

Venturing into No-Man's-Land: V Corps' Success with Adaptation in the Meuse-Argonne

A Monograph

by

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14. ABSTRACT This paper addresses the organizational complexity V Corps experienced in the Meuse-Argonne in terms of doctrinal limitations, technological issues and training shortcomings. After a difficult start to the campaign, V Corps recognized that in-stride adaptation required an internal cultural shift that enabled leaders to balance integration of new technologies with changes in doctrinal employment. Through the lens of complexity leadership theory, this work charts the obstacles to adaptation as well as the social milieu that affected V Corps' actions and decisions. A key area of focus is on the early struggles of V Corps to link the corps level with the innovation at the divisional level. Over time, commander and staff interactions across echelons improved, leading to dynamic change during combat operations. The key findings are that leaders directly impact the culture necessary for adaptation, that the employment of new technology is better suited when leaders and staffs link new ideas to operations, and that doctrinal approaches are only one of many options for pursuing adaptive creativity. The analysis from this monograph can aid military planners as they strive to adapt in complex environments during combat operations.					
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Abstract

Venturing into No-Man's-Land: V Corps' Success with Adaptation in the Meuse-Argonne by MAJ John M. Nimmons, US Army, 55 pages.

Much of the historiography of WWI examines the technological aspects of change as singular actions that brought about success in the Meuse-Argonne. That is only part of the story as the situation in the Meuse-Argonne. The actions of V Corps demonstrate that the situation was much more complex due to doctrinal, technological, training and cultural challenges. Given the problems of doctrinal limitations, unsynchronized use of new technology, poorly trained divisions, and newly created corps headquarters, how did V Corps and its divisions adapt in-stride during large-scale combat operations in the Meuse-Argonne campaign? After a difficult start to the campaign, V Corps recognized that in-stride adaptation required an internal cultural shift that enabled leaders to balance integration of new technologies with deviations in doctrinal employment.

Through the lens of complexity leadership theory, this work charts the obstacles to adaption as well as the social and cultural impacts that affected V Corps' actions and decisions. A key area of focus is on the early struggles of V Corps to link the corps level with divisional innovation. Over time, commander and staff interactions across echelons improved, leading to dynamic change during combat operations. Through their efforts, they shifted V Corps' culture to one that embraced the change necessary for success in the Meuse-Argonne.

Despite the passing of 100 years, corps and division missions remain focused on shifting paradigms at the tactical and operational level of war to enable continuous positions of strategic advantage. As with the corps and divisions of 1918, today's organizations either succeed or fail to adapt based on their cultural responses to internal and external challenges. If systemic, the failure to adapt tactically and operationally can inhibit any strategic success. However, through successful adaptation, units can adjust in ways that continually support strategic objectives.

First, adaptation requires engaged leadership that understands how to mold and change organizational culture to capitalize on opportunities. Secondly, exploiting opportunities via technological advantages requires key personnel within the organization to link new capabilities at the entrepreneurial level with existing organizational structures and plans. Finally, balancing these opportunities with an awareness of doctrinal limitations can help leaders and staffs adjust their organizations to meet internal and external demands. As units seek to employ operational art to link tactics to strategic aims, these lessons provide valuable insight to issues that, despite a century of technological and organizational advancement, continue to challenge the force.

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This work is dedicated to the 14,246 Americans who gave their lives at the Meuse-Argonne from September 26 to November 11, 1918. In honor of the centennial of the battle, it is with great care and solemnness of heart that this work seeks to preserve their memory for future generations. I would like to thank Paul Jacobsmeyer for his inspiration to delve deeper into this subject. I am indebted to Dr. Peter Schifferle and Colonel Tod Strickland for their guidance and candor that helped guide the writing of this monograph. And last but not least, a special thank you to my wife, Shannon, for tolerating and supporting my obsession with art, history and writing.

Acronyms

AEF	American Expeditionary Force
FSR	Field Service Regulations
MG	Major General
WWI	World War I

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Introduction

Unwilling or unable to work outside of the existing paradigm, many senior American officers treated doctrine like dogma and failed to understand the true test of doctrine was the reality of battle and that doctrine had to be refined – even radically altered if necessary – to be useful.

—Mark Grotelueschen, *The AEF Way of War*



Figure 1. *Over the Top*. Originally drawn with charcoal in 1918, Jules Andre Smith captured the American experience in World War I as a commissioned artist for the War Department. Illustration from Jules A. Smith, *Over the Top*, Smithsonian Institute, 1918, accessed February 8, 2018, <https://airandspace.si.edu/multimedia-gallery/af26030-smith-wwi-art>.

With delicate, but deliberate strokes of his charcoal pencil, Jules Andre Smith drew a striking rendition of American troops in his drawing *Over the Top*. With deft simplicity, Smith used charcoal to display the multifaceted nature of combat in World War I by depicting a dirigible and a tank supporting infantry units as they navigate an unearthly landscape pocked with craters and trenches. Solemn in their task, the nameless figures quietly trudge towards impending doom. In

limited space, Smith adeptly captured the vastness of the battlefield while also seamlessly depicting an assault without end and the bleak mood that such an endeavor produces.

Scarred and deformed, the landscape, destroyed long ago by previous assaults and artillery bombardments, suffers the same destructive fate once more as both man and machine rumble forth. It is as if the desolate nature of the terrain echoes the emotions of men. In this despair, Smith chose to leave leaders ambiguously absent from any noticeable role. Gone from the picture are the heroic renditions of those who act as guiding beacons for their men. Instead, all are equally indistinguishable in the long march towards an uncertain fate. In doing so, Smith conveys a grave commentary on combat: that the repetitive action of unimaginative plans results in hopeless, arduous, and pointless tasks that ultimately erode combat power, degrade morale, and destroy unit effectiveness.

Like the nameless soldiers marching forth in *Over the Top*, the infantry regiments of the 79th Division struggled through unimaginative, repetitive actions as they fought to seize V Corps objectives during the first phase of the Meuse-Argonne from September 26 to October 4, 1918. Despite a severe lack of training or combat experience, they were to seize the objectives of Malancourt, Montfaucon, and Nantillois while also assisting the 37th Division in a turning movement to dislodge Germany infantry dug in around the woods of Montfaucon.¹ While leaders at all echelons conceptually understood the plans surrounding these objectives, they lacked the understanding of the complexity that would hinder their ability to maneuver their units under fire. This miscalculation would spell disaster for the regiments on the ground.

On September 26, 1918, after a three-hour artillery barrage where army and corps level artillery concentrated their fire at similar objectives just beyond the front, divisional artillery began

¹ American Battlefield Monuments Commission, *79th Division Summary of Operations in the World War* (Washington, DC: US Government Printing Office, 1944), 12. Epigraph quotation from Mark Grotelueschen, *The AEF Way of War: The American Army and Combat in World War I* (New York: Cambridge University Press, 2007), 352.

a rolling barrage at 0530 to support initial infantry advances of the 79th Division's 313th Infantry, 314th Infantry, and 315th Infantry Regiments, with the 316th Infantry Regiment in reserve. Once they began their assault, there was no synchronized artillery support beyond the initial bombardment. As a result, the 313th and 314th Infantry lacked artillery support at crucial moments to enable their maneuvers.²

Mired in fog, obstacles, and rugged terrain, the 313th and 314th Infantry slowly made their way towards Malancourt for four hours. Like the terrain depicted in *Over the Top*, combat for the past four years transformed the area into an unrecognizable wasteland. Lacking training and experience, the regiments of the 79th Division did not anticipate the difficulty and complexity of navigating and maneuvering units across this hellish landscape. The smoke from the initial rolling barrage, coupled with the morning fog, created confusion as the battalions of the 314th Infantry started their advance towards Malancourt. In the chaos, elements of the 315th Infantry lost contact with their unit, stumbling into the 314th area of operations. Like the indistinguishable soldiers from Smith's picture, units began to blend together as they unknowingly bypassed German machine gun positions.³

At around 0930, the fog lifted, and to the surprise of the Americans, German machine gun positions opened up on them from all sides. The withering fire abruptly halted the 314th Infantry Regiment's advance. Beset by enemy positions on all sides, no artillery fire came to their support, and the 79th Division decided to commit their reserve elements of the 316th Infantry to assist. The resulting combat action saw a complete breakdown of division control as elements of the 316th

² Monuments Commission, *79th Division Summary*, 12.

³ Ibid. Divisions relied heavily on intelligence and planning analysis from higher headquarters. As a result, their plans lacked the necessary synchronization needed to produce tangible effects on the ground. The failure of artillery to 'cut the wire' is such an example. This point is further reinforced by the fact that the 79th Division did not really account for terrain and weather and its effect on their operations as part of their plan. The end result was a plan that could not be properly executed because it lacked synchronization and control measures.

Infantry merged with the 313th to support the failing attack. Unit boundaries no longer existed, and the 79th Division lost command and control of its subordinate units.⁴

Images like Smith's *Over the Top* exemplify the brutal terrain that complicated the V Corps staff's ability to plan and control logistical support streaming to and from the front.⁵ With corps and divisional staffs overwhelmed, the 313th Infantry Regiment resumed the attack at 1400 without artillery support. Following the orders from V Corps and adhering to the infantry-centric doctrine of the day, the 79th Division ordered its infantry regiments forward. In essence, they doubled down on their belief that the infantry units could mass and overwhelm enemy positions without any increase in artillery or enabler support. As the battle unfolded, this logic would prove to be costly.⁶

Despite the confusion, disorder, and inadequate artillery support, division staffs within V Corps continued to advance due to a misguided belief in American doctrine that oversimplified the complexity of the battlefield they faced. In short, V Corps and its divisions failed to adapt to changing conditions in the early phases of the Meuse-Argonne, and it was this failure that led to profound organizational and tactical change before the final phase. The fundamental question, then, is given the problems of doctrinal limitations, unsynchronized use of new technology, poorly trained divisions, and newly created corps headquarters, how did V Corps and its divisions adapt in-stride during large-scale combat operations in the Meuse-Argonne campaign?

⁴ Monuments Commission, *79th Division Summary*, 14. Recognizing the need to conduct an operational pause, the 79th Division halted the advance to reorganize. During this pause, the division took time to reorganize its regiments, but did little in regard to change its original plan. Furthermore, they requested no support from V Corps. Conversely, V Corps could not support its subordinates during the battle. Having only formed as a staff a month prior, like its divisions, the chaotic nature of the battle overwhelmed the V Corps staff.

⁵ Don Branson, "A Critical Analysis of the Operation of the Fifth Corps in the First Phase of the Meuse-Argonne" (individual research paper, CGSC, 1933), 14. Interestingly, Captain Branson, an Infantry officer, did not graduate from CGSC, and reasons for his departure are unknown. He did receive credit for the courses he took, but was reassigned to Fort Crook, Nebraska in 1933.

⁶ Branson, "A Critical Analysis," 15.

Fortunately, the story of V Corps does not end like the bleak image depicted by Smith in *Over the Top* because V Corps recognized that in-stride adaptation required an internal cultural shift that enabled leaders to balance integration of new technologies with deviations in doctrinal employment. Specifically, before the third phase of the campaign, V Corps made significant changes to its planning methods, tactics, organizational structure and leadership personnel to address the reality of the emerging changes on the modern battlefield. Much of the historiography of WWI examines the technological aspects of change as singular actions that brought about success in the Meuse-Argonne. That is only part of the story. Instead, this campaign should be viewed from the understanding that the changing complexity of the modern battlefield of 1918 was more than just technological innovations. Holistically, it is essential to examine the social context of these units and their relationship to technological changes to better understand how organizations adapt to environmental stimuli.

In their article, “Complexity Leadership Theory: Shifting from Human Capital to Social Capital,” Michael Arena and Mary Uhl-Bien state that “innovation is as much a social phenomenon as it is a technological one.”⁷ Through this lens, the actions of V Corps in the Meuse-Argonne campaign provide historical relevance to Arena and Uhl-Bien’s ideas of complexity leadership theory and adaptive space.⁸ Initially, for V Corps, adaptive space acted as a metaphorical ‘no-man’s-land’ because many in the organization struggled to bridge the gap between operational processes at corps level and the divisional innovation. Over time, V Corps’ learned to embrace the

⁷ Michael Arena and Mary Uhl-Bien, “Complexity Leadership Theory: Shifting from Human Capital to Social Capital,” *People & Strategy* 39, no. 2 (Spring 2016): 23. Connections to ideas, technology and information are linked by brokers, or “individuals ... [who] ... act as connectors from one cluster to the next.

⁸ Arena and Uhl-Bien, “Complexity Leadership Theory,” 24. Arena and Uhl-Bien further state, “Adaptive space occurs in the interface between the operational and entrepreneurial system by embracing, rather than stifling, the dynamic tension between the two systems. It does this by enabling brokerage across clusters to spark emergence of novel ideas and then leveraging the natural benefits of cohesion that occurs ... to foster idea development and sharing.”

challenges inherent in this ‘no-man’s-land,’ resulting in a dramatic organizational change that brought about the necessary adaptation needed to succeed on the battlefield.

An examination of the first phase of the Meuse-Argonne campaign from September 26, 1918, through October 4, 1918 demonstrates how V Corps adapted. Analysis focuses on the key factors that led to V Corps planning errors by commanders and staffs during the first phase of the Meuse-Argonne. Specifically, an investigation of V Corp’s artillery employment techniques, infantry doctrine, and situational understanding of tempo and synchronization provides insight into their social dynamic that hindered initial change. Finally, analysis in the first chapter examines V Corps’ inability to balance doctrinal constructs with innovation and the corresponding impact on communicating a shared understanding at all echelons.

The second section examines the replacement divisions of V Corps during the second phase of the Meuse-Argonne from October 4, 1918, through November 1, 1918. This section analyzes commanders’ decisions through the lens of complexity leadership theory as learning and adjusting to nuanced shifts in warfare occurred. Secondly, an analysis of how each echelon evolved in its understanding of the battlefield provides insight into the social dynamic needed to stimulate innovation. Lastly, this section looks at key brokers and leaders responsible for making the necessary connections across the organization to institute critical adaptation.

The third section studies the final stage of the Meuse-Argonne from November 1-11, 1918. The analysis in this section examines the integral role leadership played in creating the adaptive space necessary for the integration technological innovation with organizational changes.⁹ Specifically, analysis focuses on how new leadership changes embraced tension and friction within the organization to adapt. It also highlights the important social dynamic of how staffs and

⁹ Arena and Uhl-Bien, “Complexity Leadership Theory,” 24. Adaptive space is an area that Arena and Uhl-Bien describe as “the interface between the operational and entrepreneurial system.” There is natural tension in this area and successful organizations use this space to embrace the tension rather than stifle it. In other words, there is tension between those who seek novel ideas and those who run the existing system. Bridging that gap enables an organization to become more adaptive.

commanders developed new ways to communicate shared understanding across echelons. By doing so, conclusions in this section link commander and staff interaction across echelons as an essential social dynamic necessary for adaptive change during combat operations.

The final section synthesizes the three phases of the Meuse-Argonne case study by providing conclusions and recommendations for today's Army. This section discusses the challenges and opportunities of new technology for today's staffs. The further analysis emphasizes the critical role that an individual's perception of doctrine plays their cognitive process to understand the operational environment and communicate plans. Finally, this section provides a reflective venue for readers to assess and apply tools helpful for the planning of military operations at the division and corps level.

Over the Top: Rushing to Failure in the First Phase of the Meuse-Argonne

The transportation of ammunition and supplies was rendered difficult over the water-soaked ground; the long cold nights were depressing to the troops, who were seldom dry and constantly under fire ... Life became a succession of dangers, discomforts, and hungers, with a continuous pressure being exerted on the individual to do more than he felt himself or his organization capable of accomplishing.

—George C. Marshall, *Memoirs of My Services in the World War, 1917-1918*

Despite the secrecy and extensive planning that consumed the newly developed headquarters before September 26, 1918, V Corps remained unprepared for the challenges that awaited them at the outset of the Meuse-Argonne campaign. With mostly untrained and inexperienced units, V Corps positioned the 79th Division on the right flank, the 37th Division in the center, the 91st Division on the left flank (Figure 2). Keeping its only combat-tested unit, the 32nd Division, in reserve, V Corps planned to attack aggressively towards the 117th German Reserve Division and the 1st and 2nd Foot Guard Regiments of the 1st Guard Division located along the

Voker Stellung.¹⁰ They expected the Germans would defend from trenches and that after an American assault penetrated the defensive line, a war of maneuver would ensue.

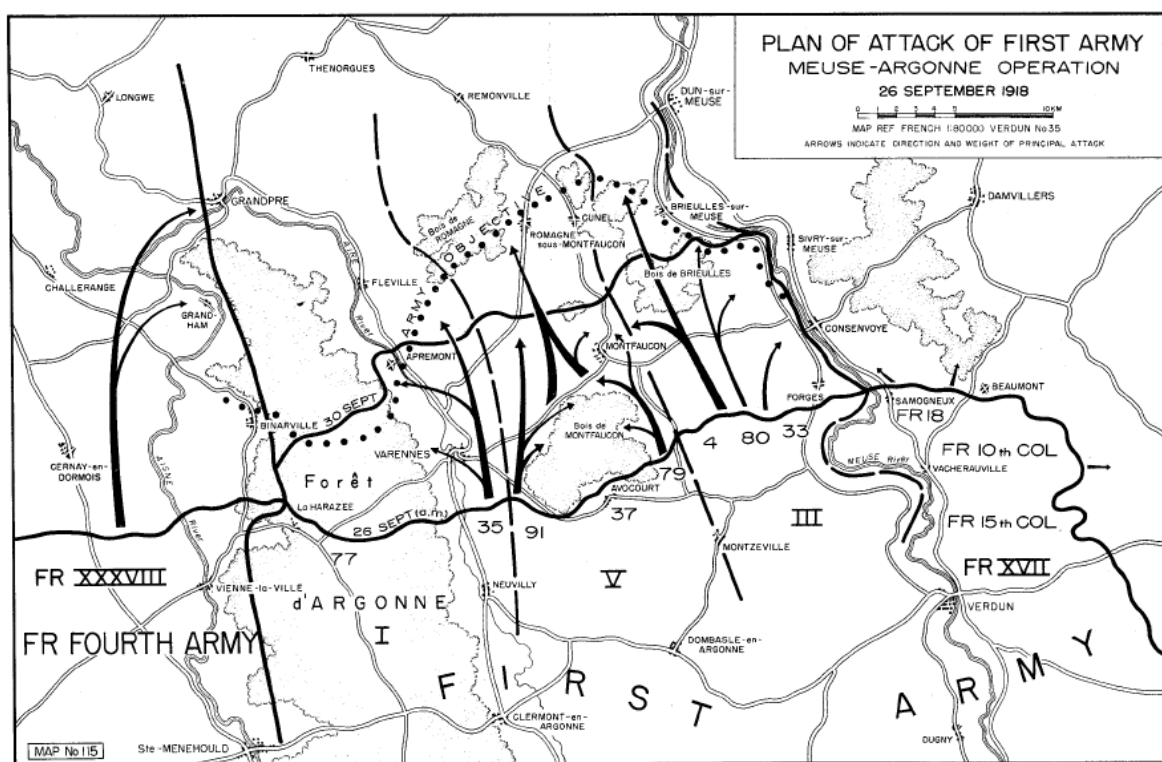


Figure 2. Map of V Corps, September 26, 1918. Center of Military History, *The United States Army in World War I*, vol. 9 (Washington, DC: US Government Printing Office, 1992), 128.

Inconsistencies regarding synchronization of artillery units to the V Corps maneuver plan hamstrung the overall progress, and over the next five days, the divisions of V Corps struggled to achieve the First Army mandated objective of Montfaucon. Failure to quickly accomplish these objectives cost V Corps time and resources as they struggled to move supplies and artillery pieces over rough terrain while maneuvering poorly trained formations. The compounding effect of unrecognized doctrinal limitations, misapplied artillery technology, and a rigid command structure

¹⁰ Don Branson, "A Critical Analysis," 6. V Corps' unrealistic expectations of their infantry divisions stemmed from an inability to anticipate the evolved complexity of the modern battlefield. Epigraph from George C. Marshall, *Memoirs of My Services in the World War, 1917-1918* (Boston: Houghton Mifflin Company, 1976), 175.

contributed to an ineffective organizational dynamic between V Corps and its divisions that stifled innovation and led to repeated failure.

Obstacles to Innovation: Doctrinal Dogma and Poor Training

To better understand V Corps' inability to adapt as a whole initially, it is important to discuss its divisions and the organizational relationships that developed at the start of the Meuse-Argonne. The experiences of the 91st Infantry Division, the 37th Infantry Division, and the 79th Infantry Division shed light on how V Corps misapplied divisional capability to what the reality of the fight demanded. For the 37th Infantry Division and 79th Infantry Division, the first phase of the Meuse-Argonne Offensive was a bloody struggle that significantly reduced their effectiveness within five days of fighting.¹¹ By the fifth day, the men of these divisions lived the reality depicted in Smith's *Over the Top*.

Despite initial gains by the 79th Division, 37th Division and 91st Division during the first three days of the first phase of the Meuse-Argonne, the cost to manpower was staggering.¹² In addition to navigating rough terrain, German tactics changed. German forces began to effectively concentrate artillery fire with enfilade machine-gun fire from strong points on advancing American units.¹³ The enemy situation differed from planned enemy reactions as Germans forces chose to defend from strong points instead of along trench lines. American commanders found themselves partially fighting trench warfare and partially fighting a war of maneuver. The doctrine of maneuver

¹¹ Samuel Harrison, "The Operations of the U.S. Fifth Corps in the First Phase of the Meuse-Argonne Offensive" (monograph, The Command and General Staff School, 1931), 10. Captain Samuel Harrison, an Infantry officer, wrote this research paper while a student at CGSC. He graduated in 1931.

¹² Harrison, "Operations of the U.S. Fifth Corps," 11-12. In his analysis of the battle, Harrison points out that divisions failed to account for the depth of German machine gun positions. When coupled with terrain and weather challenges, the results were catastrophic as divisional commanders defaulted to repeated frontal assaults without adequate support.

¹³ American Battlefield Monuments Commission, *91st Division Summary of Operations in the World War* (Washington, DC: US Government Printing Office, 1944), 18-19.

warfare was incompatible with the enemy situation, yet V Corps continued to issue orders based on the existing doctrine of the day.

In this light, the first obstacle to innovation and adaptation was the overreliance on existing doctrine by some division commanders and the V Corps staff. Even though the Army updated portions of the Field Service Regulations (FSR) of 1914, it still provided the doctrinal foundation for commanders and staffs concerning offensive and defensive concepts in World War I.¹⁴ Of these concepts, it is important to note that the FSR of 1914 mostly saw the infantry as the primary method for achieving mass against an enemy. Without stipulating the need to coordinate artillery with infantry maneuver, the FSR of 1914 focused more on flank attacks and envelopments by infantry divisions to enable a pursuit.¹⁵ In this context, it is possible to see why the 79th and 37th Infantry Divisions continued with repeated assaults around Montfaucon instead of waiting on artillery to reposition to provide much-needed support.¹⁶

The conflict between the doctrinal understanding of warfare and the reality of combat as it existed in 1918 highlights a key point of friction. During the brief training American divisions received before the Meuse-Argonne, British and French instructors at Langres, France emphasized the importance of additional artillery support for infantry assaults after initial bombardments.

¹⁴ Department of the Army, *Field Service Regulations, U.S. Army, 1914* (Washington, DC: Government Printing Office, 1914), 82-96. See also Michael Bonura, *Under the Shadow of Napoleon: French Influence on the American Way of Warfare from the War of 1812 to the Outbreak of WWII* (New York: New York University Press), 202-212, for more information on the evolution of US Army doctrine prior to and during WWI.

¹⁵ Department of the Army, *FSR 1914*, 85. The concept of mass was mostly thought of in terms of infantry formations concentrating their firepower in two defined areas: the frontal attack, to fix the enemy main body, and the flank attack or envelopment, where the decisive effort of the operation was to take place. It is important to note here that doctrine depicts frontal attacks as necessary to set conditions for a flanking movement or an envelopment, and it is here where it is possible to understand the mindset of commanders who continually accepted higher casualties during initial frontal assaults as these attacks were anticipated to shape a division flank attack. In their minds, the infantry remained the preeminent supplier of combat power, and as such, the infantry formation itself would shape the battlefield while loosely assisted by auxiliary support when needed.

¹⁶ Don Branson, "A Critical Analysis," 8.

However, General Pershing, who oversaw the American training curriculum, noted his displeasure with the school, and he dismissed these British and French artillery techniques because he felt they focused only on trench warfare. Instead, General Pershing reaffirmed his adamancy in existing American doctrine, stating, “It was my opinion that victory ... must be won by driving the enemy into the open and engaging him in a war of movement.”¹⁷

In this light, the second obstacle to adaption was leadership. General Pershing disagreed with the new French and British techniques of artillery support employment for offensive operations.¹⁸ He dismissed French and British methods and felt that American units under their instruction “would have been seriously handicapped” if they solely focused on trench warfare.¹⁹ While his desire to bring an American approach to ending trench warfare is understandable, discounting the French and British innovation with artillery hamstrung his corps and divisions when they entered combat because it created an organizational culture resistant to different ideas.

Another obstacle hindering V Corps was the lack of divisional training needed to understand the capabilities of formations and equipment. Three of the four divisions entering the first phase of the Meuse-Argonne not only lacked combat experience, but they also lacked sufficient training due to the timing of the operations. The 91st, 37th and 79th Divisions were newly formed, and their training mostly consisted of the limited, initial pre-deployment training aimed at integrating men drafted into selective service with Army life.²⁰ Without experience or extensive training, division commanders and staffs relied more on outdated doctrinal methods of warfare to see them through combat operations.

¹⁷ John Pershing, *My Experiences in the World War* (New York: F.A. Stokes, 1931), 152.

¹⁸ Ibid., 150-156. Pershing’s mentality set the tone for his command of First Army. In doing so, he may have limited the abilities of his commanders to creatively solve problems at the tactical level. Pershing would never come to this conclusion as his memoirs detail no shift in his mentality after the war.

¹⁹ Pershing, *My Experiences*, 152.

²⁰ American Battlefield Monuments Commission, *37th Division Summary of Operations in the World War* (Washington, DC: US Government Printing Office, 1944), 1.

Don Branson, a student at CGSC during the interwar period, states in his 1933 research paper that after the first two days of the Meuse-Argonne campaign, V Corps “believed that if three fresh divisions had been available,” they would have been able to achieve more past Montfaucon.²¹ His analysis demonstrates the fault in V Corps’ thinking because it indicates a desire to adhere to infantry-centric doctrinal ideas rather than give serious consideration to other possibilities. Committing more infantry without proper artillery support would have been a continuation of failed methods, resulting in needless loss of life. As it stood, V Corps did not recognize it was reaching a crisis point.

Silos of Thought: The Disconnect between Artillery and Infantry Tempo

In addition to doctrinal misconceptions of infantry employment, the inadequate use of artillery highlights another similar area that hindered innovation. The American paradigm of warfare in World War I still thought of individual branches (artillery, infantry, cavalry, etc.) in independent silos.²² This method of siloed thinking prevented V Corps and its divisions from adapting existing infantry-centric doctrine with the technological advancements and advantages artillery provided.

Siloed thinking resulted in plans that called for infantry maneuvers to penetrate 10-50 kilometers deep within enemy lines.²³ V Corps and divisional staffs accounted for the infantry ability to travel these distances but failed to anticipate the speed at which other enablers could move to support these assaults. Furthermore, before the initial attack, V Corps plans echoed the mentality

²¹ Branson, “A Critical Analysis,” 16. The significant losses of the 37th and 79th Divisions during the early part of the campaign demonstrate this propensity towards an adherence to infantry-centric doctrine as inexperienced units attacked well-defended positions without artillery support.

²² Thomas Khun, *The Structure of Scientific Revolutions* (Chicago: The University of Chicago Press, 1962), 69. See also Arena and Uhl-Bien, “Complexity Leadership Theory,” 23. In hierarchical organizations, silos create obstacles to interconnectivity and limit innovation.

²³ J. W. Vilner, “History of the Fifth American Army Corps,” in *Narrative of the 5th Corps from November 1st 1918* (Browns Summit, NC: Etherington Conservation Services, 2007), 2-5.

of their higher headquarters when their orders “called for the infantry to continue [their] initial attack all the way to the distant objectives,” exceeding the initial plans for artillery support and sustainment.²⁴ While justified in their desire to seek an attack that penetrated prepared German defenses, V Corps’ siloed thinking inhibited them from accurately considering a holistic view of their organizational limitations. This organizational rigidity resulted in orders that directed subordinates to seize unsupportable objectives.²⁵

While innovation in artillery technology certainly provided many new advantages on the battlefield, its limitations still centered around its mobility.²⁶ Further compounding artillery mobility was the ravaged terrain that made simple foot navigation difficult. Without realizing this limitation, the disconnected nature of artillery and infantry created corps and divisional planning gaps. Specifically, the 37th and 79th Division’s decision to continue the initial assault without artillery support after the second day of the Meuse-Argonne Campaign indicates that leaders at all echelons relied primarily on their understanding of doctrine, rather than analyzing the complexity of the compounding problem of enemy, terrain, and organizational limitations.²⁷

In a pattern often repeated throughout the initial phase of the Meuse-Argonne, V Corps did not synchronize artillery support after the initial, rolling bombardments. Further complicating the matter was the lack of a sufficient plan at the corps or division level to move the guns up quickly as

²⁴ Mark Grotelueschen, *Doctrine Under Trial: American Artillery Employment in World War I* (Westport, CT: Greenwood Press, 2001), 115-116.

²⁵ Paul Strong and Sanders Marble, *Artillery in the Great War* (Barnsley, South Yorkshire: Pen and Sword Books, Ltd., 2011), 194-195.

²⁶ *Ibid.*, 194.

²⁷ Monuments Commission, *37th Division Summary*, 14. See also Monuments Commission, *79th Division Summary*, 15-20. The experiences of these two divisions differed slightly, but both share a constant similarity with their ambivalence to artillery preparation. If artillery preparation did occur, it did not last longer than thirty minutes. Further compounding this issue was the fact that artillery was never concentrated on specific objectives, thus allowing the Germans the ability to reposition forces and provide counterbattery fires once the Americans began their infantry assaults.

the infantry advanced.²⁸ In short, V Corps struggled to assess the tempo of its operations effectively.²⁹ The destructive nature of the initial bombardments contributed to this problem as they destroyed the necessary road infrastructure beyond captured objectives needed to transport the large artillery pieces as well as the horse-drawn artillery.

V Corps continued to struggle with tempo as its logistics plan for both infantry and artillery did not account for passable routes across no-man's-land. Compounding this problem was the increased flow of supply convoys and casualty trains back towards the headquarters at Avocourt. The congestion became so bad during the first day that "staff officers on duty at [V] Corps Headquarters [were used] to keep traffic moving."³⁰ Thus, siloed thinking hindered V Corps from accurately assessing its capabilities as an organization. The result was a failure to resource artillery for the 79th Division on the second day of the Meuse-Argonne, leaving the inexperienced infantry to continue to assault without waiting for the artillery to reposition.³¹

With only three viable routes through the 38-kilometer area in no-man's-land, pre-war maps became useless as these roads no longer existed. The planning factors based on these maps were quickly discounted the moment a deluge of casualties streamed to the rear. To make matters worse, the heavy rain right after the start of the campaign all but rendered crossing that vital area

²⁸ Harrison, "Operations of the U.S. Fifth Corps," 6.

²⁹ Department of the Army, Army Doctrinal Reference Publication (ADRP) 3-0: *Operations* (Washington, DC: Government Printing Office, 2016), 2-7. Tempo is defined as "the relative speed and rhythm of military operations over time with respect to the enemy.

³⁰ Branson, "Critical Analysis," 14. See also, Willian Haan, Tactical Note No. 7, 32nd Division Headquarters to the 63rd and 64th Infantry Brigades, September 24, 1918. In this note, MG Haan reissues Pershing's "Combat Instructions for Troops of First Army. In this document, Pershing warns his subordinates to "make every arrangement beforehand to prevent the movement to the rear of the wounded and prisoners from jamming up the roads or trails to be used by artillery, ammunition and supply vehicles." Pershing's original note, dated August 29, 1918 – and well before the start of the Meuse-Argonne – clearly indicates that leadership thought of the problem of congested roads prior to the offensive. As Clausewitz states, war on paper is easier than the reality of war, and while subordinate commanders and staffs understood Pershing's idea, planning and executing it was much harder when put to the test.

³¹ Branson, "Critical Analysis," 9.

with artillery, supply wagons and trucks all but impossible.³² The compounding result increased the risk for the infantry divisions as they outpaced their artillery support.³³ Without synchronization, artillery could not move closer to the front to support the infantry, and logistical support could not be timed to alleviate congestion along critical routes.

It is in these details that analysis of V Corps shows the difficulty with which it takes to synchronize all assets with a maneuver plan properly. Commanders and staffs quickly became overwhelmed with the complexity of the situation. Their simple, infantry-centric plans did not contain the necessary details that accounted for large numbers of casualties, shipment of supplies, and transportation of artillery assets needed to sustain multiple infantry assaults against an adapting enemy.

Most importantly, the compounding effect of poorly applied doctrine, narrow thinking, and misallocation of technology hindered V Corps from adapting in-stride during combat operations. Lacking a holistic organizational view, V Corps created a one-dimensional maneuver plan and missed vital opportunities to maintain tempo throughout the first phase of the Meuse-Argonne. After five days of fighting, this one-dimensional plan resulted in 3,423 casualties for the 79th Division, 3,460 casualties for the 37th Division and 3,135 casualties for the 91st Division, all but rendering V Corps combat ineffective.³⁴

³² George C. Marshall, *Memoirs of My Services in the World War, 1917-1918* (Boston: Houghton Mifflin Company, 1976), 160-164.

³³ Ibid., 163. General Marshall does not acknowledge in his memoirs that V Corps and First Army erred in their planning. In fact, he describes the adverse impact of weather and terrain on equipment and men as “merely ... something which must be overcome ... and [we] had no thought that we had tied ourselves up.” But as the AEF came to realize in the later phases of the Meuse-Argonne, weather and terrain needed consideration before employing aviation and artillery, not to mention supplies and logistical support.

³⁴ Branson, “A Critical Analysis,” 15.

Analysis: Obstacles to Adaptation

The challenge posed by the formidable adaption of the Germans notwithstanding, V Corps faced incredible internal obstacles to innovation within their organization. In regards to obstacles, Arena and Uhl-Bien describe two systems within organizations: the entrepreneurial and operational system. The entrepreneurial system seeks creativity and novel ideas while the operational system desires efficiency and order, creating a naturally occurring tension. Leaders who attempt to prevent this tension can sometimes cause the organization to fail to adapt. Instead, Arena and Uhl-Bien argue that organizations should allow this tension to occur to connect the two systems within an area called the adaptive space.³⁵ For the first phase of the Meuse-Argonne, leaders and staffs within V Corps primarily relied on the operational system for planning and their social culture minimized the potential of the entrepreneurial system by reducing the tension between the two systems, negating any possible connection in the adaptive space.

One of the reasons that V Corps' organizational culture relied solely on the operational system is that their leaders and staffs lacked the experience to understand the paradigm they faced. Rushed divisional training at Langres and a desire to quickly launch the Meuse-Argonne offensive hindered V Corps' ability to develop the necessary relationships between echelons. Arena and Uhl-Bien note that brokers are important to the success of an organization to link the entrepreneurial and operational systems. As a new headquarters with roughly only a month working together prior to the offensive, V Corps struggled to understand itself operationally, let alone allow for lower echelons to grow in an entrepreneurial spirit. In essence, there were no brokers to bridge any new novel idea to the operational system in V Corps because the efforts of standing up a new unit before a major combat operation limited the scope of how leaders and staffs understood their organizations (Figure 3).

³⁵ Arena and Uhl-Bien, "Complex Leadership Theory," 24.

As V Corps struggled to understand itself, many within the organization defaulted to an overreliance on doctrine. Unfortunately, the doctrine they relied upon was built around an old paradigm of warfare in which infantry divisions were the primary fighting force. While infantry remained vital to the success of the mission, V Corps and its divisions misunderstood that changes in technology required a shift in thought and doctrine on operational tempo. This misunderstanding of tempo led to poorly coordinated and under-resourced attacks at various times throughout the first phase of the Meuse-Argonne campaign. Without brokers to bridge any possible changes at divisional levels to V Corps situational understanding, innovation languished, and V Corps repeatedly issued orders for additional costly attacks.

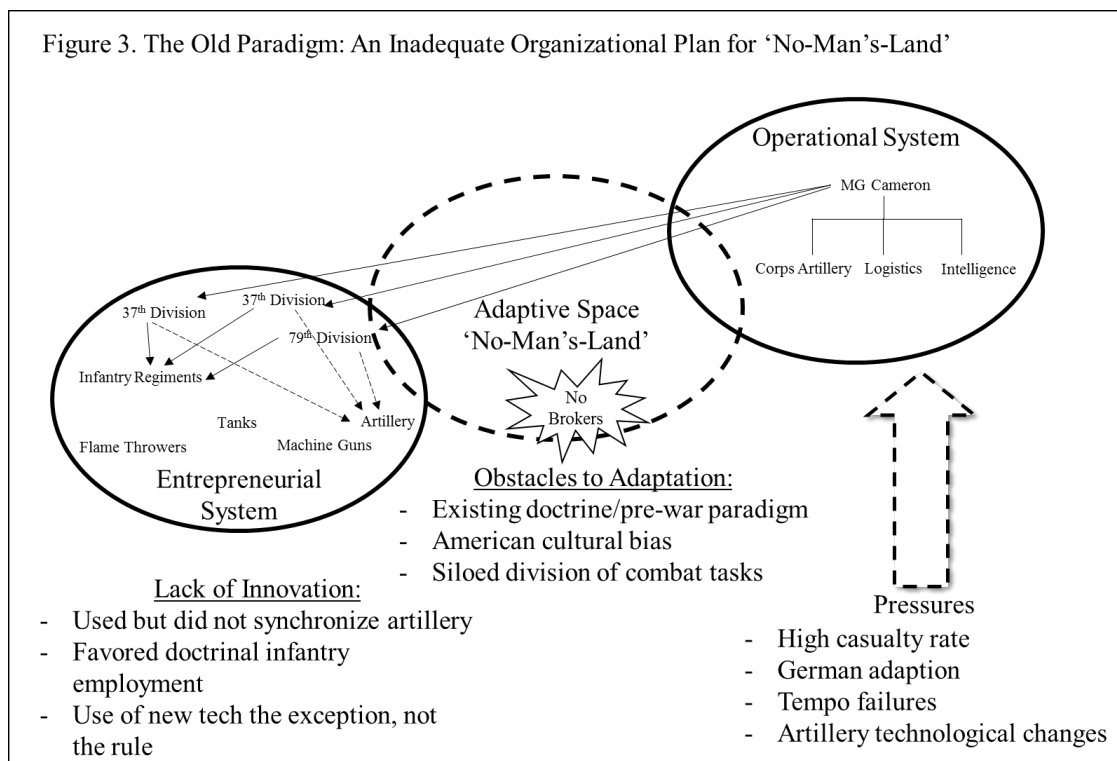


Figure 3. The Old Paradigm: An Inadequate Organizational Plan for 'No-Man's-Land.' Created by author, adapted from Michael J. Arena and Mary Uhl-Bien, "Complexity Leadership Theory: Shifting from Human Capital to Social Capital," *People & Strategy* 39, no. 2 (Spring 2016): 24.

Finally, another reason for V Corps' organizational dysfunction was an American cultural bias by many leaders throughout First Army. General Pershing's desire to keep the 'spirit of the bayonet' alive hindered any entrepreneurial thought within the corps and divisions of his command.

This limitation is evident in his attitude towards the training the British and French provided at Langres. While a competent and aggressive leader, General Pershing's frame of reference stemmed from a different paradigm of warfare where maneuver warfare, or open warfare as he called it, was possible.³⁶ Without an emphasis on the Allied instruction at Langres, General Pershing created a culture where leaders and staffs under his command prioritized American doctrine rather than new ideas. Lacking the experience to challenge this cultural bias, units went into combat culturally disposed to ignoring the adaptive space needed for innovation.

As the first phase of the Meuse-Argonne concluded, intense internal and external pressure began to mount on V Corps. Doctrine no longer matched the reality on the ground and all three of the initial assault divisions culminated before reaching their final objectives.³⁷ For change to occur, V Corps needed to address significant internal issues before it could effectively respond to its operational environment. To avoid more bleak instances like Smith's *Over the Top*, how V Corps decided to deal with this pressure and friction would determine their ability to adapt in-stride during combat operations.³⁸

Crossing No-Man's-Land: V Corps' Linkage of Innovation to Operations

[Learning to learn is] a never-ending process of learning, unlearning, and relearning, both within and beyond conventional frameworks.

—Jamshid Gharajedaghi, *Systems Thinking: Managing Chaos and Complexity*

³⁶ Grotelueschen, *Doctrine Under Trial*, 14-17.

³⁷ Marshall, *Memoirs*, 167.

³⁸ Carl von Clausewitz, *On War*, trans. and eds. Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1984), 119. In Chapter 7, Book I of *On War*, Clausewitz says of friction, "Everything in war is very simple, but the simplest thing is difficult ... The military machine ... is basically very simple and therefore seems easy to manage. But we should bear in mind that none of its components is of one piece: each part is composed of individuals, every one of whom retains his potential of friction." Thus, as V Corps and its divisional commanders came to realize, the simplest of tasks required great many individual actions. Ultimately, it would take more synchronization and coordination between echelons to alleviate the friction of battle.

By the fifth day of the Meuse-Argonne campaign, V Corps was in a crisis as their first divisions failed to achieve success quickly. German forces adapted their tactics, and in doing so, the defense of strategic strongpoints became more important than trench lines. Internally, V Corps remained unable to innovate. Rather than examining new ways to solve the problem, V Corps continued to follow the existing infantry-centric doctrine by replacing the ineffectual 37th, 79th and 91st Divisions with the 32nd and 3rd Divisions.³⁹ After a three-day operational pause, by October 4, 1918, V Corps was still in no position to seize the First Army mandated objectives initially anticipated for capture on September 27, 1918.

As they reassessed the enemy situation, V Corps staff headquarters expected the Germans to defend their positions along the Kriemhilde Stellung vigorously.⁴⁰ To penetrate this defensive belt, V Corps directed that its divisions seize the objectives of Romagne-sous-Montfaucon and the surrounding heights of Bois de Cunel east of Romagne-sous-Montfaucon (Figure 4).⁴¹ While the objectives assigned to the divisions were more feasible regarding distance they were expected to cover, V Corps repeated past mistakes as the Corps artillery plan did not include supporting fires past the initial bombardment.⁴²

Despite some early failures, as the second phase progressed, some divisions began to avoid costly frontal assaults by utilizing artillery for suppression as they maneuvered to envelop German strong point positions.⁴³ The success of these divisions depended on their ability to adapt

³⁹ Center of Military History, *American Armies and Battlefields in Europe* (Washington, DC: US Government Printing Office, 1992), 177. Epigraph from Jamshid Gharajedaghi, *Systems Thinking: Managing Chaos and Complexity* (Burlington, MA: Elsevier, Inc., 2011), 227.

⁴⁰ CMH, *American Armies*, 177-179.

⁴¹ American Battlefield Monuments Commission, *3rd Division Summary of Operations in the World War* (Washington, DC: US Government Printing Office, 1944), 61.

⁴² Monuments Commission, *3rd Division*, 61. V Corps artillery plans remained unsynchronized with divisional artillery for the initial part of the second phase.

⁴³ Paul Jacobsmeyer. "On the Edge of a Breakthrough: Semi-Open Warfare in the American Expeditionary Force -- the Experience of the 32nd Division (Michigan-Wisconsin National Guard)" (paper presented to the Society for Military History 75th Annual Meeting and Conference, 2008), 18.

technology and doctrine to address the new paradigm of combat. Evidence suggests that these new divisions began to act as V Corps' entrepreneurial system as they explored different and creative ways to employ and synchronize artillery with infantry assaults.

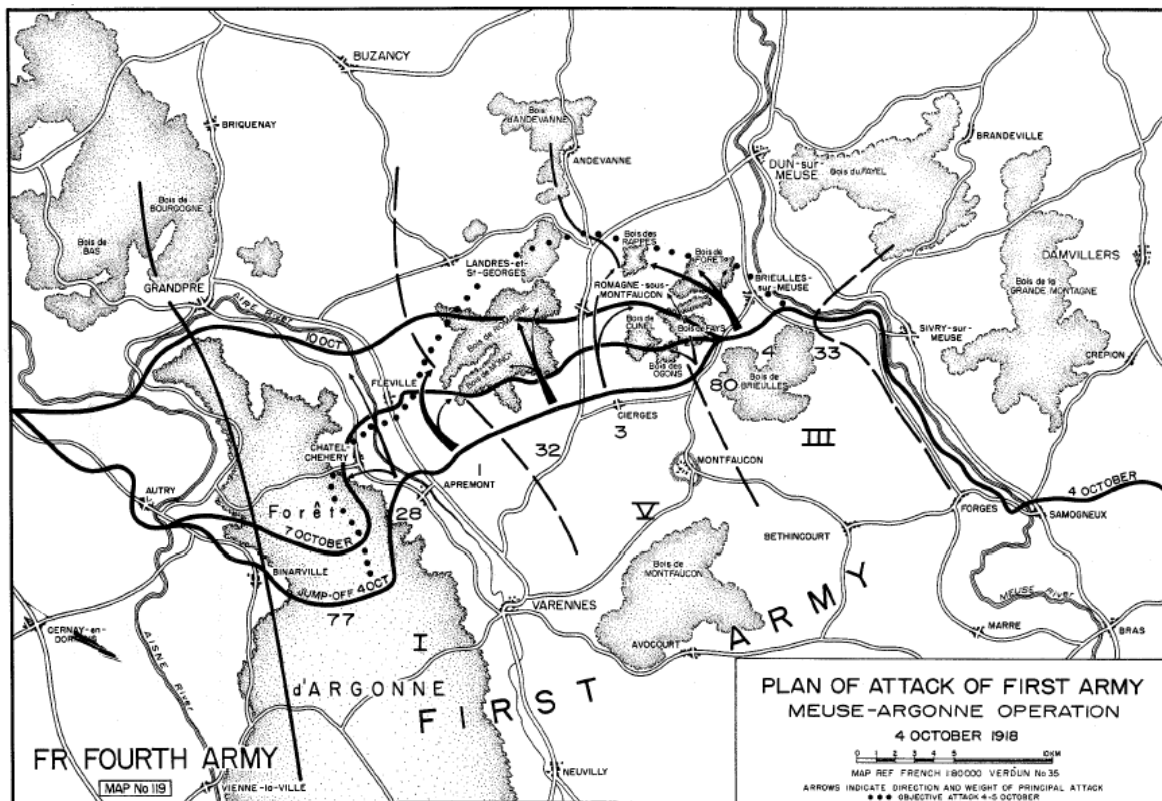


Figure 4. Map of V Corps on October 4, 1918. Center of Military History, *The United States Army in World War I*, vol. 9 (Washington, DC: US Government Printing Office, 1992), 211.

The challenge for V Corps centered around incorporating these successful changes at the divisional level as a synchronized effort across the corps. Regarding adapting while conducting combat operations, the key to coordinating the 32nd and 3rd Divisions innovations with artillery integration centered around commanders and staffs who could link the entrepreneurial efforts of their divisions to the operational system of V Corps.⁴⁴ Despite initial setbacks, V Corps created an opportunity for the right brokers to explore adaptive space as the second phase of the Meuse-Argonne closed.

⁴⁴ Unit History, *History of the Third Division United States Army in the World War* (Andernach-on-the-Rhine, 1919), 20-21.

The 32nd Division as an Entrepreneurial System

The second phase of the Meuse-Argonne is not only distinguished from the first phase by date, but also by changes within divisions as they began to act as V Corps' entrepreneurial system. Specifically, innovation within both the 3rd Divisions and the 32nd Division began to manifest itself through the different ways their infantry brigades employed artillery. The process involved significant trial and error, and throughout the second phase, divisions saw mixed results. These combined results provided the initial gains with which V Corps gained momentum for success.⁴⁵

After relieving the 91st Division, the 32nd Division began the second phase on October 4th with an assault on Gesnes, which lay to the northeast of Cierges. Through the use of reconnaissance patrols, the 32nd Division differed from its predecessors regarding understanding the battlefield. Based on the intelligence collection from their brigades, they determined that the Germans used the lull in the American three-day operational pause "to get better organized for defense. The [32nd Division] patrols found the enemy too strongly disposed to be ousted by infantry action alone, and so artillery support was secured and the line promptly advanced."⁴⁶ Namely, 32nd Division's 64th Brigade utilized divisional artillery to not only destroy obstacles for an infantry advance but also to concentrate it at a specific point to suppress and neutralize German machine gun positions. As a result, the 64th Brigade successfully captured Gesnes.

Despite the success of these efforts, the lack of counterbattery fire hindered any further advance for the 32nd Division as a whole. As this fight occurred, V Corps received the 1st Division and immediately assigned them to the left flank of the 32nd Division.⁴⁷ The success of the 64th

⁴⁵ Arena and Uhl-Bien, "Complexity Leadership Theory," 26. Arena and Uhl-Bien describe momentum as a necessary element that encourages the "entrepreneurial system [to] take action." This is done through their description of Adaptive Principles: "start small, find a friend, follow energy, set boundaries, embrace conflict, and create network closure." See the Analysis portion of this section for more detail in how V Corps utilized these principles to gain momentum.

⁴⁶ Wisconsin War History Commission, *The 32nd Division in the World War, 1917-1919* (Madison, WI: Joint War History Commissions of Michigan and Wisconsin, 1920), 98.

⁴⁷ *Ibid.*, 100.

Brigade at Gesnes increased the complexity of the situation as the 32nd tried to balance liaison with a new adjacent unit while also consolidating their gains around Gesnes. Complicating this process was effective German artillery and machine gun positions near the Bois de la Morine, which lay between the 32nd and 1st Divisions. To exploit success, the 32nd Division, despite the complexity they faced, decided to continue with an attack on the Bois de la Morine the later that day.

Unfortunately, the 32nd Division rushed its plan to attack, and it failed to follow the formula that allowed for success at Gesnes. They “issued no formal field order, but indorsed copies of the corps order to its brigades.”⁴⁸ With no artillery support or clear understanding of German positions, the 64th Brigade launched a disastrous assault. After failing to take the Bois de la Morine, the 64th Brigade withdrew, and the 32nd Division began to plan another attack. Learning from their mistake, they began to plan for better coordination and concertation of artillery before the next infantry assault.⁴⁹

Rather than repeat their first costly mistake at the Bois de la Morine, the commander of the 32nd Division, MG William Haan, directed that coordination for artillery support focus on a clear understanding of German positions. The plan devised during the night of October 4th was one that brought every division asset to bear on the Bois de la Morine in a synchronized manner. In conjunction with massed artillery for suppression and neutralization of German positions, the 32nd Division utilized “gas and flame troops and tanks” by cross-attaching them to infantry units of the 64th Brigade.⁵⁰ In doing so, MG Haan and his staff deviated from existing doctrine, and their

⁴⁸ American Battlefield Monuments Commission, *32nd Division Summary of Operations in the World War* (Washington, DC: US Government Printing Office, 1944), 38-41. In essence, the 32nd Division did little to synchronize divisional and V Corps artillery assets with the infantry assault of the 64th Brigade, mostly because they did not conduct a detailed reconnaissance of the German machine gun positions around the Bois de la Morine.

⁴⁹ Wisconsin War History, *The 32nd Division*, 100.

⁵⁰ *Ibid.*

innovative solution overwhelmed the Germans within the Bois de la Morine as they solved the crucial problem of tempo that plagued the previous divisions of V Corps.

From the Bois de la Morine to the Kriemhilde Stellung, the 32nd Division continued to apply innovative successes learned as they deviated from doctrine with their artillery synchronization. Meanwhile, their higher headquarters, V Corps, remained largely ineffectual in supporting its divisions. V Corps had no real plan, other than to direct that its divisions penetrate the Kriemhilde Stellung. The critical aspect of broker linkage from corps to division still did not occur, leading the divisions under V Corps to fight in small, independent actions rather than a synchronized corps attack.⁵¹

Given V Corps organizational dysfunction, the 32nd Division continued with its successful changes. Again, looking outside of doctrine, MG Haan sought to use concentrated artillery for suppression to enable infantry to envelop German positions at Romagne. Considerable planning and reconnaissance occurred before the main attack on October 9th. Rather than repeat the changes that gave them success at Gesnes and Bois de la Morine, MG Haan and his staff demonstrated further innovation as they experimented with even more creative ways to attack the Germans.⁵²

MG Haan wanted to avoid frontal assaults in the main defensive belt around Romagne. The plan was to use artillery to suppress German forces while the 32nd Division's 126th Infantry penetrated the defense south of Romagne. Again, cross-attached tanks and infantry, in coordination with artillery, broke through the German lines, and the rest of the 32nd Division's infantry brigades poured through the penetration point. As the fight progressed, the Germans realized they were outflanked and began taking up positions along the surrounding hills. In spite of this, the 32nd Division continued to employ their new, innovative tactics. From October 10-11th, the fighting

⁵¹ Charles P. Summerall, *The Way of Duty, Honor, Country: The Memoir of General Charles Pelot Summerall* (Lexington, KY: University Press of Kentucky, 2010), 141-142. Constant boundary shifts and the incorporation of the 42nd Division into the fight complicated V Corps' situational understanding.

⁵² Wisconsin War History, *The 32nd Division*, 102.

remained difficult, but the changes in tactics allowed the 32nd Division to locally capitalize on opportunities that forced the Germans to reposition forces in desperation continually.⁵³

On October 13th, V Corps began to change their approach to planning and synchronization of corps attacks. Specifically, extensive coordination occurred between V Corps and the 32nd to devise a plan for suppressing defenses on La Cote Dame Marie and the other hills surrounding Romagne. During this time, Major General Summerall replaced Major General Cameron as the V Corps commander, and with this change came changes to how V Corps planned.⁵⁴ MG Summerall immediately ordered his staff to synchronize V Corps artillery with divisional artillery to support combined arms assaults on Hill 258 and other hills that flanked La Cote Dame Mair. The result was a complete penetration of the Kriemhilde Stellung, with the 32nd Division enveloping Romagne, forcing the German forces to withdraw under pressure.

The 3rd Division as an Entrepreneurial System

Simultaneously, while 32nd Division learned by trial and error, the 3rd Division mirrored their learning process. Despite starting the second phase of the Meuse-Argonne with a rolling barrage for their initial attack, 3rd Division launched their assault brigade, the 5th Infantry Brigade, without any significant artillery preparation. The lack of artillery coordination allowed the Germans to defend machine gun positions while also massing their artillery and aviation assets against elements of the 5th Brigade. Instead of continuing the attack, the commander of the 5th Brigade halted his formation and sent a request to the 3rd Division Headquarters for concentrated artillery fire on the machine gun positions located to the south of the woods near Hill 250.⁵⁵ Instead of

⁵³ Wisconsin War History, *The 32nd Division*, 102-105.

⁵⁴ Summerall, *Duty, Honor, Country*, 142-148. This synchronized cooperation between corps and division is a drastic deviation from previous V Corps planning efforts and can be attributed to Major General George Cameron's ouster as V Corps Commander. Replacing him was Major General Charles Summerall who previously commanded the 1st Division. MG Summerall's perspective as a division commander in the Meuse-Argonne enabled him approach planning with his staff differently than his predecessor.

⁵⁵ Unit History, *History of the Third Division*, 16.

following the doctrine of the day, this commander sought to mass artillery on an objective before committing his infantry. The 5th Brigade commander's actions in this instance proved successful as the concentrated artillery fire suppressed and dislodged the Germans.

Despite this success, the commanders of the 3rd Division did not incorporate 5th Brigade's methods on the following day. The 3rd Division commander, General Buck, met with his regimental commanders that night to formulate a plan for the next day. Surprisingly, they all agreed to assault their objectives without any artillery concentration. Primed by their existing doctrine, the plan only focused on coordination between infantry units and began to unravel as the stiff German resistance broke down unit cohesion.⁵⁶ After the attack failed, brigades in 3rd Division started to explore methods, like 5th Brigade's example, in a trial and error process.

The innovation at the brigade level helped the 3rd Division to put the right pieces in place. In another assault in Woods 250, the 4th Infantry Brigade took a tactical pause, consolidated personnel and requested a fifteen-minute artillery barrage on the German machine gun positions in Woods 250. This purpose of this barrage was to suppress enemy positions to allow the 4th Brigade to advance. The effect of this decision allowed the 3rd Division to begin to gain ground and preserve precious combat power.⁵⁷

Over the next four days, the 3rd Infantry Division utilized reconnaissance from aviation and infantry brigades to develop the situation. Once they identified enemy strongpoints, they massed their efforts against those points. Their actions demonstrate a dramatic shift from the overreliance

⁵⁶ Unit History, *History of the Third Division*, 18. The woods near Hill 250 still contained large elements of German units, and the assault on the second day saw limited success.

⁵⁷ Unit History, *History of the Third Division*, 18. The success at Woods 250 seems to be the spark that energized staff planning away from existing doctrine, and official divisional account describes the efforts of the 7th Infantry's Intelligence Officer providing vital information of German strongpoints in the area. His efforts, coupled with better use of aviation reconnaissance, provided the division with vital information that they used to concentrate their artillery against to support their infantry. As the 3rd Division came to realize, the minimization of planning gaps required bottom-up refinement of objectives before conducting infantry assaults. The concentrated and synchronized efforts from all enabling assets could set the conditions by reducing the enemy's ability to do the same.

on corps assets to one where corps assets were only requested when the division simply had no more resources to offer its brigades. This process became the standard operating procedure, and the 3rd Division's systematic clearance of objectives with synchronized and concentrated firepower supporting well-timed infantry assaults ultimately drove the Germans back.⁵⁸

With the arrival of MG Summerall as the V Corps commander, the 3rd Division, like the 32nd Division, collected, analyzed and coordinated reconnaissance and intelligence before operations to identify specific strong points. These points became artillery targets for neutralization before infantry assaults. Only after artillery massed at these points were rolling barrages used to support infantry operations further.⁵⁹ Ultimately, their willingness to change their methodology blended French and British artillery doctrine with General Pershing's concept of open warfare.⁶⁰ With the innovative pieces in place, it was up to the brokers of V Corps to link these changes to its operational system.

Analysis: Linking Doctrinal Deviation to the Operational System

In his review of the 32nd Division, Paul Jacobsmeyer asserted that during this period, MG William Haan communicated a desire to plan combat operations outside of existing doctrinal approaches to his staff.⁶¹ Haan's challenge to his staff enabled them to understand the operational environment better. As a result, the 32nd Division began to focus reconnaissance and intelligence efforts that drove staff planning to better-coordinated artillery bombardments with infantry attacks. To complement these efforts, 3rd Division, under the command of MG Buck, also came to similar

⁵⁸ Unit History, *History of the Third Division*, 19-21.

⁵⁹ Monuments Commission, *32nd Division Summary*, 38, 46-54.

⁶⁰ Jacobsmeyer, "Edge of a Breakthrough," 27-29.

⁶¹ *Ibid.*, 19-22. Two striking developments occurred at this time. First, divisions began to function as the entrepreneurial system of V Corps. External pressures at the divisional level forced the 32nd and 3rd Divisions to explore creative solutions to a very complex problem. The second development is the change in V Corps leadership. General Summerall's changes to the command of V Corps brought brokers that connected the entrepreneurial system to the operational system. Now effective change could occur across V Corps.

conclusions and began to change tactics, employing concentrated and synchronized artillery to support infantry assaults.⁶²

Capitalizing on the innovations of 32nd Division and 3rd Division, MG Summerall recognized that the divisions of V Corps needed support from their higher command to implement changes. While the previous leadership of V Corps mistakenly focused primarily on infantry, MG Summerall decided to concentrate more on artillery employment and its synchronization across V Corps.⁶³ His changes within V Corps had the backing of the new First Army commander, LTG Liggett.

Like MG Summerall, General Liggett's primary goal after taking command was synchronizing planning between echelons. These changes required time, and despite pressure to continue the offensive, General Liggett exercised tactical patience to ensure his staff and subordinate echelons better synchronized their efforts.⁶⁴ During General Liggett's retraining phase, MG Summerall began to incorporate a counterbattery system at lower levels. Instead of corps, divisions would mass their artillery at more localized objectives, providing faster and more concentrated effects to the infantry. Summerall ensured V Corps artillery supplemented these effects when requested. Corps counterbattery freed up divisional artillery to better support maneuvering infantry. While the plans to move guns quickly into support positions were not

⁶² Unit History, *History of the Third Division*, 21-27.

⁶³ Summerall, *Duty, Honor, Country*, 150-151.

⁶⁴ Michael Bigelow, "Lt. General Hunter Liggett: Command in the AEF," *The Story of the American Expeditionary Forces*, accessed November 2, 2017, <http://www.worldwar1.com/dbc/hunterliggett.htm>. "... Liggett retooled and remodeled First Army. Starting within his headquarters, he strengthened his staff with officers such as Colonel George C. Marshall, his G3, and then met with his staff daily. To prepare First Army for the impending attack against German defenses, Liggett retrained his infantry and artillery. Some infantry received special training in techniques for attacking strongpoints, while the rest were trained to bypass these defenses. Artillery batteries laid out supporting plans to use interdicting fires to isolate infantry objectives and to conduct counterbattery fires against German artillery. Perhaps the key factor was that commanders were indoctrinated in maximizing supporting fires and using gas to suppress enemy defenses."

perfect, better planning between echelons made it possible to sustain success in the later part of the Meuse-Argonne.⁶⁵

These changes provide clear evidence that critical persons in V Corps linked innovation within the entrepreneurial system to changes in the operational system. These key brokers include MG Summerall and his use of existing personal relationships to influence those on V Corps staff to change. MG Haan and MG Buck also acted as brokers as they communicated creative innovations with artillery to V Corps staff and MG Summerall. Last but not least, MG Summerall was not afraid to fire ineffectual leaders or staff officers.⁶⁶ In their place, he promoted others who he knew could act as key brokers to communicate essential ideas.⁶⁷ This top-down change linked bottom-up refinement and as a result, V Corps began to adapt (Figure 5).

It was through innovative commanders like MG Buck and MG Haan who adapted doctrine by tailoring their forces and assets to achieve success on the battlefield. In truth, their examples blended both Pershing's and Allied artillery concepts into a hybrid concept that Paul Jacobsmeyer aptly called "semi-open" warfare.⁶⁸ This blending of US and Allied ideas on warfare did not precisely fulfill General Pershing's wish of open warfare, but in the end, V Corps began to adapt in a unique way that captured the American offensive spirit.

In this spirit, the social culture of V Corps changed into a dynamic dialogue between MG Summerall and his division commanders. By doing so, V Corps adapted as their culture shifted

⁶⁵ J.B.A. Bailey, *Field Artillery and Firepower* (Annapolis, MD: Naval Institute Press, 2004), 265-270. Colonel Lanza's counterbattery methods were well known to MG Summerall and their collaboration and experience together provided the necessary expertise to drive change. The combined result of synchronized corps and divisional artillery produced dramatic neutralizing effects on enemy forces.

⁶⁶ Summerall, *Duty, Honor, Country*, 144-145.

⁶⁷ *Ibid.*, 145.

⁶⁸ Jacobsmeyer. "Edge of a Breakthrough," 16.

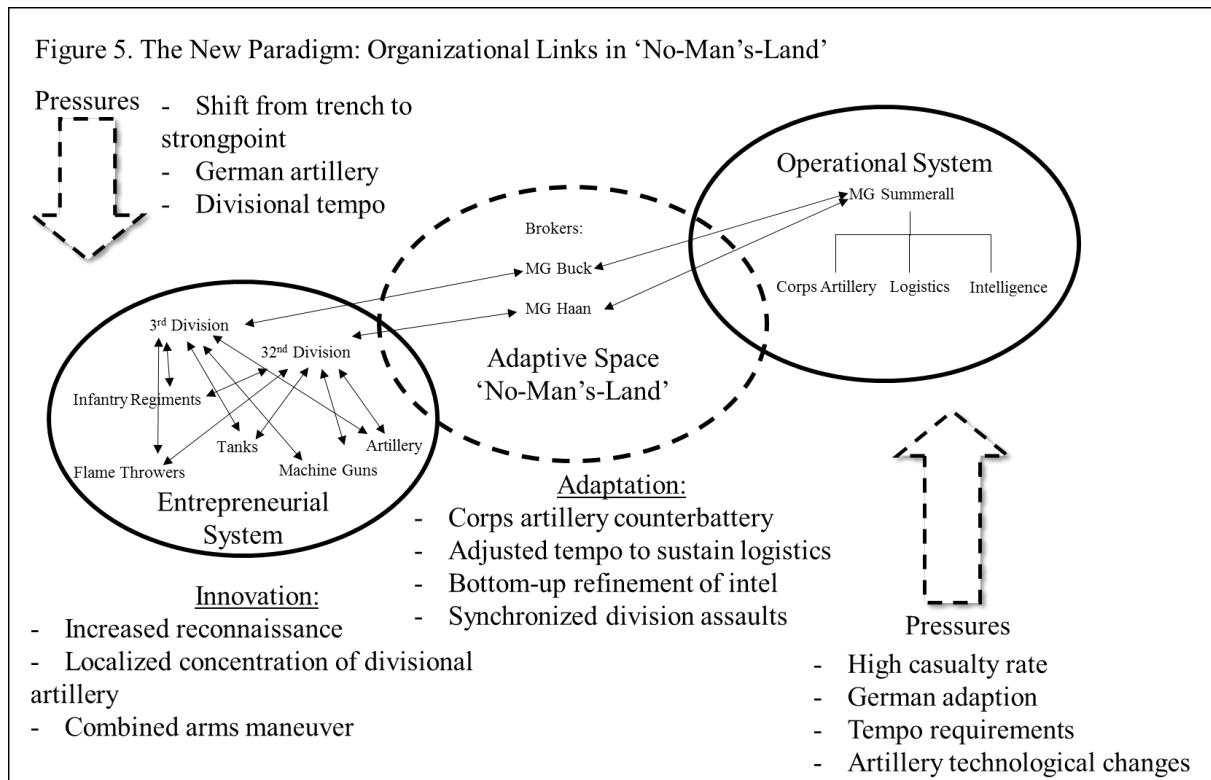


Figure 5. The New Paradigm: Organizational Links in 'No-Man's-Land.' Created by author, adapted from Michael J. Arena and Mary Uhl-Bien, "Complexity Leadership Theory: Shifting from Human Capital to Social Capital," *People & Strategy* 39, no. 2 (Spring 2016): 24.

from a rigid structure based on a narrow view of doctrine to one that linked and synchronized innovation at lower levels. This transition to a different cultural state exemplifies the definition of adaption by Arena and Uhl-Bien.⁶⁹ It also demonstrates Khun's definition of a paradigm shift in *The Structure of Scientific Revolutions* where anomalies become accepted, ultimately changing normal science.⁷⁰ V Corps cultural shift from an old paradigm to a new one demonstrates that organizational adaptation needs the right leadership to link entrepreneurial success with changes to the operational system.

⁶⁹ Arena and Uhl-Bien, "Complexity Leadership Theory," 25.

⁷⁰ Khun, *The Structure of Scientific Revolutions*, 5-7. Khun defines a paradigm shift as a series of anomalies that "subvert the existing tradition" of normal science. This process leads the "profession to a new set of commitments," thus creating a revolution in thought and the acceptance of a new paradigm.

Seizing the Objective: Adaptation in the Third Phase of the Meuse-Argonne

But...trials are not randomly related to one another; reflection on each trial and its results sets the stage for the next trial. Such pattern of inquiry is better described as a sequence of “moments” in a process of reflection in action.

—Donald Schön, *Educating the Reflective Practitioner*

The remarkable changes made in V Corps before the final phase of the Meuse-Argonne demonstrated the willingness of leadership to shift the cultural paradigm within V Corps. Even though V Corps replaced the 3rd and 32nd Division with the 2nd and 89th Divisions for the last major offensive, the adaptations made during the second phase were not lost with the addition of these new units.⁷¹ By operationalizing the new paradigm, V Corps’ culture now allowed for changes in the entrepreneurial system to influence responses to the operational environment.

While retraining and organizational restructure occurred, lower echelons at the regiment and brigade level actively maintained contact with German forces through multiple patrols. These proactive measures allowed units within the new divisions of V Corps to build a common operating picture across echelons.⁷² The official account of V Corps cites the actions of the 89th Division on October 21st as vital to the planning of the final phase because their efforts captured a German map that “point[ed] out the main topographical features upon which the [German] defense of the line was based.”⁷³ Planning efforts began shifting from top-down objectives to a mix of focused bottom-up intelligence collected by divisions with Corps reconnaissance (Figure 6).

⁷¹ Summerall, *Duty, Honor, Country*, 150-154. In an effort to utilize their innovative methods, the 3rd and the 32nd Divisions were reassigned to III Corps to bolster and improve their organization. See also, Wisconsin War History, *The 32nd Division*, 118-124. Epigraph from Donald Schön, *Educating the Reflective Practitioner* (San Francisco: Jossey-Bass, 1987), 27.

⁷² Bigelow, “Command in the AEF,” accessed November 2, 2017, <http://www.worldwar1.com/dbc/hunterliggett.htm>.

⁷³ Vilner, “History of the Fifth American Army Corps,” 7.

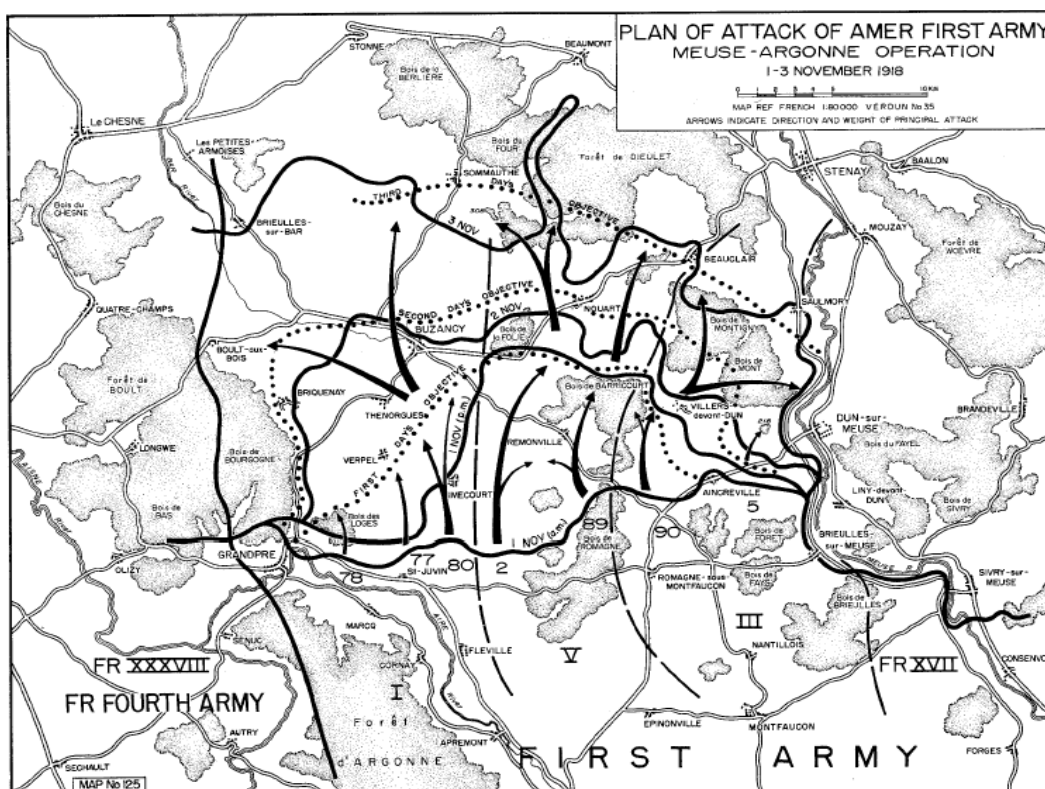


Figure 6. Map of V Corps, November 1-3, 1918. Center of Military History, *The United States Army in World War I*, vol. 9 (Washington, DC: US Government Printing Office, 1992), 373.

While bottom-up intelligence became integral to division and corps planning, it still had its limits. In order to confirm reports as well as fill in remaining gaps, V Corp further adapted its intelligence collection by effectively employ innovations within their Corps Air Service.⁷⁴ The result was an invaluable treasure-trove of information where future planning efforts could concentrate. The official V Corps history accounts for continued adaption, stating that the aerial reconnaissance provided “much valuable information was derived as to...which enemy occupied his sector and ... his routes of circulation. From them ... the Artillery Information Service

⁷⁴ Vilner, “History of the Fifth American Army Corps,” 7. The coordination and employment of aircraft enabled V Corps to gain valuable information on enemy positions in-depth to support ground assaults and counterbattery targets. This focus indicates that the V Corps’ culture continued to adapt to the capabilities of its formations.

discovered many [enemy] battery positions.”⁷⁵ V Corps now leveraged new technology correctly to aid in focused planning efforts that aided their maneuver divisions.

The other remarkable outcome of this innovative process was the development of the combined Infantry Assault and Artillery Objective Map.⁷⁶ This document, made possible by broker linkages between divisions and V Corps artillery, demonstrates how adaptation became part of the operational system. The decentralized information gathering efforts at lower levels helped higher echelons identify gaps in plans, ultimately helping them focusing their planning efforts as they sought to reduce unknowns.

Through the Objective Map, V Corps finally addressed the tempo problem that plagued them from the beginning. Whereas the original objectives during the first two phases did not acknowledge a realistic understanding of tempo, the objectives during the final phase were realistic, thoroughly researched, and properly planned. The most important part of this collaborative planning was that it allowed for synchronization through a shared common operating picture. The overall success of V Corps highlights the effects of this synchronization during the final phase of the Meuse-Argonne. The planning was so effective that the coordinated effort of artillery and infantry isolated German artillery units, preventing them from leaving their shelters to conduct counterbattery operations in support of their infantry in the defense.⁷⁷

Unlike in the first two phases of the Meuse-Argonne, V Corps and divisional planning did not stop synchronization and artillery coordination with their artillery after the first planned assault.⁷⁸ V Corps, with the help of its divisions, built artillery displacement tables for all artillery

⁷⁵ Vilner, “History of the Fifth American Army Corps,” 8.

⁷⁶ Ibid. The active reconnaissance patrols of divisions, coupled with changes in air corps utilization gave V Corps a rough estimate of enemy positions and strength from which they could tailor the use of their assets to confirm or deny information gaps.

⁷⁷ Vilner, “History of the Fifth American Army Corps,” 8.

⁷⁸ Bailey, *Field Artillery*, 265-270.

while also accounting for the necessary sustainment requirements to ensure that artillery was continuously within the range of advanced infantry objectives. This planning table also incorporated the capabilities of new technology, like the ranges of tanks, aircraft and machine guns. Doing so combined every asset that V Corps could bring to bear in a synchronized manner.⁷⁹

This planning effort resulted in a combined arms effort across V Corps that isolated both German infantry and artillery positions, ultimately overwhelming them and forcing them to withdraw from their positions along the Barricourt Crest. With an accurate common operating picture and shared understanding of equipment capability across the formation, V Corps and her subordinate echelons created flexible plans that allowed them to continue concentrated attacks against the retreating Germans.

The sustained success after November 1, 1918 is a true testament to the dramatic shift in intelligence collection and processing, as well as synergizing corps and divisional efforts at the operational and tactical level. As a result, V Corps adapted as an organization by moving past the issues that plagued them previously. Leadership support from higher echelons extended down to lower echelons and it created the necessary cooperation between commands that enabled the development of an accurate common operating picture.⁸⁰

In this case, less was more in that V Corps could concentrate operational resources to fill in gaps that tactical levels could not. This allocation of resources was made possible by commanders and staffs who acted as brokers, linking what they saw to a flexible response from V Corps. It also

⁷⁹ Vilner, "History of the Fifth American Army Corps," 8. The official history references these documents frequently. The consistent mention of these planning tables, coupled with more thorough accounts of orders, field actions and records demonstrate better unity of effort from staffs across echelons in First Army. Not only was their record-keeping improving, but their willingness to write out more detailed orders demonstrates that staffs fully accepted the shift in paradigm, abandoned their previous haphazard planning efforts, and began to embody the changes that Liggett implemented.

⁸⁰ Bailey, *Field Artillery*, 268. See also Grotelueschen, *Doctrine Under Trial*, 116-121. Lieutenant General Hunter Liggett demonstrated a willingness to change the nature of First Army. With the addition of like-minded individuals, like General Summerall, Liggett and his new team fostered an environment conducive to learning and experimentation. In doing so, their actions created an organization that strengthened inter-echelon relationships and systems, thereby improving overall unity of effort.

removed the unnecessary burden from the corps staff in planning every detail in a vacuum. This system remained amenable to input from lower echelons, and doing so allowed V Corps to leverage assets towards remaining gaps. At the same time, staff officers worked diligently to produce documents that were simple, effective and could be used by multiple echelons to coordinate efforts. Doing so finally combined the capabilities of new technologies with the American offensive spirit in a lethal manner that turned the tide of the Meuse-Argonne and gave the Allies the breakthrough they needed.

Conclusions and Recommendations

For—at the summit—command consists of management as well as leadership, and although the hierarchy of rank may make it seem otherwise, it is very much a collaborative activity.

—Eliot Cohen and John Gooch in *Military Misfortunes: The Anatomy of Failure in War*



Figure 7. *Soldier and Companions Advancing Through Barbed Wire*. Wladyslaw Benda, a Polish-American artist, captures the confidence and determination of American troops. Illustration obtained from the Library of Congress files of Wladyslaw Benda, *Soldier and Companions Advancing Through Barbed Wire*, Library of Congress, accessed February 8, 2018, <https://www.loc.gov/exhibits/american-artists-view-the-great-war/online-exhibition.html>.

Contrasting Smith's *Over the Top* with Benda's *Soldiers and Companions Advancing Through Barbed Wire* demonstrates the fundamental shift in the thought of V Corps by the end of the Meuse-Argonne. Whereas Smith's characters looked tired and weary, Benda's characters lean forward with faces resolved to overcome the impending challenge. The unity of Benda's figures illustrates cohesion and singularity of purpose. The unmistakable sense of pride embodied by Benda's soldiers leaves the viewer with a sense of confidence and assurance that success is imminent. Unlike Smith's *Over the Top*, Benda conveys to the viewer that the assault will soon end at the hands of confident, determined American soldiers.

Like Benda's depiction, *Soldiers and Companions Advancing Through Barbed Wire*, V Corps' confidence as an organization grew as it developed a willingness to adapt. Despite early obstacles, V Corps not only thought critically about the operational environment but also about how its processes interacted with and in that environment. With the right leaders, V Corps demonstrated a willingness to deviate from doctrine and implement new technology in innovative ways. This cultural shift changed the paradigm for the German forces. In doing so, V Corps confidently exploited its success by helping higher echelons achieve the strategic aim of forcing the German government to surrender.

Despite the passing of 100 years, corps and division missions remain focused on shifting paradigms at the tactical and operational level of war to enable continuous positions of strategic advantage.⁸¹ As with the corps and divisions of 1918, today's organizations either succeed or fail to adapt based on their cultural responses to internal and external challenges. If systemic, the failure to adapt tactically and operationally can inhibit the ability to succeed strategically. However, through successful adaptation, units can adjust in ways that continually support strategic objectives.

⁸¹ Everett Carl Dolman, *Pure Strategy: Power and Principle in the Space and Information Age* (New York: Taylor and Francis Group, 2005), 126-132. Dolman defines strategy as the pursuit of continuous positions of advantage. While tactically and operationally focused, corps and divisions act as the connective tissue that links strategy to tactics. This vital connection enables strategic positions of advantage in warfare.

First, adaptation requires engaged leadership that understands how to mold and change organizational culture to capitalize on opportunities. Secondly, exploiting opportunities via technological advantages requires key personnel within the organization to link new capabilities at the entrepreneurial level with existing organizational structures and plans. Finally, balancing these opportunities with an awareness of doctrinal limitations can help leaders and staffs adjust their organizations to meet internal and external demands. As units seek to employ operational art to link tactics to strategic aims, these lessons provide valuable insight to issues that, despite a century of technological and organizational advancement, continue to challenge the force.⁸² In short, this final section ties lessons from the Meuse-Argonne to conclusions and recommendations for today's Army concerning leadership's impact on adaptation, technology integration, and doctrinal innovation.

Leadership, Organizational Culture and Opportunities for Adaptation

Fundamental to any organization is the role of the leader in understanding internal organizational complexity and culture. For V Corps in the first two phases of the Meuse-Argonne, leaders exerted influence over subordinates that initially stifled change. This rigidity partially stemmed from a lack of organizational trust by senior leaders due to the vast amount of poorly trained units with inexperienced leaders.⁸³ Without previous combat experience with tanks, artillery, machine guns and flamethrowers, the initial leaders within V Corps relied on an outdated

⁸² US Department of the Army, Army Doctrinal Publication (ADP) 3-0: *Operations* (Washington, DC: Government Printing Office, 2017), 6. In keeping with the Joint Doctrine definition, ADP 3-0 defines operational art as the “cognitive approach by commanders and staffs – supported by their skill, knowledge, experience, creativity, and judgment – to develop strategies, campaigns, and operations to organize and employ military forces by integrating, ends, ways and means. Epigraph from Eliot Cohen and John Gooch, *Military Misfortunes: The Anatomy of Failure in War* (New York: Free Press, 1990), 242.

⁸³ Grotelueschen, *Doctrine Under Trial*, 116. Leaders were afraid to employ artillery differently early on because they were afraid it would hit their infantry units. Early on in the offensive, they were not willing to accept risk or alter their plans to maximize artillery effectiveness.

doctrinal model that primarily focused on infantry. This misapplication of doctrine led leaders at lower levels to avoid innovation as they struggled to understand the complexity of the environment.

As a new headquarters, V Corps used existing doctrine to create a fighting force centered on older models of organizational understanding. In other words, V Corps did not know what it did not know until it experienced it. This problem is not an unfamiliar one, and units routinely follow existing doctrine until an incongruence of thought and reality occurs. Much like Liggett and Summerall's approach to change, supporting adaptation within organizations requires an acknowledgment of organizational and doctrinal shortcomings. Doing so builds a cultural mindset that anticipates the reality of combat as it naturally shifts away from the existing paradigms detailed in doctrine. This reality does not negate the usefulness of doctrine; however, communicating an anticipated change requires dialogue between leaders and lower echelons. Leveraging the right brokers within the organization can help ensure this dialogue remains dynamic and iterative.

But how capable is today's Army in recognizing failure and creating an organizational learning culture? The answer is that it depends on the organization; however, there are some negative trends. Citing a 2014 annual survey on army leadership, in his article entitled, "The Weaker Foe – Part 3: Transforming to Win Future Wars," Jim Greer argued that:

Today's leaders – process-oriented, risk-averse, managers vice leaders, compliance-driven, focused on deliberate planning and execution – must transform themselves into cunning, innovative, problem-generating, asymmetric warriors, and moreover transform themselves in a way that enables them to promote and sustain a culture that enables cunning to flourish. For...leaders, this requires that they start by critiquing and altering the very culture they spent a lifetime maintaining and promoting.⁸⁴

⁸⁴ Jim Greer, "The Weaker Foe – Part 3: Transforming to Win Future Wars," The Strategy Bridge, August 17, 2017, accessed November, 16, 2017, https://thestrategybridge.org/the-bridge/2017/8/16/the-weaker-foe-part-3-transforming-to-win-future-wars#_ftn10.

Doing so is no easy task. Army doctrine states that in order to enable mission command, units need to build cohesive teams through mutual trust.⁸⁵ In essence, the operational system must not be so rigid as to prevent the creation and transfer ideas across echelons.

There are difficulties with this process because it can be argued that the Army exists as a hybrid organization that falls in between the spectrum of hierarchy and a network.⁸⁶ In *Making Things Work*, Yaneer Bar-Yam asserts that hierarchies prevent organizations from addressing complex environments because “to the extent that a single individual is in control of an organization, the organization is limited in complexity to the overall complexity of that single human being.”⁸⁷ While organizations can and do adapt, their hierarchical nature can limit the extent that adaptation occurs. This point is especially valid for V Corps at the beginning of the Meuse-Argonne, and it should be noted that only when V Corps adjusted its hierarchical nature at lower levels were they able to overcome challenges.

As the fight progressed, the 3rd Division and the 32nd Division creatively adjusted to battlefield conditions. While altering how they employed artillery fires, they also changed the organizational structure of their infantry regiments to include tanks, machine guns and flamethrowers. In this instance, MG Haan and MG Buck acted as brokers, and their dialogue with MG Summerall and his staff helped link innovation at the divisional level to an adaption of V Corps operational process.⁸⁸ In essence, it is important to remember that personalities of leaders and staffs have a direct relationship to the organization’s ability to identify shifts in current the paradigm.

⁸⁵ US Department of the Army, Field Manual (FM) 3-0: *Operations* (Washington, DC: Government Printing Office, 2017), 1-20. Part of mutual trust requires organizations to ensure that cultural disposition does not stifle innovation at lower levels.

⁸⁶ Yaneer Bar-Yam, *Making Things Work: Solving Complex Problems in a Complex World* (Cambridge, MA: Knowledge Press, 2004), 49.

⁸⁷ Ibid., 66.

⁸⁸ Arena and Uhl-Bien, “Complexity Leadership Theory,” 23-25. One way to view leadership roles is to ensure that systems exist within organizations to connect innovation at lower levels with operational process at higher levels.

Discord between higher and lower echelons indicates that essential linkages may not exist. While this friction is natural, an organization adapts or fails to adapt based on how well they can create these links. This friction is an indicator of the adaptive space Arena and Uhl-Bien described, and as such, it should be harnessed by leadership, rather than minimized. The first step to harnessing this friction is to ask why it is occurring to generate a dynamic and iterative discussion between echelons. The second step is through discussion. In this discussion, brokers are identified and given responsibility to help link both systems. An honest self-assessment of organizational effectiveness and efficiency is necessary. Ultimately, this change cannot happen if leaders are unwilling to admit organizational faults or listen to brokers.

Conversely, welcoming organizational critiques helps achieve the right balance of decentralized control that enables bottom-up refinement. Our doctrine emphasizes this through its mission command principles; however, this concept is often misunderstood.⁸⁹ Bar-Yam makes this point when he says, “It is important that people begin to break free from the traditional notion that the only alternative to hierarchical control is anarchy.”⁹⁰ It is important to note that V Corps did not abdicate its planning role by defaulting to lower echelons to simply ‘figure it out.’ Today, this common misnomer hinders discussions on decentralized control.

Instead, V Corps’ nuanced change allowed them to choose the most vital points in the battle to assist subordinates in achieving their objectives while also allowing for subordinate freedom of action at the tactical level. In doing so, they struck the right balance of decentralized control, but they also ensured more synchronized efforts across V Corps. The latter does require control, but that balance becomes possible when clear communication occurs in both a top-down and bottom-up manner. Bar-Yam further confirms this point, saying, “There is a spectrum between

⁸⁹ US Department of the Army, Army Doctrinal Reference Publication (ADRP) 6-0: *Mission Command* (Washington, DC: Government Printing Office, 2012), 2-1.

⁹⁰ Bar-Yam, *Making Things Work*, 104.

weak coordination and large-scale coherence of forces. The important step to take is not to implement distributed control, but to determine how distributed a control structure needs to be in order to successfully face the objectives of the conflict at hand.”⁹¹

As this Meuse-Argonne case study illustrates, relationships that define culture are imperative. Leaders directly or indirectly influence how organizations recognize paradigm shifts and adapt to the operational environment. Those relationships are vital because they encourage the transfer of ideas at pivotal moments during combat. By asking why internal friction occurs, leaders can establish a culture that innovates, adapts and shifts paradigms. In short, empowering subordinates requires a thoughtful process that engages the organization as a whole to be adaptive. It may sometimes require unconventional thinking to achieve those results.

Tying New Technology to Organizational Planning and Structures

While trying to understand and implement new technology, V Corps simultaneously sought to build and develop relationships and systems with its subordinate and parent headquarters. While there were other factors, like training and experience, which negatively impacted organizational cohesion, it is important to note that the organizational structure built on an older paradigm of warfare confused leaders and staffs. In effect, the rigidity within the organization prevented leaders from focusing on their environment because they were applying old models to a complex endeavor of merging new technology with a new organization.

Today, political factors and other operational environment conditions present similar challenges to Army combat unit structures that form new relationships through the creation of task forces that are “scalable and tailorable” depending on the mission.⁹² To create organizations capable of adapting during large-scale combat operations in multi-domain battle, leaders and staffs

⁹¹ Bar-Yam, *Making Things Work*, 109.

⁹² US Department of the Army, Army Doctrinal Publication (ADP)1-0: *The Army* (Washington, DC: Government Printing Office, 2012), 4-3.

should give serious thought to developing methods of employing new technology and the impact that such an endeavor produces on the organization as a whole. Central to this is a recognition that the shifting of task organizations often requires a shift in technological capability. Through the right brokers, the criticality of this step helps staffs and commanders gain a clearer picture of the capabilities of their new subordinate units and the holistic change that their addition brings to the overall organization.

A real danger to organizations exists when task organizations change, especially when staff analysis of this change does not include considerations concerning organizational capability and communication impacts. This incomplete analysis results in missed opportunities and unidentified gaps. As in 1918, war remains a complex human endeavor, and as long as it stays that way, human interaction to establish habitual organizational relationships and systems will continue to be a deciding factor on unit success or failure. As planners build operational plans, they should consider the following whenever anticipating task organization changes:

- 1) Is a capability gained or lost?
- 2) What possible friction points exist between the incoming unit and the new headquarters?
- 3) How does the incoming unit employ technology not inherent to our organization?
- 4) How can this new technology or organization be synchronized and linked with existing technology and organizational processes? What brokers exist that can help connect these two elements?
- 5) What cultural obstacles prevent this new technology or capability from becoming part of how our organization adapts? Why? Does this shift away from existing doctrine? If so, how and why?

These questions help planners think through the synchronization of *ideas* because they tie the capability to a specific action and person/entity. The leaders of V Corps and its divisions missed this point early on in the Meuse-Argonne. The communication of ideas, including the collaborative

dialogue it inspires, helps link the operational system with the entrepreneurial systems. As a result, this process helps develop relationships necessary to improve organizational understanding and common operating picture development.⁹³

Balancing Doctrine with Organizational Adaptation

Finally, it is also equally important for organizations to examine current doctrinal concepts as environmental factors emerge. This topic is important because as the Meuse-Argonne case study demonstrates, commanders and staffs leaned more on existing doctrine when confronted with training and experience inadequacies. Moreover, Dr. Peter Schifferle notes the dramatic impact of the failures of inexperienced officers on post-war doctrine in his book, *America's School for War: Fort Leavenworth, Officer Education, and Victory in World War II*. Due to these failures, leaders sought to bring about doctrinal change to implement lessons learned. This change did not occur without debate, and the views varied from junior officers who argued for modernity and mechanization of artillery and reconnaissance organizations while senior officers tended to support the value of traditional branches and the spirit of the bayonet.⁹⁴ These debates became vital to the intellectual growth of the post-WWI Army, and the experiences of officers in the AEF greatly affected how they taught younger officers as well as how they developed their changes to doctrine.

Similarly, the Army of today finds itself in a doctrinal quandary. While the United States Army continues to fight small-scale wars against terrorism around the globe, it must also maintain readiness to fight large-scale operations. Debate continues on how to balance doctrine with the experiences of senior officers from 1980s and the Gulf War and the counterinsurgency experiences

⁹³ Gary Klein and John Nimmons, "Rethinking Aspects of Design and the Military Decision-Making Process," *Armor Magazine* (Fall 2017): accessed February 8, 2018, <http://www.benning.army.mil/armor/eARMOR/content/issues/2017/Fall/4Klein-Nimmons17.pdf>.

⁹⁴ Peter Schifferle, *America's School for War: Fort Leavenworth, Officer Education, and Victory in World War II* (Lawrence: University Press of Kansas, 2010), 39-61, 97-98.

of younger officers after 2001. Doing so is no easy task as many different perspectives create tensions where ideas conflict with one another.

Currently, proponents of small-scale operations lean heavily toward brigade or smaller actions while there are those who argue that division or higher should be the focus of doctrinal changes. It is here where the V Corps' example in the Meuse-Argonne provides insight towards future conflict. Initially, officers in the Meuse-Argonne over-relied on doctrine to fill their experience and training gap. The rigid structure between division and corps echelons prevented units from being successful because of a top-down focus on mission execution. However, V Corps enjoyed more success when they balanced their demands with bottom-up refinement from their divisions. In other words, an approach that over-emphasizes one echelon over the other ignores the necessary balance required to be effective and adaptive.

Today's Army faces similar challenges as commanders and staffs seek to balance existing doctrine with new ideas. Doctrine should serve as a starting point, but commanders and staffs should consider altering various doctrinal aspects to shift paradigms in complex environments. The nuance in perspective is worth noting as it is the key to V Corps' success in the last phase of the Meuse-Argonne. Specifically, V Corps did not abandon doctrinal processes completely. Rather, V Corps and its divisions created a new paradigm by rearranging and adjusting existing elements of their doctrine to fit techniques for new equipment.

Through theory, Bar-Yam explains the reason for V Corps' rearrangement of patterns in his discussion on networks and collective memory. Bar-Yam states that before creativity can occur in the brain, informational inputs must be subdivided and categorized for processing and pattern recognition. After this happens, the mind can begin the creative process, thus "creating new possibilities out of combinations of what already exists."⁹⁵ The point here is that in order to deviate

⁹⁵ Bar-Yam, *Making Things Work*, 47-49.

to new tactical or operational possibilities, one must first understand the existing paradigm through the lens of the existing doctrine.

But one should not merely stop there. The next step to creativity is linking those patterns to paradigm shifts. The goal of every military organization should be to force a paradigm shift on their opponent, while not having their opponent force one on them. To do so requires careful study of existing doctrine, but as emergent properties begin to indicate that doctrinal aspects are no longer viable, doctrinal patterns should be rearranged to create new possibilities. Borrowing from both Gaddis and Bar-Yam, military planners should be using multiple perspectives to gain insight on new relationships in a complex environment.⁹⁶ Doctrine is only one perspective of many that serve as a good starting point.

In the latter part of the second phase and into the final phase, V Corps did not completely throw out existing doctrine.⁹⁷ Instead, keen officers linked patterns with emergent properties and changed the sequence, timing, and process of synchronization of artillery to better suit infantry support. Rather than mass fires effects before assaults or on poorly conceived objectives, they allowed lower echelons to build an intelligence picture that allowed them to mass *all* effects of their formations on decisive points.

This nuanced change to existing doctrine produced striking results. Infantry assaults remained vital, as General Pershing wanted, but their timing and sequence changed to dramatic and successful effect. In essence, these officers shifted the paradigm with a nuanced change to doctrine, but to get there, they first needed to change the paradigm of their own organizational culture. In

⁹⁶ Bar-Yam, *Making Things Work*, 26-27. See also John Lewis Gaddis, *The Landscape of History: How Historians Map the Past* (New York: Oxford University Press, 2002), 20-21, 27. Gaddis, like Bar-Yam, advocates multiple different perspectives, zooming in and out with different 'lenses' to gain a better, more holistic understanding of the world around us.

⁹⁷ Bar-Yam, *Making Things Work*, 49. Anticipating potential paradigm shifts requires units to constantly seek knowledge or capability gaps while also being unafraid to creatively dabble outside of doctrine to solve operational and tactical problems. This is done through Bar-Yam's pattern organization model.

short, doctrine should not be discounted, but similarly, it should not be followed rigidly. If it is, military planners run the same risk as their predecessors in the first and second phases of the Meuse-Argonne who remained whetted to the checklists and dogma that prevented unit success.

In conclusion, as the Army looks towards possible future wars that may return to large-scale combat operations, communication and synchronization are just as important today as they were in 1918. Leaders should remain vigilant in their efforts to create opportunities for adaptation in their organizations by establishing a culture that embraces internal friction as a way to innovate and adapt. As global complexity continues to increase, organizations should give thoughtful consideration to the understanding that adaptation is only possible when ideas can freely move between echelons. To ensure effective transmission of ideas, metaphorically, leaders and staffs should provide the right people to link ideas across an organizational no-man's-land that separates operational systems from innovation. Whatever form this takes depends on the willingness of those persons to creatively and honestly approach problems. Doing so may make us more adaptable while operating in complex environments, and it may help prevent relearning the hard lessons of the Meuse-Argonne.

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