cavalry In Today's Army," (Monograph, United States Army School of Advanced Military Studies, 2013), https://apps.dtic.mil/dtic/tr/fulltext/u2/a589560.pdf, 33.
[89] Bernard William Rogers, *Cedar Falls and Junction City*, 18.

the western edge of Iraqi Republican Guard (IRG) forces while clearing the lightly defended security zone for VII Corps (see Map 4).[90] Lieutenant General Frederick Franks, the VII Corps Commander, ordered Colonel Leonard "Don" Holder, Commander of 2 ACR, to "fight to find out the Tawakalna dispositions without becoming pinned down in a big fight."[91] Combined with the 2 ACR covering force frontage width of four armoured divisions in-depth, Holder applied an economy of force to 2 ACR's use.[92] However, as the operation commenced, the situation demanded more from 2 ACR than initially expected.

The advance-to-contact was initially slow; the coalition lost an operational-level element of surprise for a left-hook encirclement manoeuvre, which enabled the IRG armoured forces to partially reorient to the west and prepare to block VII Corps's armoured penetration.[93] To retain operational tempo, Franks redirected 2 ACR to an eastern axis, extending 2 ACR's limit of exploitation east to the 70 Easting (thereby increasing its depth of penetration), and amending the 1st Infantry Division/2 ACR passage of lines to 0200 on 27 February.[94] This decision immediately transformed 2 ACR from the covering force to a component of the main assault force. It was instrumental in the reestablishment of operational-level initiative, from which the Iraqis never recovered.[95] The famous Battle of the 73 Easting ensued, with 2 ACR destroying the majority of the IRG Tawakalna Division who were the operational-level blocking force that was critical to Iraq's reorienting.[96] This battle not only saw the disruption of the tactical-level armoured counter-attack but operationally it

[90] H.R. McMaster, "Destruction of the Tawakalna Mechanized Division," in "Eagle Troop at the Battle of 73 Easting," *Strategy Bridge*, (blog), accessed February 01, 2020, https://thestrategybridge.org/the-bridge/2016/2/26/eagle-troop-at-the-battle-of-73-easting; John J. McGrath, *Scouts Out!,* 172-3; "Rich Creed and Nathan Jennings, "Winning the Deep Fight: Why We Should Return To Echeloned Reconnaissance And Security," *Modern War Institute*, (blog), March 15, 2019, https://mwi.usma.edu/winning-deep-fight-return-echeloned-reconnaissance-security/.
[91] John J. McGrath, *Scouts Out!,* 173.
[92] John J. McGrath, *Scouts Out!,* 173; "Rich Creed and Nathan Jennings, "Winning the Deep Fight: Why We Should Return To Echeloned Reconnaissance And Security," *Modern War Institute*, (blog), March 15, 2019, https://mwi.usma.edu/winning-deep-fight-return-echeloned-reconnaissance-security/.
[93] H.R. McMaster, "Destruction of the Tawakalna Mechanized Division,"
[94] Ibid.
[95] John J. McGrath, *Scouts Out!,* 174.
[96] George F. Hofman and Donn A. Starry, *Camp Colt to Desert Storm: The History of U.S. Armored Forces,* (Kentucky: The University Press of Kentucky, 1999), Kindle Edition, Loc 6617.

also opened a gap in the Iraqi defences for several VII Corps units.[97] These units, including the 1st Infantry Division, subsequently penetrated the Iraqi operational-level depth and reserve areas. Ultimately, 2 ACR dislocated the Iraqi strategic-level defence with a 4500-man force, exemplifying economy of force and disproportionate effects.

2 ACR's achievements demonstrated the enduring role of cavalry. The regiment's economy of force by fighting outnumbered, combined with its rapid mission transition from a security mission to an offensive operation as part of the main penetrative thrust, achieved a disproportionate battlefield effect. Herbert R. McMaster's verification of superior training and technology within 2 ACR compared to that of the IRG also satisfied the third aspect underpinning the cavalry dilemma – the force's structure was superior in tactical and technological abilities, without depriving the main force of sufficient combat power. Despite the weather depriving 2 ACR of its integral air-support element for the majority of the operation, 2 ACR's use of technological systems such as thermal and Global Positioning System (GPS) enabled US tactical and operational commanders to achieve superior orientation, through a sound understanding of the force structure capabilities.[98] Excellent tactical training also supported this technology by allowing US forces to rapidly acquire and destroy IRG forces in well-defended but predictable positions. This understanding came from recognising Soviet doctrinal defensive patterns, which the Iraqi's had mimicked most notably during Eagle Troop's twenty-three-minute engagement, which destroyed the majority of a tank battalion.[99]

Despite the significant characteristic changes to warfare, cavalry forces continued to achieve the cavalry trinity. The previous case studies demonstrated that successful cavalry operations equal a sufficient nesting of the trinity, practically facilitated through tactical and

[97] Ibid. 6652.
[98] Ibid.
[99] Mike Guardia, *The Fires of Babylon. Eagle Troop and the Battle of 73 Easting*, (Havertown: Casemate Publishing, 2015), Kindle Edition, Loc 2639-2712; Mike Guardia, "Eagle Troop and the Battle of 73 Easting," *YouTube,* accessed 01 March 2020, https://www.youtube.com/watch?v=qQsioBaMWR4.

technological superiorities, thereby balancing the dilemma in the pursuit of disproportionate effects. While victories contain valuable lessons, defeat also provides a powerful examination tool in the context of the future cavalry design, training, and acquisitions. Without the cavalry trinity, and an imbalance of the cavalry context dilemma, the exponential likelihood of failure ensues.

PART III - WHEN CAVALRY CANNOT ACHIEVE THE TRINITY.

"Forward the Light Brigade! Charge for the Guns!

Alfred Lord Tennyson.[100]

While forces lose battles for several competing reasons, the absence of cavalry applying a successful trinity during defeats reinforces the value in cavalry's enduring role. JEB Stuart and Yoav Brom demonstrated the folly associated with a cavalry force unable to either simultaneously or rapidly transition between orientation, dislocation, and disruption or effectively balance the cavalry context dilemma. When cavalry forces cannot achieve the trinity, cavalry's inherent weaknesses emerge; cavalry either expose and destroy their assigned unprotected main force or they destroy themselves.

III.1. Failure to balance the dilemma – Stuart missing in action at Gettysburg, 1863.

"Stuart's cavalry was too far removed from the Army of Northern Virginia to warn Lee of the Army of the Potomac's movements. Lee's army inadvertently stumbled into the Union Army at Gettysburg, walking blindly into what became the largest battle of the war."

H.B. McClellan.[101]

JEB Stuart's cavalry raid and the ensuing defeat of General Lee's Army of Northern Virginia (ANV) at the Battle of Gettysburg in 1863 demonstrated the folly of a cavalry organisation that is unable to achieve the trinity through a poor orientation of purpose, reduced flexibility, and an inability to balance the context dilemma. While historians

[100] Alfred Lord Tennyson, "The Charge of the Light Brigade," *Tennyson's Poetry*, accessed February 02, 2020, https://www.sparknotes.com/poetry/tennyson/section9/.
[101] Robert E. Lee, cited in Edward G. Longacre, *The Cavalry at Gettysburg. A tactical study of Mounted Operations during the Civil War's Pivotal Campaign, 9 June-14 July 1863*, (Nebraska: University of Nebraska Press, 1986), 37.

frequently focus on the orders dispute or absence of Stuart during a critical point as causal to failure, Stuart's force structure decisions and tactical limitations demonstrate how an initially capable force became incapable and thus ineffective during the battle.[102]

Stuart, renowned as the finest reconnaissance commander in the ANV, demonstrated superior tactical acumen during several preceding campaigns that incorporated cavalry's full range of enduring tactical operations.[103] His prior successes thwart a counter-argument that he was incompetent, as did Lee's previous achievements. Notably, however, Stuart and Lee's victories before Gettysburg all contain a vital element – cavalry forces provided timely and accurate information to orient the tactical commander, while also being ready for combat actions to achieve orientation, dislocation, and disruption.

Practically, Lee and Stuart achieved this synergy through a combination of combined arms familiarisation and personal familiarity, liaison officers (message riders) between adjacent units, and unambiguous orders. Executed tactical concepts were also well balanced to achieve cavalry's three purposes with an economy of force, counter-balancing Lee and Stuart's desires for disproportionate effects. The preliminary actions for the Seven Days Battles, Beaver Dam Creek, Gaine's Mills, and the Second Battle of Bull Run contain a well-balanced use of Stuart's cavalry to screen and guard to orient. Subsequently, they also demonstrate efficient offensive tactics to dislocate and disrupt with a relatively small force.[104]

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[102] Historians debate whether Lee's orders were either too vague to the point of being ineffective, or whether Stuart ignored the Commander's Intent component of the order from Lee and raided too far south, with too large a force, dislocating himself from the main body, and blinding Lee. Warren C. Robinson, *Jeb Stuart and the Confederate Defeat at Gettysburg*, (Nebraska: University of Nebraska Press, 2007), Ix – xiii; Edward G. Longacre, *The Cavalry at Gettysburg*, 9.

[103] Both Longacre and Robinson demonstrate Stuart's significant reconnaissance and raiding victories at Centreville, Richmond, Cattler's Station, and Chambersburg. Edward G. Longacre, *The Cavalry at Gettysburg*, 24-27; Warren C. Robinson, *Jeb Stuart and the Confederate Defeat at Gettysburg*, 37-38.

[104] Stuart's 1862 identification and circumnavigation of McClellan's army before the Seven Days Battles was a masterstroke of cavalry operations, encompassing timely reconnaissance and limited offensive operations, as was his successful reconnaissance of the Union flank at the Battle of Beaver Dam Creek and Gaine's Mill. Similarly, his identification and capture of Union battle plans at the Second Battle of Bull Run, and his actions at Fredericksburg demonstrated his significant worth to Lee, placing Lee in a favourable situation to commit to battle. Monte Ackers, *Year of Glory. The Life and Battles of JEB Stuart and His Cavalry, June 1862 – June 1863*, (Philadelphia and Oxford: Casemate Publishers, 2012), Kindle Edition, Loc 830 – 2200; Warren C. Robinson, *Jeb Stuart and the Confederate Defeat at Gettysburg*, 12-13.

At Gettysburg, however, Stuart failed to balance the cavalry context dilemma, spelling doom for the CSA.

Following Lee's orders on the evening of 23 June to screen his main body's movement, Stuart executed a deep raid (see Map 5) with three brigades of cavalry between 25 June – 02 July 1863.[105] This action left the ANV with a significantly reduced cavalry footprint (see Figure 6), incapable of main body reconnaissance or shielding. Stuart's tactical application of the cavalry context was fundamentally flawed; Stuart's lack of investment in his stay-behind cavalry element demonstrated a poor balance between force structure capabilities, disproportionate effects, and economy of force.

Stuart's decision to divert the majority of his force to the raid without a sufficiently capable force to orient the main force demonstrated a lack of sufficient consideration of economy of force against the tactical and technological capabilities of the army. While critics cite Stuart's decision to leave 3,000 cavalry with the main force as a rebuttal, the cavalry force left with the main force was tactically insufficient. From the outset, Stuart selected Jones and Robertson's two divisions to stay behind. Robertson's division was not battle-hardened and had reported poorly following its performance at the Battle of Brandy Station.[106] Robertson's brigade was also severely understaffed, reducing his freedom of action despite being in command of both his and Jones' brigade as the ranking officer.[107]

Additionally, while Jones' reputation was extremely sound, his subordination to Robertson stymied his aggressive nature. This nature was a critical requirement to complete a timely return to Gettysburg after completing the preliminary mountain pass guarding missions during the ANV's movement. Robertson was more cautious and arrived late on 03

[105] While McClellan attempts to justify a third set of orders that authorized a raid toward Washington (the essence of what Stuart did), this is mostly disputed by contemporary historians. Warren C. Robinson, *Jeb Stuart and the Confederate Defeat at Gettysburg*, 154.
[106] Eric J. Wittenberg and David J. Petruzzi, *Plenty of Blame to Go Around. JEB Stuart's Controversial Ride to Gettysburg*. (New York: Savas Beattie LLC, 2006), Kindle Edition, Loc 3820-3829.
[107] Ibid, 266.

July, rendering his force ineffective. Additionally, Lee's remaining cavalry under Brigadier-General Jenkins and Brigadier John D. Imboden were insufficiently manned (Jenkins) and trained (Imboden) to fulfil Stuart's responsibilities given by Lee.[108] Stuart's decision to take Brigadier-General Hampton with him, and his failure to provide Lieutenant-General Longstreet with sufficient situational awareness through a credible liaison officer, saw Stuart's tactical strawman course of action fail spectacularly.[109]

Stuart's absence resulted in the ANV main body being surprised and committing to battle in a confused and disorderly manner on the first day of Gettysburg. Consequently, CSA Generals Henry Heth and Dorsey Pender's meeting engagement at the Chambersburg Pike needlessly killed precious CSA infantry.[110] Had Stewart better balanced and led the cavalry left with the main force, or imposed a limit of exploitation further to the north, Lee may have had a better operational picture to a seek a battle of advantage. Stuart failed to both orient his commander and misorient the Union forces marching north.

Historians hypothesise that Lee may still have achieved success once the battle commenced, with a successful cavalry orientation of General Longstreet's forces on the first day, but the on-hand cavalry was overwhelmed and understrength with tasks.[111] The lack of sufficient cavalry conducting reconnaissance also influenced CSA General Richard S. Ewell's timidity, leading to his failure to capture the decisive terrain of Cemetery Hill on 01 July. The occupation of this position could have split the hinge of the Union defence, captured critical Union artillery positions, and isolated Union infantry to the north and east for destruction before their reinforcement. Consequently, the Union forces were able to occupy, reinforce, and defend Cemetery Hill, neutralising the CSA infantry over open ground with potent artillery fire and retaining the fishhook perimeter through successful interior

[108] Ibid. 3122-3131
[109] Edward G. Longacre, *The Cavalry at Gettysburg,* 151.
[110] Ibid, 155.
[111] Ibid. 158.

lines. Unquestioningly, the failure of the Confederacy to seize this position promptly contributed significantly to CSA tactical-level defeat.[112] Had Stuart provided an accurate depiction of the disposition of Union forces in the vicinity, or conducted guarding actions in support of the main assault, the result likely would have been different.[113]

Stuart's cavalry at Gettysburg demonstrated the importance of the cavalry trinity within mission design and execution. By inappropriately splitting his force, Stuart failed to balance his roles. His forces were underprepared for orientation and dislocation at the expense of a failed disproportionate attempt to disrupt. By splitting his troops and assigning himself to the raid, thereby leaving untrusted, junior commanders behind, Stuart was unable to achieve a balance between economy of force and disproportionate effects. While Stuart had all the tools at his disposal to balance the cavalry trinity, his poor tactical decisions broke the trinity. Conversely, Yoav Brom's failure would not come by his hand; technology and tactics worked in unison to defeat him. Unlike Stuart, Brom would not escape the folly with his life.

[112] The position offered an exponential advantage to the occupier, facilitating a superb view over the surrounding countryside, as well as dominant artillery battery positions. Edward Porter Alexander, *Fighting for the Confederacy. The personal Recollections of General Edward Porter Alexander*, ed. Gary W. Gallagher (Chapel Hill and London: The University of North Carolina Press, 1989), 232; Bradley M. Gottfried, *The Maps of Gettysburg. An Atlas of the Gettysburg Campaign, June 3-July 13, 1863*, (New York: Savas Beattie LLC, 2007), 216-225.

[113] Despite not being officially reprimanded by Lee, historians accept an implied rebuke through Stuart's lack of promotion to Major General. Edward H. Bonekemper, III. *How Robert E. Lee Lost the Civil War*. (Fredericksburg, VA: Sergeant Kirkland's Press, 1998), 139.

III.2. Failure to achieve all purposes – The destruction of the IDF's 87th Armoured Reconnaissance Battalion at the Battle of the Chinese Farm, 1973.

"Reshef asked Brom to send one of his reconnaissance companies to reinforce what was left of Mitzna's force. It was Rafi Bar-Lev's company that arrived. Within minutes, Haim Bar-Lev's nephew was killed by a tank's shell."

Abraham Rabinovich.[114]

The lead-up to and destruction of the 87th Israeli Defence Force's (IDF) Armoured Reconnaissance Battalion (87 ARB) on 16 October 1973 demonstrated the folly of cavalry forces that breaks the trinity through misalignment of both tactics and technological limitations of the force.[115] While effective at reconnaissance in support of orientation, 87 ARB (see Figure 7) was ill-equipped to conduct disruption or dislocation by direct action against a heavily armoured force. By committing to battle, 87 ARB's leadership ignored the limitations of the battalion's economy of force nature. Consequently, this folly destroyed the battalion.

Egyptian Army forces crossed the Suez Canal on 6 October 1973, occupying the Sinai Peninsula, before transitioning to the defence to seek a favourable negotiating position at expected ensuing peace talks. The Egyptian Second and Third Armies dug in astride the natural obstacle of the Great Bitter Lake. In response, the IDF planned a Suez Canal crossing of its own to attack the Egyptian lines of supply to dislocate them, thereby reversing the fate of the conflict. The ensuing plan, Operation Abirey-Lev, entailed a crossing near Deversoir, to the west of the region known as the Chinese Farm (see Map 6).[116]

Following a successful reconnaissance that identified the seam between the Egyptian Second and Third Armies on the 09 October 1973 astride the Great Bitter Lake, Major

[114] Abraham Rabinovich, *The Yom Kippur War. The epic encounter that transformed the Middle East,* (New York: Schocken Books, 2017), 415.
[115] While the unit was not directly titled a cavalry unit, the Divisional Reconnaissance Units such as the 87th performed cavalry duties. John J. McGrath, *Scouts Out!,* 132.
[116] Abraham Rabinovich, *The Yom Kippur War,* 376-409.

General Ariel Sharon sought a counterattack to exploit the seam immediately.[117] However, he was incapable of doing so due to the lack of mass and potency that his divisional cavalry asset, 87 ARB, provided.[118] The battalion's vulnerabilities of jeep reconnaissance vehicles, no integral fire support capabilities, and obsolete tanks made it unable to establish and maintain contact. Therefore, it was unable to neutralise the Egyptian infantry digging fortifications at the Tirtur crossroads on 09 October. Thus, the battalion missed its first opportunity to unhinge the Egyptian defence and facilitate route security for IDF forces' movement to the anticipated bridgehead.[119] Herein, the inability of a cavalry force to conduct both reconnaissance and combat actions exposes the folly of divorcing lethal combat power from cavalry assets.

Despite possessing tanks, the battalion was highly vulnerable to man-portable Anti-Tank Guided Missiles (ATGM), while also lacking sufficient scouts who could assist with ATGM neutralisation through fighting and fires. A cavalry force, better supported with integral fires to immediately fix or neutralise exposed enemy infantry, can better support immediate action to facilitate penetration and the destruction of underprepared dismounted flank guards.[120] Such forces may also avoid the counter-battery fire implications that had disrupted IDF main body artillery use.[121] Had this been so, 87 ARB could have rapidly secured the decisive terrain in support of the ensuing river crossing, potentially also preventing later Armoured Brigade heavy losses.[122]

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[117] Scott Pence, "The Role of Reconnaissance Forces in the Counterattack," (Monograph, United States Army School of Advanced Military Studies, 2016), https://apps.dtic.mil/dtic/tr/fulltext/u2/1022191.pdf, 8.
[118] The battalion consisted of three tank companies, a jeep reconnaissance company, a medical platoon, and a repair platoon. John J. McGrath, *Scouts Out!*, 130.
[119] Scott Pence, "The Role of Reconnaissance Forces in the Counterattack," 8.
[120] Charles River Editors, *Israel's Wars: The History and Legacy of the Jewish State's Most Important Military Conflicts*, (Michigan: Charles River Editors, n.d.), Kindle Edition, Loc 2251
[121] Ibid.
[122] Ariel Sharon reportedly called the resultant carnage on the morning of 16 October the "most terrible sight he has ever seen." Similarly, Rodman demonstrates the bloody nature of the IDF victory. David Rodman, *Israel in the 1973 Yom Kippur War. Diplomacy, Battle, and Lessons*, (Sussex: Sussex Academic Press, 2017), Kindle Edition, 1038; Charles River Editors, *Israel's Wars,* Loc 2402.

Additionally, 87 ARB's inability to join and exploit the 14th Armoured Brigade's company minus tank penetration into the rear echelon of the Egyptian Army on the night of 15 October proved its impotence. After infiltrating between the 21st and 16th Division via the 16th Egyptian Brigade's flank security position, Captain Gideon Giladi's tank company (from 40th Tank Battalion) discovered that it had penetrated the rear of the Egyptian defensive position, entering the logistical node location for the Egyptian Division. After some successful destruction of Egyptian fuel reserves, ammunition dumps, and surface-to-air (SAM) batteries, Egyptian counter-penetration forces overwhelmed Giladi's force.[123] Acknowledging the Armoured Brigade's mission was a south-to-north feint to mask the intended river crossing to the west, a more potent penetration of this position by 87 ARB in support of this penetration might have increased the deception quality of a northern thrust, thereby supporting dislocation. Additionally, this manoeuvre would have further disrupted enemy counter-penetration efforts through direct fire and the inherent cueing of close air support, noting the previous destruction of the Egyptian SAM umbrella – a skill innate to cavalry practices.[124] Instead, Colonel Amnon Reshef (14th Armoured Brigade Commander, with 87 ARB attached) held 87 ARB to the rear. The battalion contributed nothing, enabling the Egyptian consolidation at the Lexicon-Tirtur junction, the re-shielding of its critical vulnerability of flank security, which led to the neutralisation of precious IDF main force armoured commodities.[125] Subsequently, the successful counter-penetration employment by elements of the Egyptian Armoured forces rapidly destroyed Captain Gideon Giladi's tank company and supporting infantry forces, ending the opportunity of exploitation, and retaining the decisive terrain.[126]

[123] Abraham Rabinovich, *The Yom Kippur War*. 412.
[124] Ibid, 398-400.
[125] Herzog lists the subsequent destruction this position inflicted in the IDF forces. Chaim Herzog, *The War of Atonement. The inside Story of the Yom Kippur War*, (New York: Skyhorse Publishing, 2018), Kindle Edition, Loc 3246-3294.
[126] Chaim Herzog, *The War of Atonement*, Loc 4277-4311.

Furthermore, Reshef's later decision to deploy the battalion into an assault across open ground against the entrenched position on the morning of 16 October is a timely reminder of the intellectual rigour required to understand and employ cavalry forces successfully. The ensuing attack, which killed the 87 ARB Commanding Officer, Major Yoav Brom, and destroyed his unit, demonstrated the limited offensive operations in which cavalry operate as an economy of force option.[127] Reshef failed to understand the cavalry dilemma, seeking disproportionate effects without understanding the capabilities of the force, nor cavalry's economy of force aspects. By pitting the cavalry force against entrenched defences, this exposed cavalry's weaknesses of limited mass and protection, which it was unable to balance with an integral fires capability to achieve disruption or dislocation. Consequently, 87 ARB failed to balance the dilemma and failed to perform its three enduring roles.

The Chinese Farm reminds cavalry practitioners of the importance of the cavalry context dilemma as a component of the cavalry trinity. The cavalry force did not attack with the intent to selectively neutralise or destroy critical capabilities that would reduce the coherent defence of the Egyptian Second Army. Nor could the 87 ARB destroy the Egyptian will to fight by attacking command and control nodes that presented for destruction during the company minus tank raid. A decision to do either would have significantly reduced IDF casualties and may have contributed to tactical disruption and operational dislocation of the Egyptian defensive array if IDF forces had secured the Lexicon-Tirtur junction sooner. Instead, 87 ARB deployed against an enemy surface, resulting in its rapid destruction and the IDF achieving victory at unnecessary cost. Cavalry forces must, therefore, continue to possess the ability to successfully disrupt the enemy through security operations and limited offensive and defensive operations. Integrated systems must also facilitate a rapid transition

[127] Abraham Rabinovich, *The Yom Kippur War*. 420.

from reconnaissance to combat actions in order for cavalry forces to retain their tempo inducing qualities. A cavalry force capable of solely reconnaissance duties will remain impotent at the critical point of the engagement or battle.

PART IV – CAVALRY'S FUTURE REQUIREMENTS FOR A TRINITY.

Seize the outpost K5 with your knight, and you can go to sleep. Checkmate will come by itself.

Savielly Tartakower.[128]

Past cavalry successes and failures provide a treasure trove of lessons to orient the pursuit of future cavalry acquisitions and training focus while remaining relevant through the full spectrum of the grey zone, limited war, and total war. When focused through the filter of cavalry's enduring role, however, some evident tactical and technical requirements emerge. The ability of cavalry to continually achieve its three purposes within the cavalry trinity provides the tangible link to categorise these requirements.

IV.1 A new spyglass and saddle – Technological requirements of future cavalry to successfully orient.

During that late-night meeting, Grierson talked with Lieutenant-Colonel Blackburn, bringing up a subject which had been discussed between them on the march during the day – the need for better scouting now that they were entering unknown territory.

Dee Brown.[129]

Grierson's continual success in orienting toward objectives and away from adversary ambushes—despite operating in enemy territory saturated with civilians, enemy combatants, and insurgent-like militias—provides cavalry with tangible milestones for enduring success. A modern Grierson must reconnoitre beyond the visual, audible, tactile, and infrequently olfactory sensory realm, which formed the baseline of Grierson's collection plan. Cavalry forces, therefore, need inherent informational and physical domain collection capabilities that

[128] Irving Chernev, *The Most Instructive Games of Chess Ever Played: 62 Masterpieces of Chess Strategy* (Massachusetts: Courier Corporation, 1992), 15.
[129] Dee Brown, *Grierson's Raid*, 64.

enable open and closed source collection, much like Grierson did within the civilian community via his "Butternut Guerrillas" under the command of Sergeant Richard Surby.

IV.1.1 Butternut Cyber Guerrillas – Expedient orientation through the cyber spectrum.

Cavalry must be able to collect and transmit data on social media platforms and other telecommunications networks to expediently translate information into intelligence and feed the commander's estimate. Much like Grierson's Butternut Guerrillas provided him with up-to-date knowledge from unsuspecting civilians, captured mail couriers, newspapers, and telegraph stations, so too must the future cavalryman.[130] Hezbollah, the IDF, and other terrorist cells have each demonstrated the value of social media to transmit orders; share technology, tactics, and procedures (TTP); distribute information operations messaging; conduct reconnaissance, targeting, and surveillance; and recruit new fighters in the previous two decades.[131] In this medium, the Australian tactical-level commander more likely personifies the bumbling CSA infantry and cavalry trying to find Grierson in the dark.

Australia's current process of conducting open-source collection with precious specialist intelligence assets is too slow and cumbersome. Australia's method represents an industrial-age warfare approach that is increasingly obsolete, granting a nimble enemy

[130] Ibid, 87.

[131] Geoff Dean, Peter Bell and Jack Newman, "The Dark Side of Social Media: Review of Online Terrorism," *Pakistan Journal of Criminology* 3, No:3, (Jan 2012), 110, https://www.researchgate.net/profile/Frederic_Lemieux/publication/236730770_Assessing_Terrorist_Risks_Developing_an_Algorithm-Based_Model_for_Law_Enforcement/links/02e7e535bef3516b60000000/Assessing-Terrorist-Risks-Developing-an-Algorithm-Based-Model-for-Law-Enforcement.pdf#page=117; Liane Rothenberger, "Terrorist Groups: Using Internet and Social Media for Disseminating Ideas. New Tools for Promoting Political Change," *Romanian Journal of Communication & Public Relations* 14, No: 3, (December 2012), 7-23, http://journalofcommunication.ro/oldsite/archive2/027/27/Rothenberger_27.pdf; Thomas D. Mayfield III, "A Commander's Strategy for Social Media," *Joint Force Quarterly*, 60, no: 1, (1st Quarter, 2011), 79-83, https://pdfs.semanticscholar.org/7f94/f1e7469a87b55425127084fa98b1be83a8ef.pdf; Liane Rothenberger, "Terrorist Groups: Using Internet and Social Media for Disseminating Ideas", 7-8; Thomas Elkjer Nissen, "Terror.com – IS's Social Media Warfare in Syria and Iraq," *Military Studies Magazine. Contemporary Conflicts* 2, no: 2, (2014), 1-3, http://www.fak.dk/en/news/magazine/Documents/ISSUE%2002,%20VOLUME%2002/Terror_com_ISs_Social_Media_Warfare_in_Syria_and_Iraq.pdf; Drew Herrick, "The Social Side of 'Cyber Power'? Social media and Cyber Operations," in *2016 8th International Conference on Cyber Conflict* (Telinin: Estonia, 2016), 110, https://ccdcoe.org/uploads/2018/10/Art-07-The-Social-Side-of-Cyber-Power.-Social-Media-and-Cyber-Operations.pdf; Thomas Elkjer Nissen, "Terror.com – IS's Social Media Warfare in Syria and Iraq, 1-2.

automatic collection and decision superiority.[132] However, the inclusion of this capability within cavalry platforms drastically improves a commander's understanding, exponentially improving orientation, and providing a gateway for disruption and dislocation, regardless of the type of conflict of the future.

A neo-Luddite rebuttal justifying the partitioning of open source collection to a specialist operator within the formation intelligence cell significantly limits effective reconnaissance. Rejectionists frequently cite the 'reliability issues', 'vast volumes of data', or 'searching difficulty' associated with 'unqualified' lower-level open-source collection as justification for specialist control of the capability. [133] This rebuttal, however, is a conflation of the differing responsibilities of information and intelligence collection. It also underestimates the technologically savvy abilities of the youngest generation in the Army, who are wedded to the digital age through smartphone technology. So, Australia needs this capability, but where to source these Butternut Guerrillas? Cavalry scouts provide a modern answer.

The redesign of the cavalry scout capability is the next evolutionary measure to achieve the Butternut Cyber Guerrilla. Previously, the cavalry scout has possessed the auxiliary skills of personnel tracking, demolitions, anti-armour weapon use, marksman, and motorcycle operator. Combined with the regimental surveillance troop operator who holds specialist surveillance mast equipment and micro-UAS platform qualifications, the cyber scout may now replace or augment one of these skills. The role of this scout includes the ability to collect digital footprint information on open-source platforms of identified and

[132] While outlining the opportunities for exploitation, PTE E demonstrates the ingrained mindset of the Battlegroup Intelligence analyst owning the Open Source Intelligence (OSINT) capability. PTE E, "The tactical application of Open Source Intelligence (OSINT)," *The Cove* (blog), December 12, 2018, https://cove.army.gov.au/article/the-tactical-application-open-source-intelligence-osint.
[133] Nihad A. Hassan and Rami Hijazi, *Open Source Intelligence Methods and Tools. A practical guide to Online Intelligence*, (New York: APress, 2018), Kindle Edition, 16; Expert System Team, "Advantages and disadvantages of open-source intelligence," *Expert System* (blog), February 24, 2017, https://expertsystem.com/advantages-disadvantages-open-source-intelligence/; Reuser's Information Services, *OSINT and Intelligence. On the significance of OSINT for the overall intelligence effort*, Reuser's information services, (Leiden, The Netherlands: May 09, 2013), 6.

suspected targets. The digital scout must also master electromagnetic passive reconnaissance and surveillance. This role includes scout use of open-source platforms to identify events, activities, and patterns relevant to the immediate tactical situation or area of operations historically defined through visual and audible observation methods. By doing so, cavalry may again replicate Grierson's overmatch in Mississippi provided by Surby's mail courier seizures, 4th Cavalry's document finds during CEDAR FALLS, or George Meade's layered collection at Gettysburg.[134] This opportunity is particularly important, acknowledging the civilian populace's transmission of high fidelity data in the modern battlespace during significant events.[135] The Army's provision of a tablet with language translation software for open-source collection facilitates digital reconnaissance-pull with the targeting and fusion centre, while also reducing the loss of clarity associated with fusion centre attempts to understand tactical-level actor reactions to friendly force actions – something a room full of computers far from the battlefield cannot achieve. This realisation also defeats the historical argument that task-specific combined arms augmentation is a viable alternative on the grounds of information quality and target familiarity. Like Imboden's cavalry at Gettysburg, a reconnaissance asset unfamiliar with its commander will perform sub-optimally. These new Butternut Guerrillas provide a substantial advantage to the cavalry of the future.

The potential of this capability to orient the commander successfully is enormous. Open-source collection facilitates the orientation of the platoon or combat team to action time-sensitive targeting against adversaries using open source systems, much like Colonel Edward Hatch did at the Mobile and Ohio Railroad, or 2 ACR did on approach to the 73

[134] Meade used an interwoven mesh of cavalry, spies, and passive HUMINT sources to gain information superiority in the lead-up to Gettysburg. Similarly, Murray comments on the potency of the civilian population in informing the methods of collection via open sources. Warren C. Robinson, *Jeb Stuart and the Confederate Defeat at Gettysburg*, 144-47; Riley Murray, "The Unrealised Value of Open Source Intelligence for Irregular Warfare," *The Strategy Bridge* (blog), July 25, 2018, https://www.realcleardefense.com/articles/2018/07/25/the_unrealized_value_of_open_source_intelligence_for_irregular_warfare_113651.html.

[135] Riley Murray, "The Unrealised Value of Open Source Intelligence for Irregular Warfare".

Easting. Additionally, when networked to the higher headquarters, this technology may cue the orientation and movement of the main force, retaining that enduring aspect of cavalry as an economy of force agent. Open-source collection also ensures a reduction in sensor to shooter cueing time, forearming the modern Grierson with disproportionate decision speed reminiscent of the special forces community, thereby facilitating the link between superior orientation and dislocation or disruption.[136] But what about a powerful enemy that can destroy cavalry at first sight or beyond the line of sight? How does a cavalry organisation detect the modern armoured defensive position that saw the end of the 87 ARB?

IV.1.2 Colonel Don Holder's new thermal and Grierson's better horses – Expedient orientation via the electromagnetic spectrum.

Grierson's brigade and Holder's ACR distinguish themselves from Brom's battalion and Captain Giladi's tank company by their ability, when outnumbered, to orient first onto the adversary and avoid concentrating in the enemy's engagement area. Where Holder's forces had technological overmatch in thermal sights, and Grierson's brigade had overmatch through superior mounts and effective scouting techniques, modern cavalry must now pursue these tactical edges, which generate the superior speed to orient. A modern adaptation to this technological edge is the permanent augmentation of electromagnetic direction-finding and listening equipment, such as the TCI 803 or Wolfhound. Adversary forces tether to HF, VHF, UHF, and tri-band or quad-band cellular GSM communications devices. Cavalry exploitation of this capability enables adversary detection and orienting beyond the line of sight via the equipment's direction-finding and geolocating ability. This increases battlespace lethality and provides a platform for dislocation via spoofing.[137] While critics indicate that electronic

[136] McChrystal demonstrates the high-fidelity of intelligence, surveillance, and reconnaissance assets available to the Joint Special Operations Task Forces in the preceding two decades. Stanley McCrystal, *Team of Teams. New Rules of Engagement for a Complex World*, (New York: Penguin Random House LLC, 2015), 18-19.
[137] The TCI Model 803, or Praemittias Systems Wolfhound Cooperative Radio Direction Finding System, is capable of complete signal search, collection, direction-finding, and geolocation solution. Additionally, Brown demonstrates the prevalence of technology that can locate and commence data collection from adversary mobile

attack is a separate SIGINT function enabled through combined arms integration, this argument is obsolete for two reasons.

First, open-source reports demonstrate that Australia's 7th Signals electromagnetic capability exists outside the combat brigade structures and therefore cannot achieve routine tactical-level augmentation.[138] The fleeting opportunities afforded through savvy threat groups who rapidly concentrate under low emission control (EMCON), and then quickly disperse under zero EMCON, demand cavalry permanently embed this capability for expedient orientation. The status quo fails to consider unfamiliar combined arms groups severely degrade effectiveness. Recent US and Russian decisions to recommence permanent augmentation of this capability within cavalry and reconnaissance forces reinforce this notion.[139]

Second, where SIGINT capabilities were once highly technical, modern tactical-level equipment no longer requires the performance of this trade through a specialised employment category. With modern technology only requiring as little as twenty hours of instruction for competency, the Army must redefine this skill as an auxiliary ability and align it to the

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phone technology, pinpointing their locations, as well as seeding deception and information operations product to disrupt or dislocate. TCI, "TCI Model 803 VHF/UHF/SHF DF Subsystem," accessed December 27, 2019, https://www.tcibr.com/tci-model-803-vhfuhfshf-comintdf-subsystem/; Praemittas Systems, "Mongoose Cooperative Digital Direction Finding System," accessed December 27, 2019, http://www.praemittias-systems.com/wp-content/uploads/2017/06/MONGOOSE_Slicksheet.pdf; Strategy Page, "Electronic Weapons: The Wolfhound Is A Nasty Surprise," *Strategy Page. The News as History*, accessed December 27, 2019, https://www.strategypage.com/htmw/htecm/articles/20131031.aspx; Daniel Brown, "Troops in Europe are jumping in lakes and wrapping their phones in condoms to thwart Russian hackers, *Business Insider*, accessed February 01, 2020, https://www.businessinsider.com/nato-troops-are-wrapping-phones-in-condoms-to-thwart-russian-hackers-2017-10. Australian Army, "Accelerated Warfare," *Army*. Accessed December 29, 2019, https://www.army.gov.au/our-work/from-the-chief-of-army/accelerated-warfare.

[138] Australian Army, "7th Signals Regiment," *Army*, accessed December 27, 2019, https://www.army.gov.au/our-people/units/forces-command/6th-combat-support-brigade/7th-signal-regiment; Headquarters United States Marine Corps, *MCRP 2-10A.1 Signals Intelligence*, (Washington DC: Headquarters US Marine Corps, April 04, 2018), 4-1.

[139] Spring-Glace demonstrates that the US Army has identified an undermatch of SIGINT (including radar platoons and electronic attack capability) against peer competitors. Morgan J. Spring-Glace, "Return of Ground-Based Electronic Warfare Platforms and Force Structure," *Military Review*, (July-August 2019), 42, https://www.armyupress.army.mil/Journals/Military-Review/English-Edition-Archives/July-August-2019/Spring-Glace-Electronic-Warfare/.

performance of digital reconnaissance.[140] Cavalry's augmentation of this skill is achievable within current training continuum timelines while also enabling current SIGINT personnel to focus on Operational-level SIGINT duties with higher-grade technology. Several Commercial Off the Shelf (COTS) solutions already exist, with a small power supply and antennae demand that is sustainable within the Boxer CRV.

Cavalry must reconnoitre on the electromagnetic spectrum to enable superior orientation. Integral tactical-level direction-finding and listening equipment are sustainable within existing platforms, while also generating an opportunity for SIGINT personnel within the ARA to focus on higher-level SIGINT demands. Failure to orient beyond the line of sight exposes both the cavalry and main force to early concentration and therefore destruction with long-range precision munitions. While long-range orientation is essential, fleeting close-range intelligence-based opportunities also remain critical. The lessons of the interwar years and Vietnam provide a clue to cavalry's enduring human exploitation requirements.

The 11th Armoured Cavalry Regiment's Operation CEDAR FALLS experience, combined with the interwar realisation that the aeroplane could not conduct tactical field exploitation and reconnaissance, warns future cavalry practitioners of these enduring components of orientation. The 11th Armoured Cavalry Regiment's ability to locate and immediately process battlefield intelligence on enemy corpses, within caches, and through prisoner capture mimics the concerns over aeroplane reconnaissance raised by Malcolm Wheeler Nicholson in 1922. This deficiency demands cavalry continue to perform these tactical-level activities in support of orientation. Onboard biometric enrolment and verification software, such as the IDF's Automatic Target Recognition system, is the modern solution for cavalry's ability to perform this activity expediently. This technology, validated by conventional and special force's use in recent training and operations for special

[140] Strategy Page, "Electronic Weapons: The Wolfhound Is A Nasty Surprise,"; Courtney Weinbaum, Steven Berner, and Bruce McClintock, *SIGINT for Anyone*, (Washington D.C.: RAND National Defense Research Institute, 2017), https://www.rand.org/pubs/perspectives/PE273.html.

reconnaissance, surveillance, and exploitation missions, provides an opportunity for dislocation and disruption.[141] Such technology provides an incredible advantage to future reconnaissance demands by the transmission of HVT data for capture or destruction.

IV.1.3 A new camera pigeon – Expedient orientation via low-level air integration.

The interwar years and 4th Cavalry's Vietnam experience demonstrate the potency of cavalry forces possessing an integral air observation and attack augmented platform within the organisation. While the interwar years and the fragility of 2 ACR's grounded air during a critical day in DESERT STORM warn cavalry practitioners against air replacing ground cavalry, they do provide an increased detection capability to support superior tactical orientation.[142] An affordable, modern version of this capability is an armed, Unmanned Aerial System (UAS) with onboard observation and recording equipment.

A brigade standard, armed UAS platform resourced and housed on the Boxer provides increased physical standoff and difficult terrain access, supporting superior orientation. Cavalry units have demonstrated the potency of this combination with recent trials integrating the unarmed Wasp micro-UAS, as well as the Boxer capability demonstration video showing it is capable of UAS augmentation.[143] This capability, however, must continue to evolve with modern demands. The UAS's possession of communications relay equipment capable of transmitting burst video data in thermal, IR, and day camera, back to higher headquarters is the next evolutionary step supporting orientation. Additionally, the augmentation of a weapon on the platform provides cavalry with a disproportionate opportunity to threaten enemy

[141] Anthony Kimery, "USSOCOM, Army look to biometrics industry for new technologies for SOF of the future," *Biometric Update.com*, accessed December 27, 2019, https://www.biometricupdate.com/201811/ussocom-army-look-to-biometrics-industry-for-new-technologies-for-sof-of-the-future; Ami Rojkes Dombe, "Biometric Target Recognition," *Israel Defense*, accessed December 27, 2019, https://www.israeldefense.co.il/en/node/28881.

[142] H.R. McMaster, "Destruction of the Tawakalna Mechanized Division," in "Eagle Troop at the Battle of 73 Easting."

[143] The Rheinmetall GTK Boxer JODAA concept video shows the Boxer housing a quadcopter UAS. "Rheinmetall GTK Boxer JODAA," video, 00:47, https://www.rheinmetall-defence.com/en/rheinmetall_defence/systems_and_products/vehicle_systems/armoured_wheeled_vehicles/boxer_jodaa/index.php; Brian Hartigan, "ADF buys Wasp UAS," *Contact*, July, 01, 2017, https://www.contactairlandandsea.com/2017/06/01/adf-buys-wasp/.

command and control nodes, logistics, or reserves with a precision strike. Cavalry must consider the trap falls of this capability, however, if it is to continue to replicate the surprise that 4th Cavalry Regiment's Squadrons and 17th Cavalry Regiment's E Troop achieved at Operation CEDAR FALLS.

UAS use can be a double-edged sword for cavalry, revealing its presence through the known proximity of UAS tethered to possible vehicle hide locations. Consequently, cavalry must pursue this capability with two considerations in mind if it is to expedite orientation without affording the adversary the same through indicators and warnings. First, the UAS must be capable of sending data via a signature more discreet than radiotelephone (RATEL) conversation. Doing so supports simultaneous orientation and adversary disorientation by starving enemy reconnaissance of electromagnetic indicators of friendly force presence. Second, to reduce the distinguishability indicators for enemy reconnaissance, the platform must be identical to brigade main force UAS. Doing so creates the same ambiguity that 4th Cavalry and E Troop's blocking position occupation achieved in CEDAR FALLS. JEB Stuart's return ride offers the final lessons for the augmentation of this capability – have a familiar force design, and avoid the burden of an unfamiliar and slow logistics train.

Combined arms integration via the assignment of existing artillery-owned surveillance assets is not a viable alternative to integral UAS augmentation as it deprives cavalry of a lightweight logistics train that is already threatened by external pressures and survivability concerns. The ARA's artillery surveillance capability does not have the mobility match afforded by the ACR, and under the current force design, it would increase the A1 echelon to an inappropriate size. By having the platform integral to the ACR, and responsibilities performed by existing crews and scouts, the UAS capability would be more familiar and thus competent to cavalry's needs, could more readily augment into repair parts chains, would reduce divisional manning, and would prevent the unnecessary addition of

liaison and communications vehicles to the echelon. Artillery surveillance would then be free to pursue more sophisticated operational and strategic effects such as counter-battery fire detection and neutralisation.

Cavalry's enduring role demands early commander orientation. Accordingly, the ARA must recognise that the Boxer CRV is not just a 'heavy ASLAV', where extant tactics, techniques, and procedures are retrofitted into a new vehicle – relying on primarily visual, audible, and tactile collection means to inform the commander's estimate. At the same time, long-range fires can destroy the force from several hundred kilometres away, and a grey zone force avoids the battle. As the vehicle's gun and armour have increased, so too must the built-in sensors that the platform provides. Similarly, the ARA must not be stifled by stove-piped thinking that conducts electromagnetic collection outside of front-line units in old structures. Some of that must be pushed down to the commander's primary orienting asset – the cavalry.

IV.2 A new carbine and baggage train – Technological requirements of future cavalry to successfully dislocate and disrupt.

"To mask the cavalry's withdrawal, dummy horses and camps were constructed… Every horse on the lines had its dummy counterpart erected beside it, while sham men similarly constructed were dotted about the camps."

David R. Woodward.[144]

The economy of force aspect of cavalry, combined with the desire for disproportionate effects drives the cavalry acquisition of cost-effective but potent technology to dislocate and disrupt the enemy. Frequently, this includes the addition of technology that assists with deception, precision strike, and also drives savvy logistics procurement. Operation CEDAR FALLS demonstrated inherent linkages between cavalry and deception through technological acquisition. Complementarily, 2 ACR's DESERT STORM showed the

[144] David R. Woodward, *Hell in the Holy Land: World War I in the Middle East* (Lexington, KY: University Press of Kentucky, 2013), 191-192.

requirement for technology that facilitates dislocation by traversing unpredictable routes. In 1991, it was GPS. In modernity, it is via the cyber highway.

Additionally, Reshef and Brom's 87 ARB failure at the Chinese Farm, as well as Holder's success in the desert, forewarns cavalry practitioners of the requirement for cavalry forces to possess an integral fires and ATGM capability to survive when operating in the close or rear space. Similarly, 2 ACR complements this concern by confirming the requirement for the cavalry to possess systems capable of high lethality – currently provided by the main battle tank. Stuart's untimely return shows the danger of unwieldy logistics, which Grierson's forces solved through both technological and tactical exploits.

IV.2.1 Surprise in the digital Ardennes – Electromagnetic deception and attack as methods of dislocation and disruption.

In 1967, US forces successfully deceived Vietnamese forces of the location and intention of the main and supporting forces during Operation CEDAR FALLS. The M113's prevalence in both infantry and cavalry organisations provided sufficient ambiguity to provide this deception. Technology that spoofs and masks cavalry's signature from enemy EMS detection capabilities is the modern equivalent. Consequently, cavalry must pursue technology that facilitates Manipulative EMS Deception, Simulative EMS Deception, Imitative EMS Deception, Electromagnetic Hardening, Electromagnetic Interference, and Electromagnetic Masking.[145] Such a provision affords cavalry with the ability to degrade enemy commander cohesion across the various types of conflict, supporting disruption or dislocation against conventional enemy reconnaissance, insurgent commanders, special

[145] Appendix A to FM 34-45 articulates the electronic warfare and deception activities. Headquarters Department of the Army, *FM 34-45 Tactics, Techniques, and Procedures ELECTRONIC ATTACK*, (Washington: DC: Headquarters Department of the Army, June 09, 2000), A-1 – A-6, https://upload.wikimedia.org/wikipedia/commons/2/2b/FM-34-45-Tactics-Techniques-and-Procedures-for-Electronic-Attack.pdf.

operations with long-range fires, or mechanised forces via electromagnetic disruption.[146] These systems are already vehicle portable and require a small power source and antennae array that does not affect vehicle manoeuvrability or operation.[147]

Like 2 ACR's use of GPS to attack from an unexpected direction in the desert, cavalry must continue to augment technology that affords this effect. Modern cyber-attack systems capable of detection, bypass, and attack capabilities facilitate a digital 73 Easting battle by rapidly overwhelming predictable defensive patterns and equipment.[148] When conducted with sufficient virulence, this capability is capable of complete network infection, thereby enabling operational dislocation and disruption from the back of a CRV, or via a remotely deployed cavalry UAS capable of short-range communications intercept, decryption, and communications disruption.[149] Cavalry will once again threaten the close and rear space boundaries with such technology, just as Grierson, Holder, and the ACR did in Vietnam. Notwithstanding the cyber close space, Brom and Holder provide a timely warning to cavalry practitioners of the dangers associated with operating in the close physical space of the enemy.

IV.2.2 Surviving and thriving in the close space – Fires and anti-tank in the close space.

Both Yoav Brom's 87 ARB and 2 ACR in DESERT STORM demonstrate the potency and inherent requirement for cavalry forces to possess an integral fires capability when disrupting or dislocating. Brom's inability to disrupt critical flank guard elements, or later, to fix, blind, or disrupt Egyptian counter penetration forces spelt his doom. Similarly,

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[146] John R. Hoehn, *Defense Primer: Electronic Warfare*, CRS Report for Congress IF11118 (Washington DC: Congressional Research Service, September 18, 2019), 1,https://crsreports.congress.gov/product/pdf/IF/IF11118

[147] The "Krasuha-4" and "Moskva-1" systems had the ability to suppress radio signals in their entire spectrum without large radiating antennas with extensive power sources. Samuel Bendett, "America is Getting Outclassed by Russian Electronic Warfare," *The National Interest*, September 19, 2017, https://nationalinterest.org/feature/america-getting-outclassed-by-russian-electronic-warfare-22380; Renaud Mayers, "Russian Electronic Warfare Systems," *The Defensionem – The War Bible*, November 27, 2017, https://defensionem.com/russian-electronic-warfare-systems/

[148] Ibid.

[149] Terrestrial platforms are limited by their available power sources and terrain variation that shields or disrupts EMS signature. Ibid. 1-2.

when 2 ACR transitioned to the attack from covering force duties in DESERT STORM, it was able to immediately destroy and neutralise IRG defensive positions by the addition of a field artillery brigade.[150] Without this capability, 2 ACR's disproportionate disruption and dislocation achievements are doubtful.

Integral fires remain a critical capability to facilitate cavalry disruption as an economy of force option. Fires critically shield cavalry's economy of force limitations of a reduced dismounted capability, as well as negating temperamental air attack assets. Fires also enable cavalry to perform several enduring tactical actions such as coup de main through medium-range precision strike (leading to disruption), blind enemy observation positions, and screen main force movement without revealing main force artillery (thereby misorienting the enemy) and also facilitate break clean during a transition (thereby achieving dislocation).

Furthermore, fires solve modernity's demands for increased dispersion by covering vehicle weapon range limitations with lethal effects. While critics may see this requirement as a back to the future mindset, the technological requirements proceed beyond the pre-1994 2nd Cavalry Regiment who possessed an integral mortar variant. Modernity demands a portable system capable of interdiction beyond the 100km mark to meet potential adversity parity.[151] Accordingly, this capability must also be readily replenishable and straightforward to use. While this will likely be an artillery-owned, human-operated system in the short-term, the M113 Unmanned Ground System (UGV) provides an excellent platform for future 'artillery in a box' capabilities for cavalry. A UGV can move and shoot well forward without increasing the logistical burden of the cavalry force. A fuel and spare parts variant within the technical section of the combat team could also enable self-replenishment of this UGV capability before A2 echelon refurbishment. Cavalry's ability to shape and thereby orient the

[150] John J. McGrath, *Scouts Out!,* 173; H.R. McMaster, "Destruction of the Tawakalna Mechanized Division."
[151] Matthew Cox, "The Marine Corps wants to equip armored recon units with long-range precision fires," *Task and Purpose* (blog), accessed December 28, 2019, https://taskandpurpose.com/the-marine-corps-wants-to-equip-armored-recon-units-with-long-range-precision-fires.

main force requires a credible economy of force lethality. While fires provide the first solution, cavalry requires an economical tank-killing asset beyond the main battle tank.

Reshef and Brom's folly demonstrated the requirement for the cavalry to possess a potent tank-killing asset in addition to the main battle tank's existence in the cavalry force. Operation in the full spectrum of conflict demands cavalry protects itself sufficiently against the main force. While the 30mm cannon does so against infantry, the ATGM (apart from MBT or attack helicopter grouping within cavalry) remains the only weapon capable of physically destroying enemy main battle tanks. Cavalry's possession of ATGM degrades enemy confidence through the threat of presence and lethality of use. Had Brom possessed such technology, his ability to defeat Egyptian Armour or achieve a break clean is possible.

Recent events have stymied Australia's acknowledgement of this requirement. The 2019 Government decision to scale back turret-mounted anti-tank guided missiles (ATGM) on Boxer purchases is a dangerous decision that risks sufficient crew familiarity and competency.[152] Such a removal degrades cavalry's potency in several enduring tactical tasks such as coup de main, raids against armour, and defensive operations against mounted forces. The ARA's possession of a "fitted for but not with" mentality fails to consider the lessons of Jenkins and Imboden's cavalry failures at Gettysburg – inadequate training familiarity and insufficient manning leads to defeat. Additionally, the FGM-148 Javelin is a suboptimal alternative, with unsatisfactory three-minute acquisition time and non-vehicle friendly stabilisation demands.[153] The loss of the spike is similar to the removal of machine guns from an infantry battalion. Cavalry consequently is forced to rely on the main battle tank, a platform already under pressure from competing demands.

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[152] Ian Bostock, "Only 1 in 3 Boxer CRVs to receive ATGM launchers," *Defence Technology Review*, 60, December 2019 – January 2020, 6-7, https://defencetechnologyreview.partica.online/defence-technology-review/dtr-dec-jan-2020/flipbook.

[153] Charlie Gao, "Is Russia Getting Ready to Build Its Very Own 'Javelin' Tank-Killer Missile? Bad Idea?," *The National Interest*, October 02, 2019, https://nationalinterest.org/blog/buzz/russia-getting-ready-build-its-very-own-javelin-tank-killer-missile-85141.

While the existence of the main battle tank in the ACR deserves a separate paper, 2 ACR's success in the desert advocates for the retention of main battle tanks in the ACR. While mechanised infantry practitioners posit this idea in support of close combat, the technological status quo of armour currently demands both forces possess such capabilities. Simplistically, mechanised infantry requires the main battle tank for mechanised assaults and defence. Cavalry requires the capacity to threaten the adversary's close and rear space by forcing the enemy to fight sooner than expected. The 120mm gun and thick armour of the M1A1 allow cavalry to appear suddenly with a highly potent force, just as the ACR did in DESERT STORM. With tanks, cavalry continues to exploit fleeting battlefield opportunities for disruption through mounted raids or ambush with high lethality. Additionally, the tank also supports dislocation through force grouping ambiguity when also grouped with the main force, thereby supporting misorientation of the adversary.

IV.2.3 Grierson's foragers and Stuart's captured wagons – Future cavalry logistics.

Stuart's slow captured baggage trains remind the cavalry practitioner of the impact an unwieldy baggage train has on cavalry's enduring ability to dislocate and disrupt the enemy. While this is partially a tactical problem, technology provides necessary support to the resolution. The elephant in the room for the mid-21st century combat brigade is the logistical wagon chain. While the design of holistic future brigade logistics is beyond the scope of this essay, the cavalry force must embrace a revised logistics train solution to meet current and anticipated future demands – offsetting the increased weight of repair parts, the current strain on critical trades, and the increasingly lethal battlespace.

The imposition of the M113-based Unmanned Ground Vehicle (UGV) and Unmanned logistics UAS capabilities under commercial production provides two mediums that would improve integral consumption ratios and reduce workforce demands of specialist trades. This capability would also increase pod survivability due to its ability to operate dispersed,

without mutual support, and cached until needed, mimicking Grierson's success in Mississippi, and avoiding Stuart's pitfalls. Ground-based UGV provides a medium to carry heavy repair parts, water, and bulk fuel capabilities without crew sustainment, while the aerial capabilities provide rapid response for lightweight requirements such as medical supplies, ammunition delivery, and single-patient transport.[154]

Cavalry's ability to perform its enduring functions demands technological advancement to adapt to the changing characteristics of modern and future conflict. Savvy procurement must offset the high costs associated with modern developmental demands. Cavalry's procurement of cost-effective anti-tank and fires capabilities, combined with unmanned logistics and cyber detection and attack capabilities afford cavalry an economy of force consistency that can achieve disproportionate effects in pursuit of dislocation and disruption. For the small but professional ARA, this is an absolute must.

IV.3 The new caracole – Tactical requirements of future cavalry to successfully orient, dislocate, and disrupt.

"The success of the cavalry was here due to the manner in which Henry had re-organized and trained them; and it is worthy of remark that light horsemen are first mentioned in this battle. Armed with cross-bows, they competed successfully with the Hungarian horsemen, and distracted the enemy's attention during the battle by constant skirmishing."

Louis Edward Nolan, on the Battle of Merseburg, 933.[155]

The cavalry context dilemma and its relationship to the three enduring purposes of cavalry underpin cavalry's tactical evolution. The current characteristic changes to conflict demand cavalry operate in an environment characterised by increased lethality, weapon precision, prolonged or timeless conflict (or at least with a mixture of conflict and 'grey zone

[154] John. Mccoy, "Unmanned Aerial Logistics Vehicles-A Concept Worth Pursuing." *Army Logistician* 36, no. 2 (March 1, 2004): 40–44. http://search.proquest.com/docview/197282023/.
[155] Louis Edward Nolan, *Cavalry: its history and tactics*, Loc 240.

peace'), and amongst the people.[156] While these characteristics are not entirely new, their prevalence has increased. Subsequently, lessons from the past remain relevant.

IV.3.1 The cavalry accordion – Mastering concentration and dispersion.

Grierson's mastery of concentration and dispersion as tactical elements of force structure capabilities was a key ingredient to his sustained dislocation and disruption. With increased battlefield lethality, this concern returns to prevalence. Cavalry tactics must now evolve extant procedures for mutual support, the micro-tactical baseline consideration for concentration. The existing "half visual range to half effective weapon range – whichever is the least distance" mantra requires evaluation.[157] An amendment to "half detection sensor range to half weapon system effectiveness – whichever is the least distance" is the first step in this evolution. While superficially, this may seem a nuanced argument, it has practical implications for individual cavalry platform detection demands. Cavalry forces must frequently utilise reconnaissance support tools such as the quadcopter UAS. Cavalry forces must also demonstrate competence with all-arms fires employment. Both of these skills facilitate increased dispersion without isolation.[158] Doing so maintains cavalry dispersion until the critical point, negating long-range lethal fires and counter reconnaissance capabilities, while also ensuring the ability to deep strike the metaphorical Ohio Railroad at the crucial point. While such situational awareness and lethality at the front remain a necessity, a future Grierson remains hampered by the ARA's current logistical shortfalls.

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[156] John Ferris, "After the RMA," in *The Ashgate Research Companion to Modern Warfare* (University of Wolverhampton, UK: Ashgate, 2010), 119; Shawn Woodford, "The Russian Artillery Strike That Spooked the U.S. Army," Mystics and Statistics, accessed December 27, 2019, http://www.dupuyinstitute.org/blog/2017/03/29/the-russian-artillery-strike-that-spooked-the-u-s-army/; Rupert Smith, *Utility of Force. The Art of War in the Modern World*, (London: Allen Lane, 2005), Kindle Edition, 271; John Raine, "War or Peace? Understanding the grey zone," *International Institute for Strategic Studies* (blog), April 02, 2019, https://www.iiss.org/blogs/analysis/2019/04/understanding-the-grey-zone; Michael O'Hanlon, *The Future of Land Warfare (Geopolitics in the 21st Century)*, (Washington DC: The Brookings Institution, 2015), Kindle Edition, 4.

[157] *LWD 3-3-4 Employment of Armour*, (Australian Army, 2009), 1-11.

[158] Turkey has developed a quadcopter armed with a machine gun as an example of these tools. UAS vision, "Turkey's New Drone Comes with a Machine Gun," *UAS Vision*, accessed December 27, 2019, https://www.uasvision.com/2019/12/17/turkeys-new-drone-comes-with-a-machine-gun/.

Replicating existing ACR logistics on a 35 Tonne scale hampers a future cavalryman like Stuart's captured wagon trains. Cavalry requires a revised approach to logistics that challenges the status quo.

IV.3.2 Don't circle the wagons – AI-assisted logistics and foraging.

Stuart's folly of escorting slow baggage trains north reminds cavalry practitioners of the requirement for dispersed and fast logistics wagons. Unmanned logistics systems programmed for heterogenous swarming increase the likelihood of success of delivery, while also shielding the critical vulnerabilities associated with a single platform holding all or the majority of a single class of supply. Cavalry's possession of this capability reduces the humans required to operate the A1 and A2 logistics, while also providing them with further physical standoff from threat areas. As logistics get faster and more autonomous, they reduce the burden on the combat force. Notwithstanding, the horses remain hungry. Cavalry must again live off the land to supplement this capability.

Grierson's sustained success demands cavalry forage. Cavalry training must again understand how to source appropriate classes of supply (particularly power, bulk fuel, food, and water) from civilian infrastructure and off the land in both friendly and enemy terrain. Practically, this demands cavalry possess training and technology that prolongs the duration of the horse and the duration of the rider. With power and fuel demands as the main limiting factors of the horse, cavalry forces must build habitual relationships with Special Forces and friendly guerrilla elements, as they provide an opportunity for both horse and rider sustainment via captured, manufactured, or locally procured resources (mainly food and fuel). Cavalry forces achieve the latter through superior intelligence collection and coercion capabilities (through integral HUMINT). Technologically, cavalry may augment this skill by procuring long-range batteries, efficient alternators, and solar power capacity to mimic

Grierson's sustained foraging, thereby enabling cavalry's enduring achievement of persistent orientation, dislocation, and disruption.

IV.3.3 Dispelling the myth of 'death before dismount' – Mounted and dismounted combat.

Grierson's Butternut Guerrillas, Holder's ACR, and US cavalry in Vietnam show that it is vital to be competent at mounted and dismounted combat to continually orient, disrupt, and dislocate. US cavalry's operational-level success during Operation CEDAR FALLS occurred because cavalry retained the ability to fight both mounted and dismounted, discovering critical intelligence inside Vietnamese facilities, while also employing specialist dismounted weapon systems for disproportionate effects. Similarly, 2 ACR's lack of sufficient dismounted capability denied 2 ACR the ability to capture and process surrendering Iraqis sufficiently in DESERT STORM, thereby exposing risk to the main force as they maintained their advance. Additionally, Grierson's ability to deceive the civil populace with the Butternut Guerrillas occurred because he used them to seed false narratives through verbal interactions with civilians. Cavalry practitioners who see cavalry as a combat force that is purely mounted fail to understand the enduring role of cavalry requires human interaction, requires access to all forms of terrain, and seeks disproportionate effects. Previous cavalry scout iterations contained a potent mixture of anti-armour, marksmanship, and pioneering skills for a reason – it generated economy of force with limited manning. While critics may cite the difficulty of the increased system as a deterrent for cavalry's possession of this skill, this fallacy fails to consider the increased automation within existing technologies, such as the Boxer CRV. The intellect of cavalry soldiers has transcended industrial age requirements of the mid-twentieth century. Cavalry must harness this with increased responsibility and training.

Cavalry tactical acumen must continually evolve to recognise the improved intellectual quality of the soldier. A cavalry force well trained in mission command supports team consciousness, thereby enabling rapid orientation, dislocation, and disruption.[159] Practically, this demands cavalry forces train and fight in smaller combat groupings, with less rank but with more responsibility, such as those offered by Krause in *Minimum Mass Tactics*.[160] The special operations continuum provides the model for this development, with junior non-commissioned officers well trained in operational theory, collection planning, mission design, and retaining several auxiliary trade skills.[161]Doing so extends responsibility and risk levels mimicking those given to Grierson, while also avoiding the pitfall of Stuart's unsynchronised actions before Gettysburg. This continuum includes troops operating for more extended periods of physical isolation, operating under zero EMS signature, and operating without verbal orders in the pursuit of sustained main force orientation, or to capitalise on fleeting opportunities to dislocate and disrupt. Additionally, and alternatively, it will require cavalry to operate closer to the civilian populace, a challenge that comes with opportunities and additional risks.

CONCLUSION.

The offered cavalry role provides a more thorough and appropriate synthesis of the enduring aspects of cavalry. By the conduct of reconnaissance, security, transition, and disproportionate economy of force-driven offensive, defensive, and stability operations, cavalry forces support the commander through orientation, dislocation, and disruption. Cavalry forces achieve this role by successfully balancing the cavalry context dilemma while

[159] McCrystal identifies the benefit of a collective team consciousness in developing strong teams. Stanley McCrystal, *Team of Teams*, 93-98.
[160] Michael Krause, "The case for minimum-mass tactics in the Australian Army," *Australian Army Journal*, 73-5.
[161] Sutoff demonstrates the prevalence of missions with risk being designated to SOF, rather than being conducted by conventional forces who have the capability to do so. Josh Sutoff, "What's really Wrong with Mission Command," *From the Green Notebook* (blog), https://fromthegreennotebook.com/2019/02/11/whats-really-wrong-with-mission-command/.

also retaining the three enduring purposes of orientation, dislocation, and disruption. Doing so ensures cavalry retain the range of enduring tactical concepts that translate into tactical tasks.

Cavalry forces conduct these tactical concepts in the pursuit of commander and adversary orientation through reconnaissance and fighting, while also seeking to degrade the cohesion of the enemy commander through dislocation and disruption. In proving cavalry's enduring nature, analysis of the previous two centuries stress-tested the enduring nature of cavalry juxtaposed against common concerns of the modern era – periods of technological advancement with conflict metamorphosis through grey zone peace, limited war, and total war.

In providing a portal to examine the technological and tactical requirements of cavalry in the present and within a broad range of futures, history shows the folly of removing the enduring role of cavalry, while also demonstrating the disproportionate effects achieved through their retention. This realisation is critically important in a world characterised by smaller, more professional and lethal armies, where forces pursue economy of force. In each instance of failure, the inability to perform tactical concepts in support of the trinity has led to suboptimal performances, namely defeat of the force, and at times the battle or conflict.

B-CRV implementation demands technological and tactical progression of thought to ensure maximum potential achievement. To negotiate the minefield of "good idea procurement" with expensive technology, modern adaptations of old lessons provide a logical framework to evolve cavalry to the changing characteristics of war, while retaining adherence to enduring roles and responsibilities. Some of the technology and tactical structure exists within current Army stocks; it requires merely redistribution to improve efficacy. Other future recommendations require development within means that the Army possesses the capability to achieve in the short term. Importantly, the Army must approach this without bias

of existing structures, risk tolerance thresholds, or mindsets wedded to existing industrial warfare baselines. If the ARA can heed the ghosts of the past, it provides the platform for a dangerously potent cavalry. Australia must be at the forefront of technological and tactical adaptation. Achtung – Boxer!

ANNEX A – FIGURES AND MAPS

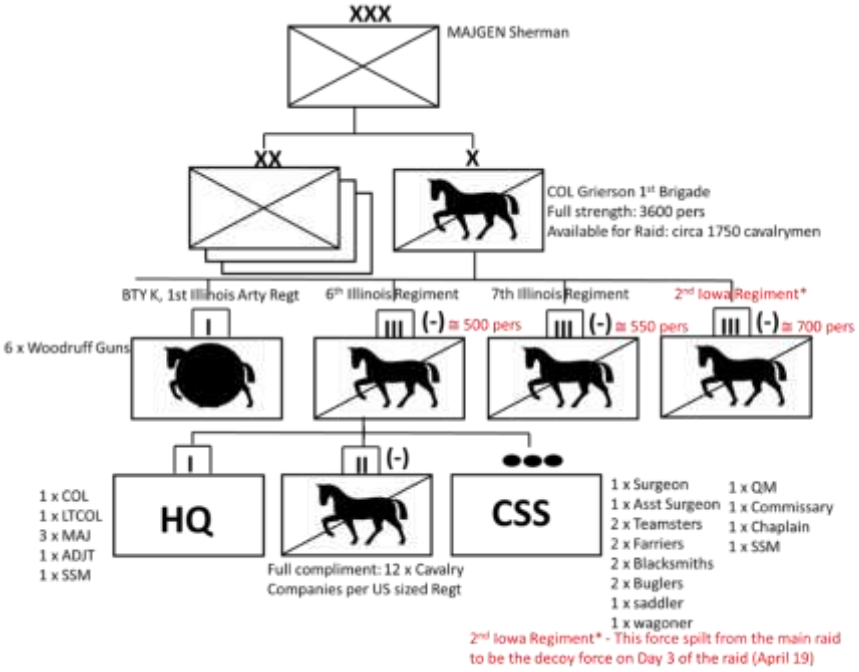


Figure 2: Grierson's Raid Order of Battle.

Map 1: Grierson and Grant's movements in the Vicksburg campaign.[162]

[162] Thomas' Legion, "High Resolution Map of Civil War Western Theater 1863, Battle of Vicksburg, and Union advance," *Thomas' Legion: The 69th North Carolina Regiment,* accessed January 20, 2020, http://www.thomaslegion.net/battleofvicksburg.html.

Map 2: Grierson's raid.[163]

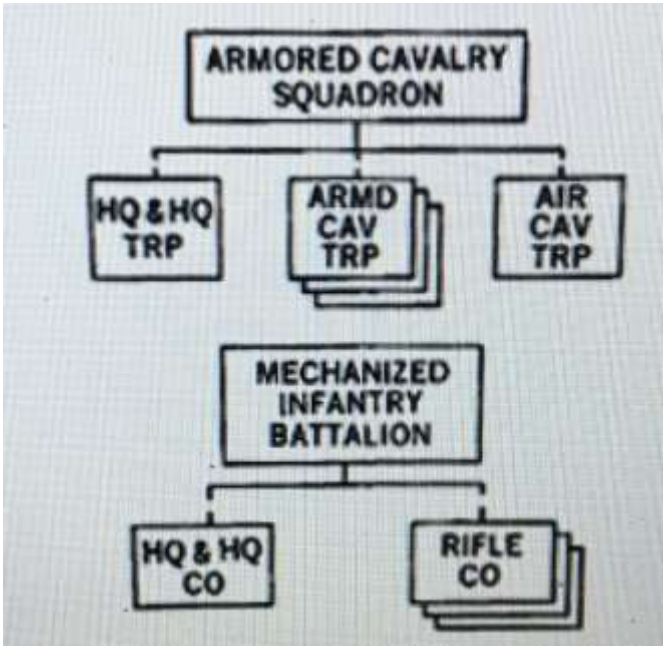
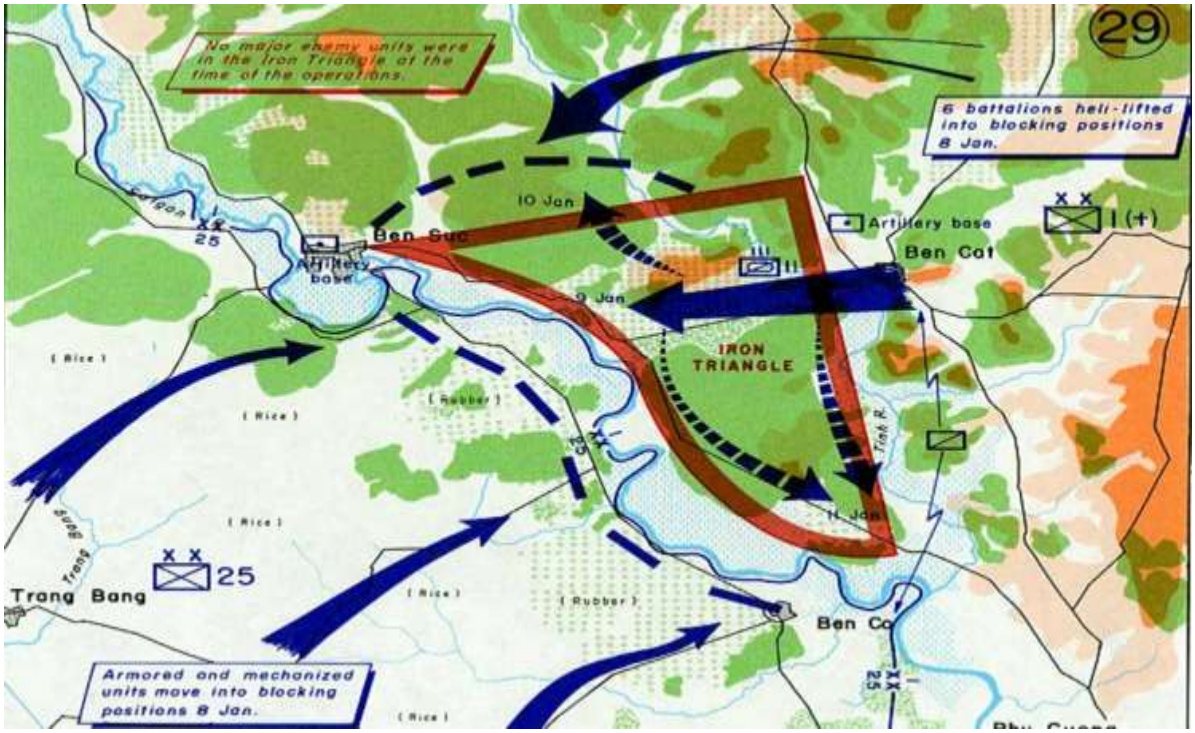


Figure 3: US Detached Cavalry Squadron, 1965.[164]

[163] David Cain, "Map of the Route of Grierson's Raid," in Tom Lalicki, *Grierson's Raid. A Daring Cavalry Strike Through The Heart Of The Confederacy* (New York: Farrar Strauss Giroux, 2004), 1.
[164] Cavalry personnel, like the infantry, deployed 'tunnel rats' to search underground. Donn A. Starry, *Mounted Combat in Vietnam*, (Washington DC: Department of the Army, 1989), Kindle Edition, Loc 651.



Map 3: Operation CEDAR FALLS.[165]

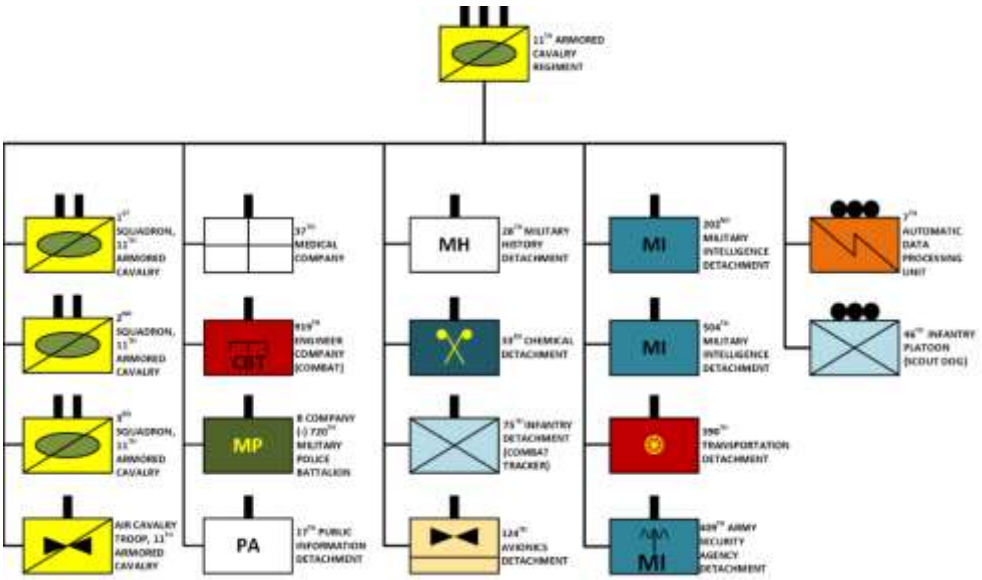


Figure 4: 11 ACR ORBAT, Vietnam.[166]

[165] Wikimedia Commons, Operation CEDAR FALLS, Wikipedia, accessed 22 Jan 2020, https://upload.wikimedia.org/wikipedia/commons/c/c0/Operation_Cedar_Falls_map.jpg.
[166] Wikimedia Commons, 11th Armoured Cavalry Regiment, Wikimedia, accessed 22 Jan 2020, https://upload.wikimedia.org/wikipedia/commons/9/9a/11th_ACR_Vietnam.png.

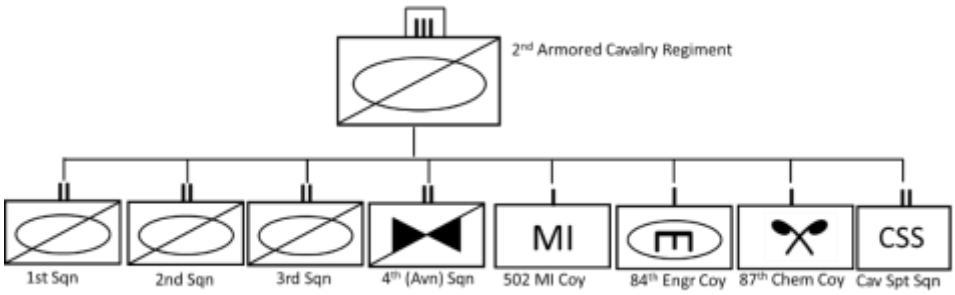


Figure 5: 2 ACR ORBAT, DESERT STORM.

Map 4: Operation DESERT STORM.[167]

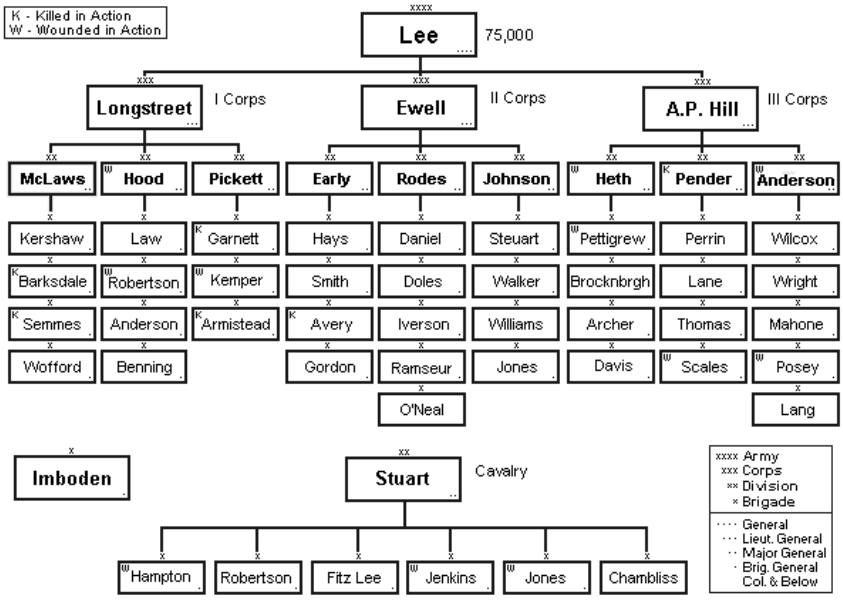
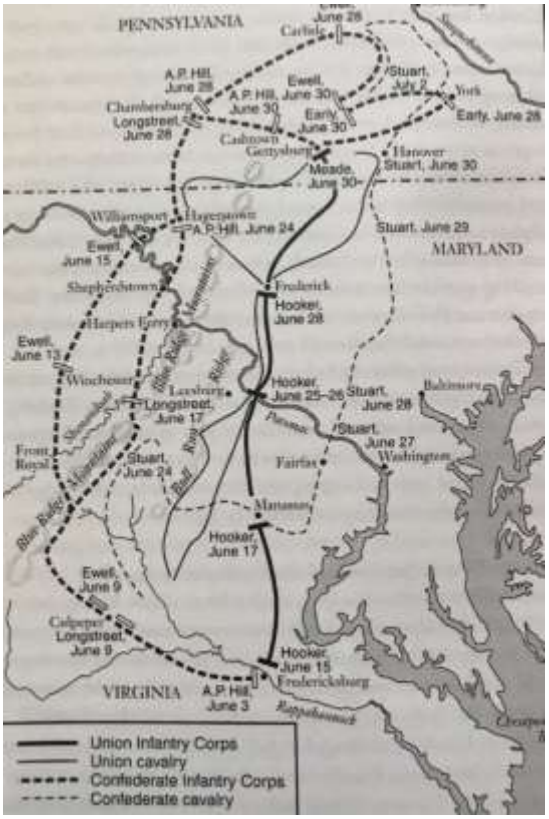


Figure 6: Gettysburg: The Order of Battle.[168]

[167] Tim Thompson, "Operation Desert Storm," *The U.S. Military and the Persian Gulf War*, (map), accessed February 01, 2020, http://www.tim-thompson.com/desert-storm.html.
[168] Padre Steve, "Gettysburg: The Order of Battle," *Padresteve.com*, accessed February 01, 2020, https://padresteve.com/2014/02/28/gettysburg-the-order-of-battle/.



Map 5: The Gettysburg Campaign.[169]

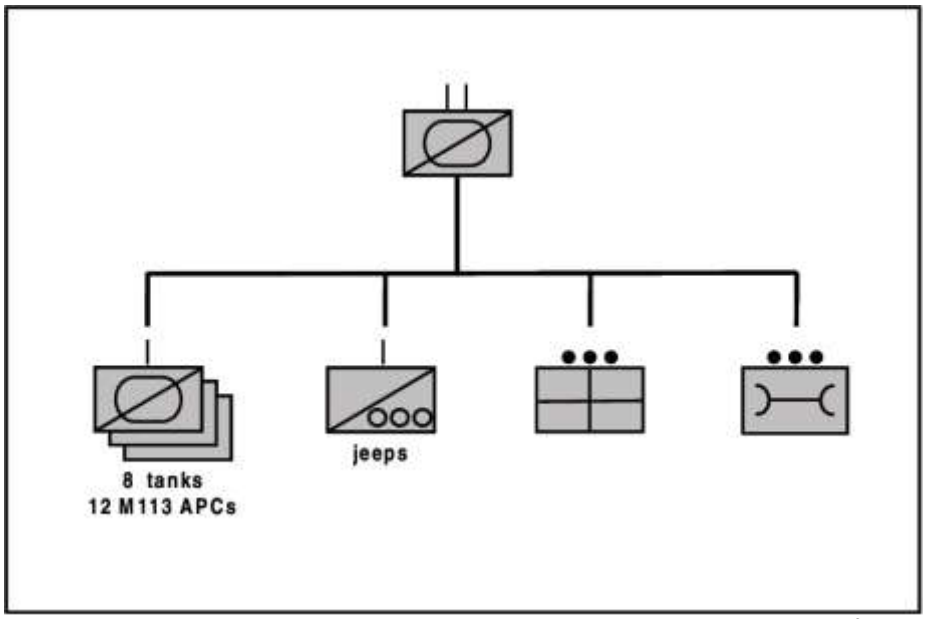
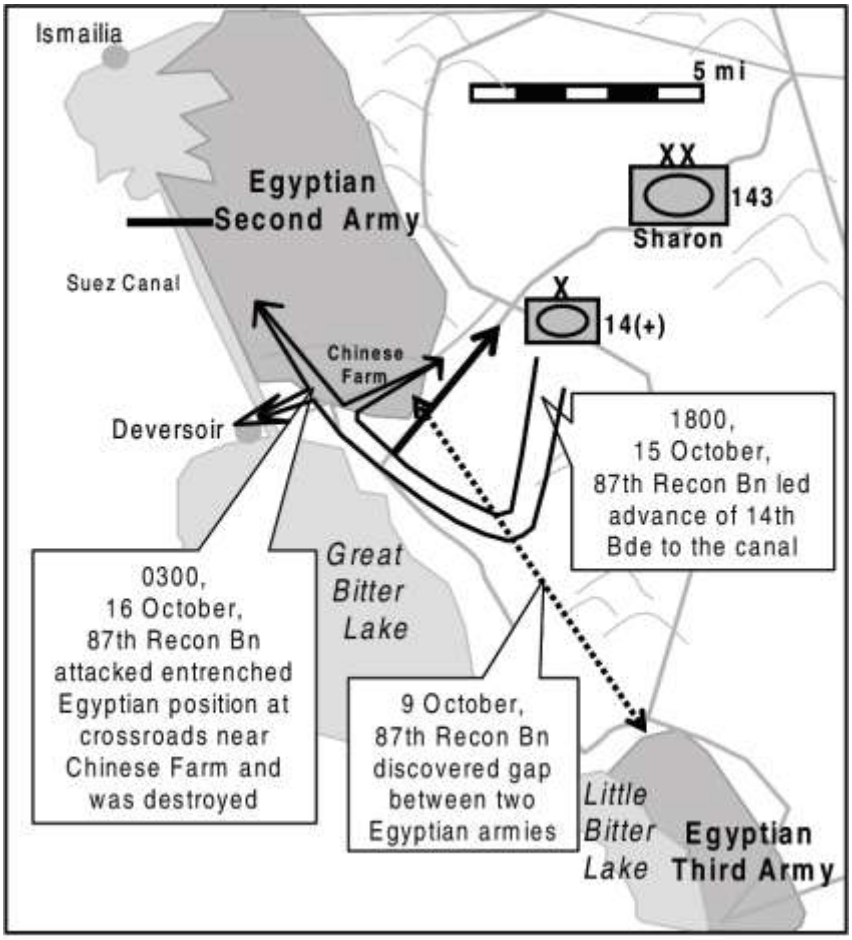


Figure 7: IDF Armored Reconnaissance Battalion, 1973.[170]

[169] Warren C Robinson, "The Gettysburg Campaign," in Warren C. Robinson, *Jeb Stuart and the Confederate Defeat at Gettysburg*, 18.
[170] John J. McGrath, *Scouts Out!*, 130.



Map 6: IDF 87th ARB in 1973 Yom Kippur War.[171]

[171] John J. McGrath, *Scouts Out!*, 131.

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