

Reflexive Control in Operational Art: Designing Emergent Opportunity in the Vicksburg Campaign

A Monograph

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True victory in military operations arises through the acceptance of defeat by one of the antagonists. Despite this, military decisionmaking frequently devolves into analysis of things over thoughts. Reflexive control theory provides an insight into human cognition that can help address this tendency. This scientific theory originated in the Soviet Union from research on human cognition to explore a phenomenon prolific within the human condition.

This monograph hypothesizes that effective employment of the operational art requires patterns of strategic thought beyond mere "ends-ways-means" framing. Reflexive control offers a way of consciously considering assumptions and risk calculus of actors within the environment, and executing actions to influence adversary decisionmaking by confirming assumptions, creating assumptions, and overloading decisionmaking processes. This work employs a US Army historical example of operational art to expand the military study of reflexive control. It reviews reflexive control theory's Cold War origin in comparison with other military theorists to offer a way to analyze it in military context. It then reframes Grant's masterful manipulation of the decisionmaking of his enemy to create emergent opportunity in the Vicksburg campaign. The monograph concludes by offering a framework by which military leaders may employ reflexive control via the design methodology.

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Abstract

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True victory in military operations arises through the acceptance of defeat by one of the antagonists. Despite this, military decision making frequently devolves into analysis of things over thoughts. Reflexive control theory provides an insight into human cognition that can help address this tendency. Reflexive control is “a means of conveying to a partner or an opponent specifically prepared information to incline him to voluntarily make the predetermined decision desired by the initiator of the action.” This scientific theory originated in the Soviet Union from research on human cognition to explore a phenomenon prolific within the human condition. While “reflexive control” is an idea re-emerging from the mists of the Cold War in discussions of “gray zone conflicts” and Russian hybrid warfare, it is in fact present throughout warfare theory and within US Army doctrine.

This monograph seeks to answer how military leaders can employ operational art to craft operations and campaigns characterized by deliberate creation of emergent opportunities. It hypothesizes that effective employment of the operational art requires patterns of strategic thought beyond mere “ends-ways-means” framing. Reflexive control offers a way of consciously considering assumptions and risk calculus of actors within the environment, and executing actions to influence adversary decision making by confirming assumptions, creating new assumptions, and overloading decision making processes.

To do this, this work employs a US Army historical example of operational art to expand the military study of the reflexive control. It reviews reflexive control theory’s Cold War origin in comparison with other military theorists to offer a way to analyze it in military context. It then reframes Grant’s Vicksburg campaign of 1863, demonstrating via primary source material, how Grant masterfully manipulated the decision making of his enemy to create emergent opportunity within his environment. The monograph concludes by offering a framework by which military leaders may employ reflexive control in operational art via the design methodology.

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Acronyms

ADP	Army Doctrine Publication
ADRP	Army Doctrine Reference Publication
FM	Field Manual
MDMP	Military Decision making Process
OODA	Observe, Orient, Decide, Act

Illustrations

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Introduction

The profoundest truth of war is that the issue of battle is usually decided in the minds of the opposing commanders, not in the bodies of their men.

—B.H. Liddel Hart, *Strategy*

True victory in military operations arises through the acceptance of defeat by one of the antagonists. Despite this, military decision making frequently devolves into analysis of things over thoughts. The theory of reflexive control provides an insight into human cognition that can help address this tendency. Reflexive control represents an opportunity for cognitive maneuver whereby military leaders consciously attack the decision calculus of adversaries and other actors within the system of their problem-set. In so doing, the practitioner of reflexive control compels change in the operational environment whereby others act in harmony with the practitioner's intent. This interaction occurs intuitively within human interaction, however, it receives considerably less emphasis in conscious western military writing. In light of increasingly antagonistic relations with adversaries who view this phenomenon differently, military leaders should understand the employment of and defense against reflexive control within their operational art. With this view toward the future, Grant's masterful Vicksburg campaign informs us of these risks and opportunities from the past.

On the morning of 16 May 1863, Confederate Lieutenant General John C. Pemberton arose with a visualization of the day's actions. Somewhere to his east, between Jackson and Vicksburg, Mississippi, lay 32,000 men of the Union Army of the Tennessee, commanded by Major General Ulysses S. Grant. Two days prior, Pemberton received a message from his superior, Lieutenant General Joseph E. Johnston, recently arrived and massing about 10,000 men in Jackson, directing Pemberton to attack Grant's rear "if practicable."¹ Pemberton had doubts

¹ Robert N. Scott, *The War of the Rebellion: A Compilation of the Official Records of the Union and Confederate Armies*, Series I, Volume XXIV, Part I (Washington, DC: Government Printing Office, 1890), 261.

about moving his recently named Army of Vicksburg, numbering 23,000 men, further from that city which Confederate President Jefferson Davis personally tasked him to retain.² After a council of war, however, Pemberton and his division commanders selected a course of action to attack southeast and sever Grant's yet unidentified lines of communication. Like so much of the Vicksburg campaign in April and May of 1863, however, little of Pemberton's visualization of the environment would match reality.

Events had begun to unravel the day prior. The Army of Vicksburg, not experienced at maneuvering above division level, began movement late and halted exhausted on a piece of ground known as Champion Hill with trail elements closing after midnight. Pemberton delayed the Army's wake-up, hoping to give his men more rest before the day's exertions. However, at 0700, Union cavalry made contact with Pemberton's forces. As skirmishing began, Pemberton received another message from Johnston informing him that Grant seized Jackson on 14 May, and directed Pemberton to link up with Johnston's force. As Pemberton's Army attempted to countermarch, slowed by the retrograde of the baggage trains, Grant's XVII Corps began attacking west. The Battle of Champion Hill, the decisive battle of Grant's Vicksburg campaign, began as Pemberton's understanding of the operational environment shattered around him. One Confederate officer noted Pemberton "looked as if he was confused -- and he gave orders in that uncertain manner that implied to me that he had no matured plans for the coming battle."³ As the day progressed, Pemberton struggled to retain key terrain to his east and proved unable to maneuver reinforcements to threatened positions. Indeed, Pemberton's psychological state regressed to the point where he required an aide's assistance to mount his horse in order to personally task subordinate elements to counterattack.⁴ By early evening, the last of the Army of

² Ibid., 139.

³ Michael B. Ballard, *Pemberton: A Biography* (Jackson: University Press of Mississippi, 1991), 160.

⁴ Ibid., 162.

Vicksburg's resistance gave way for want of ammunition as the bloodied but victorious Yankees surged forward. For a cost of 410 men killed, 1,844 wounded, and 187 missing, Grant inflicted at least 381 killed, 1,018 wounded, 2,441 missing, as well as severing one division from the Army of Vicksburg that would play no further role in the defense of that city.⁵ Pemberton, uncertain before, *knew* he was beaten and Vicksburg would soon be lost. He would later write, "I greatly regret that I felt compelled to make the advance beyond the Big Black [River], which has proved so disastrous in its results."⁶

The defeat of Pemberton's Army of Vicksburg on Champion Hill owed little to Grant's prowess as a tactician. Indeed, the Battle of Champion Hill from the Union perspective contained many frustrations, lost opportunities, and tragedy as one of Grant's three corps absorbed the bulk of the Confederate defense and the resulting casualties. Rather, Grant's defeat of Confederate forces outside their defensive works on Champion Hill at all came as an emergent opportunity masterfully crafted in operational art.⁷ Pemberton's ill-prepared army blundered forth from Vicksburg against a foe it was unprepared to meet, was unable to find or fix, and was engaged by the enemy where they did not expect. All these conditions came about because of the decisions Pemberton logically made based on his understanding of his operational environment. However, by accurately recognizing Pemberton's assumptions and by exploiting his decision making, Grant decisively exacerbated Pemberton's problems, ultimately producing a decisive victory for the Union in the Civil War. Today, as then, military leaders who seek to employ tactical action to achieve strategic effect must strive not merely for the achievement of decisive points, but must understand how they affect decision making of actors within the environment. Reflexive control theory offers a way to help leaders consider such effects within the operational art.

⁵ Michael B. Ballard, *Vicksburg: The Campaign That Opened the West* (Chapel Hill: University of North Carolina Press, 2004), 308.

⁶ Scott, *Official Records*, Series I, Volume XXIV, Part I, 242.

⁷ Jeffrey M. Reilly *Operational Design: Distilling Clarity from Complexity for Decisive Action* (Maxwell Air Force Base: Air University Press, 2012), 80.

Vladimir A. Lefebvre, a Russian born mathematician, introduced the theory to the Western World and defines reflexive control as, “a means of conveying to a partner or an opponent specially prepared information to incline him to voluntarily make the predetermined decision desired by the initiator of the action.”⁸ This scientific theory originated in the Soviet Union from research on human cognition relating to game theory and deception. This theory relates to a human phenomenon not strictly tied to any specific systems or actors at any level of war, politics, or society. Rather, it represents one way human beings attempt to compel unity of effort from each other. One example which will resonate with experienced leaders is the concept of “managing the boss” by presenting staff work in a manner calculated to guide a superior to make what the subordinate understands to be the best decision. In this regard, it is not an exaggeration that military leaders at all levels intuitively employ reflexive control theory almost daily.

Despite this, reflexive control theory remains a concept remembered in the context of the Cold War. The theory currently enjoys some resurgence in discussion because of current geopolitical tensions between Russia and the West. However, these conversations tend to remain tethered to dialogs about “grey zone conflicts” and “hybrid warfare.” Reflexive control theory perhaps seems foreign to the western audience, relegated to strategic intrigue and unfamiliar cultures. However, reflexive control is extant across cultures, theories, and military doctrine. This monograph seeks to take reflexive control theory out of consideration purely within the context of information operations, and offer a way of employing the theory within US Army operational art to encourage patterns of conscious strategic thought not often characteristic within western practice.

⁸ Timothy L. Thomas, “Russia's Reflexive Control Theory and the Military,” *Journal of Slavic Military Studies* 17, (2004), 237.

The monograph will argue that Grant, a western military leader uninfluenced with a yet undeveloped “foreign” theory, succeeded as an operational artist, in part, by naturally leveraging the ideas central to reflexive control theory in order to create emergent opportunities within his operational environment. To examine reflexive control theory as it relates to the doctrinal concept of operational art, this monograph will consist of three parts. The monograph will first expand on reflexive control theory concerning current doctrine, offer perspectives on the theory, and present a hypothetical model of employing reflexive control within operational art. It will next analyze Grant’s Vicksburg campaign, primarily in April-May, 1863, to demonstrate these patterns of strategic thinking within an American campaign of great renown. Specifically, the historical case will show how Grant’s employment of operational art deliberately manipulated Confederate decision making to his own intent. Following this, it will highlight specific elements from the analysis to glean insight of how reflexive control theory may contribute to current understanding of operational design and the operational art. At conclusion, this work hopes to offer additional conscious perspective into employment of military problem-solving methodologies to enable military commanders, assisted through their staffs, to better craft sound operational approaches. So enabled, military leaders may thus produce flexible and adaptable plans that *might* produce relevant results and generate strategic potential rather than ones that *will* fail.

Perspectives of Reflexive Control

Though reflexive control transcends cultures, the concept of deliberately preparing and communicating ideas crafted to influence an enemy commander to make a specific decision remains largely ignored in US military doctrine. However, different perspectives on reflexive control exist across theories and disciplines, as the phenomenon itself is inherent to the human condition. Before examining Grant’s use of reflexive control as an operational artist, this section will examine perspectives on reflexive control, discuss its potential expression within US Army

doctrine, and finally, offer a framework by which a military leader might analyze and employ reflexive control within the operational art. As the term reflexive control has Russian origin, a brief expansion on the Russian perspective and origin of the theory offers a logical starting point.

Theories and Their Limited Influence on US Doctrine

Reflexive control theory originates from the Cold War era Soviet Union. As such, the context of reflexive control theory from the Russian perspective includes examination of how to influence behavior of ethnically diverse domestic populations to embrace Soviet Marxist/Leninism as well as fear of attacks by external threats, especially from the West. Soviet cognitive theorists evolved ideas rejecting Western emphasis on experience and intuition. These theorists viewed emphasis on such traits as chaotic and inferior to scientifically approached planning.⁹ As such, Dr. Lefebvre first defined reflexive control in the 1960s during studies addressing game theory.¹⁰ It is worth emphasizing that reflexive control theory is neither synonymous with, nor did it evolve specifically from, *maskirovka* or military deception. Deception, by its nature, communicates false ideas through overt action. On the other hand, reflexive control theory arises from consideration of a Russian cultural/philosophical differentiation between *lozh*, a complete falsehood, and *vranyo*, an untruth based on objective fact.¹¹ Unlike military deception, reflexive control can equally involve manipulated communication of objective facts, with or without overt action. As such, military deception provides but a single means of communicating ideas crafted for employment in reflexive control.

Though reflexive control theory originated during the Cold War era, commentators across cultures and time have long observed and discussed it in some capacity within warfare. Sun-Tzu's

⁹ Diane Chotikul, *The Soviet Theory of Reflexive Control in Historical and Psychocultural Perspective: A Preliminary Study* (Monterey: Naval Postgraduate School, 1986), 33.

¹⁰ *Ibid.*, 139.

¹¹ *Ibid.*, 66.

writings in *The Art of War* are replete with discussion of manipulating the decision making of enemy leaders. He noted, “The highest excellence is to subdue the enemy’s army without fighting at all. Therefore, the best military policy is to attack strategies; the next to attack alliances; the next to attack soldiers; and the worst to assault walled cities.”¹² Moreover, Sun-Tzu provides throughout his work advice to accomplish this. To achieve victory, Sun-Tzu observes that “invincibility depends on oneself; vulnerability lies with the enemy.”¹³ This is the reason why Sun-Tzu counsels his reader to manipulate an opponent’s strategy against him, “If the enemy seeks some [specific] advantage, entice him ... provoke him ...” and “...encourage his arrogance.”¹⁴ Sun-Tzu offers that through deliberate altering of an enemy’s understanding of his operational environment, a commander can encourage his enemy to make mistakes, thus creating emergent opportunity to defeat him.

The Western perspective on reflexive control departs from the Russian scientific emphasis or Taoist principles of balance. Carl von Clausewitz devotes significant time in *On War* to emphasize the role of the commander, intellect, experience, and genius in relation to the fog and friction of war. Clausewitz notes, “Here we are not concerned with the problem of calculating such reactions ... but rather with the fact that the very nature of interaction is bound to make it unpredictable.”¹⁵ Despite this, Clausewitz’s writings on “cunning” reflect the spirit of Lefebvre’s definition; “[Cunning is] the use of a trick or stratagem [and] permits the intended victim to make his own mistakes, which, combined in a single result, suddenly change the nature of the situation before his very eyes.”¹⁶ Clausewitz goes on, however, to claim that cunning “[does] not figure

¹² Sun-Tzu. *The Art of Warfare* (New York: Ballantine Books, 1993), 111.

¹³ Ibid., 115.

¹⁴ Ibid., 104.

¹⁵ Clausewitz, *On War*, edited by Michael and Paret, Peter Howard (Princeton: Princeton University Press, 1976), 139.

¹⁶ Ibid., 202.

prominently in the history of war.¹⁷ This reflects his focus on cunning at strategic levels, also framed by a European perspective considering “war” and “peace” as largely binary systems. As such, cunning seems to fall into the realm of deterrence and theater shaping rather than the conduct of warfare for Clausewitz. In analyzing the Napoleonic Wars, Clausewitz perhaps missed an opportunity to explore his idea of cunning against masterpieces of operational art, especially the battle and campaign of Austerlitz. However, recent Western theorists placed greater emphasis on the phenomenon.

Colonel John R. Boyd offers perhaps the most recognized US military theorist to account for the reflexive control phenomenon. Boyd’s works spent significant effort to synthesize many fields of study from multiple disciplines ranging from systems theory to Taoist philosophy. Boyd’s work most notably introduced the concept of the “observe, orient, decide, act loop” (popularly known as the “OODA loop”) into US military lexicon. Boyd’s theory claims that in competition between two actors within a complex adaptive system, the actor who comprehends the evolving reality of the system can adapt to their adversary’s actions more effectively. By exploiting systematic understanding of adversaries, Boyd argues, “mentally we can isolate our adversaries by presenting them with ambiguous, deceptive, or novel situations, as well as by operating at a tempo or rhythm they can neither make out nor keep up with. Operating inside their O-O-D-A loops will accomplish just this by disorienting or twisting their mental images so that they can neither appreciate nor cope with what’s really going on.”¹⁸ The expression “getting inside the enemy’s OODA loop” in order to influence enemy command and control systems, gain initiative, and inflict psychological shock remains extant in the US military today. In fact, the OODA loop has appeared in previous US Army manuals.¹⁹

¹⁷ Ibid.

¹⁸ John R. Boyd, "The Strategic Game of ? And ?," edited by Chet Richards and Chuck Spinney (Defense and the National Interest, 2006).

¹⁹ Field Manual 6-0, *Mission Command: Command and Control of Army Forces* (Washington,

Boyd's ideas and the reflexive control phenomenon remain implied in current US Army capstone doctrine. Indeed, the 2012 edition of Army Doctrinal Reference Publication (ADRP) 3-0, *Unified Land Operations*, states, "In combined arms maneuver, commanders compel the enemy to respond to friendly action."²⁰ Though the 2016 edition of ADRP 3-0, *Operations*, removed combined arms maneuver as a defined term, it retained, "Executing offensive tasks compels the enemy to react, creating or revealing additional weaknesses that the attacking force can exploit."²¹ Both doctrinal ideas rely on the reflexive control phenomenon for validity. In both cases, friendly maneuver inherently communicates threats or opportunities to a hypothetical enemy, compelling a response. However, the phenomenon remains implied; the doctrine offers no stated suggestion to consciously create or communicate a specific idea, true or false, nor does it consider compelling a specific response. Rather, employment of the reflexive control phenomenon remains relegated to the commander's intuition for greatest effect, much more in keeping with Clausewitz than Boyd or Sun-Tzu. Likewise, reflexive control theory finds itself buried in lower echelon doctrine.

The US Army's perspective on reflexive control theory most closely resides within the context of Information Operations (IO), specifically within "inform and influence activities" within the mission command warfighting function. Before rescinding the term in the 2016 edition of ADRP 3-0, these activities were defined as, "the integration of designated information-related capabilities in order to synchronize themes, messages, and actions with operations to inform United States and global audiences, influence foreign audiences, and affect adversary and enemy decision making."²² The associated doctrine, Field Manual (FM) 3-13, still active as of this

DC: Government Publishing Office, 2003), A-1.

²⁰ Army Doctrinal Reference Publication 3-0, *Unified Land Operations* (Washington, DC: Government Printing Office, 2012), 2-2.

²¹ Army Doctrinal Reference Publication 3-0, *Operations* (Washington, DC: Government Printing Office, 2016), 3-4.

²² ADRP 3-0 (2012), 3-3.

writing, goes on to note that “effective [inform and influence activities] can affect the data, information, and knowledge adversary or enemy decision makers use through the employment of psychological, cyber electromagnetic, or physical actions that add, modify, or remove information from the information environment.”²³ As such, reflexive control theory seems to find overt expression within US Army doctrine, at least for the moment. However, the doctrinal inform and influence frameworks focus on the “decide, detect, deliver, assess” targeting methodology within the Military Decision Making Process. Though US Army doctrine incorporates reflexive control theory, it offers no expressed suggestion of how to employ it. Field Manual 6-0’s chapter on military deception comes close, but falls short in that its methodology within the operations process addresses employing false ideas and doesn’t seek to drive *specific* decisions to create emergent opportunity.²⁴ As such, leaders seeking to analyze or employ reflexive control theory currently require a non-doctrinal framework.

A Framework for Reflexive Control

Russian reflexive control theorists offer some helpful starting points. These structures include Captain First Rank Chausov’s principles of reflexive control and Major General Ionov’s four basic methods of information transfer. Such works exist in the English language thanks to the work of men such as Dr. Timothy Thomas, and deserve consideration for leaders seeking additional information on the Russian perspective of reflexive control theory.²⁵ However, this author has not identified an existing model of reflexive control theory in the context of operational art employable in planning, execution, or analysis of a military campaign. Thus, this

²³ Field Manual 3-13, *Inform and Influence Activities* (Washington, DC: Government Publishing Office, 2013), 1-3.

²⁴ Field Manual 6-0, *Commander and Staff Organizations and Operations* (Washington, DC: Government Publishing Office, 2014), 11-1.

²⁵ Thomas, “Reflexive Control Theory,” 250.

monograph must offer “a way” of framing reflexive control theory within operational art and discuss its application to analysis of the Vicksburg campaign before proceeding.

Reflexive control in Lefebvre’s definition requires several elements. First, it requires two or more decision making actors within a system. In the Vicksburg campaign, Grant’s operational environment will constitute the system analyzed, with Grant and Pemberton being the primary decisionmakers. Lefebvre’s definition next requires a “pre-determined decision.” As such, a valid framework must examine the Confederate decisions and resulting effects Grant’s operational art sought to achieve by employing reflexive control. It is worth noting that in Russian reflexive control theory, *indecision* due to overload of decision making systems can also be a desired effect of reflexive control.²⁶ As such, a reflexive control framework must identify the intended decision provoked by employing reflexive control. Finally, in order to incline another actor to “voluntarily make the predetermined decision,” analyses with the framework must identify ideas specifically selected to compel the enemy’s decision making as well as examine the means by which an actor, Grant in this case, communicated those ideas.

Beyond these elements, understanding the interrelationship of assumptions and risk represents a critical key to understanding decision making in analysis or practice. An actor may only be able to communicate effective ideas by design in reflexive control with an adequate understanding of the risk calculus of the targeted actor within the system. By understanding when another actor’s cost/benefit analysis will or will not allow the assumption of risk, an actor can better tailor ideas for communication in reflexive control to the other’s risk calculus. As such, a key source for insight into another actor’s risk calculus emerges from their assumptions about their operational environment. Such consideration seeks to achieve Boyd’s ideal of putting one’s self inside the consciousness of the other actor.

²⁶ Ibid., 249.

Therefore, consideration of reflexive control for analysis or application might follow the following framework. First, the practitioner should identify the decision they desire another actor within the system to make to achieve their desired effect or consequence. Next, the actor should define what future reality, by threat or opportunity, would alter the other actor’s risk calculus, triggering the desired decision. Next, the actor should describe the assumption the other actor must believe to perceive the threat or opportunity. Next, the actor should craft this idea into Lefebvre’s “specially prepared information;” some believable future reality (be it real, false, or somewhere in between) that promotes the assumption. Finally, the actor communicates the “reflexive idea” to the other actor using a means the other actor will receive via their own decision making support systems. The inverse of this framework might also be used to challenge one’s own assumptions about their operational environment to help protect against an adversary’s employment of reflexive control.

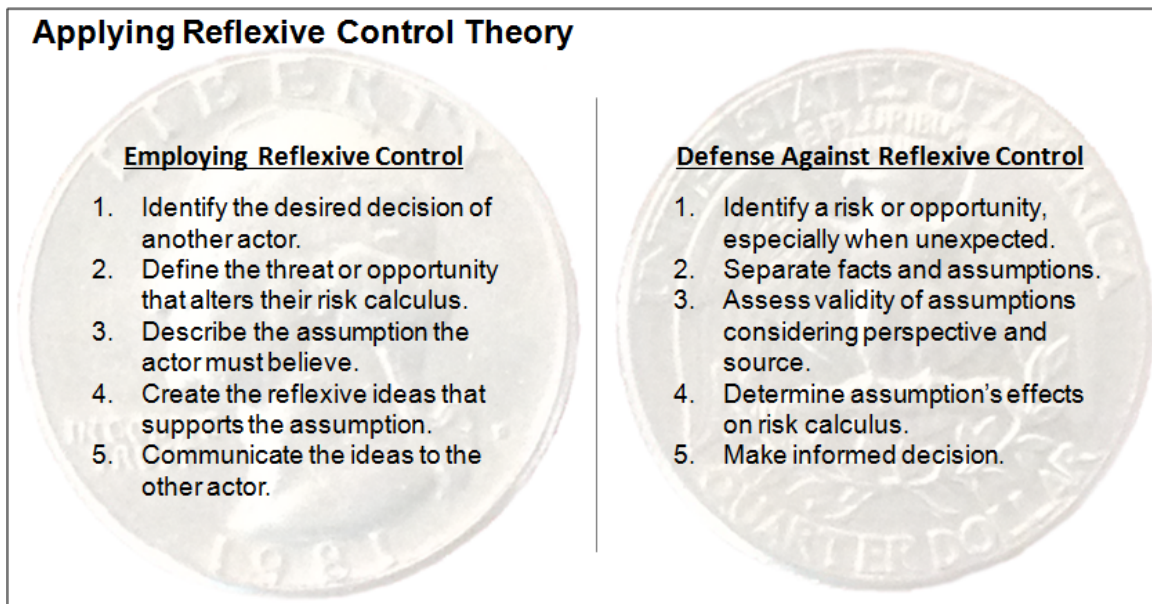


Figure 1. Applying Reflexive Control Theory. *Source:* Author.

To emphasize, deliberate employment of reflexive control requires adequate understanding of the environment as a system, framed by the context of operations. Boyd reinforces this with observation and orientation in his OODA loop, and by Sun-Tzu’s statement,

“he who knows the enemy and himself will never in a hundred battles be at risk ... He who knows neither the enemy nor himself will be at risk in every battle.”²⁷ US military doctrine’s systems approach to understanding the operational environment inculcates these imperatives. Unlike analysis of a historical example, such cognition in operation by necessity must be governed with the humility of Socratic Ignorance. Boyd cautions, “One cannot determine the character or nature of a system within itself. Moreover, attempts to do so lead to confusion and disorder.”²⁸ No leader, regardless of experience or genius, possesses true, complete objective knowledge of his environment. In operations, systems analysis offers not objective reality of the system that is, but rather the system as it is perceived to be, framed by the observer and method of observation. Practitioners of reflexive control should constantly challenge their own assumptions about their operational environment, especially regarding themselves and their adversaries. Therefore, before proceeding to this monograph’s employment of the above framework, it is prudent to consider a few points regarding military and specifically Grant’s operational context in 1863.

Considering the Present with the Past

Modern multi-domain operations can employ actions from space and via the electromagnetic spectrum, including cyber, to convey information. However, in historical military context, reflexive control traditionally relies on physical actions observed by the adversary’s information collection systems and decision support processes to communicate reflexive control’s ideas to decisionmakers. Grant and Pemberton’s 19th-Century systems to consider include similar military organizations and backgrounds, staff processes, information collection sensors and systems, friction of varied Union and Confederate sympathies, a common language, and similar

²⁷ Sun-Tzu, *The Art of Warfare*, edited by Robert G. Henricks (New York: Ballantine Books, 1993), 113.

²⁸ Boyd, “Strategic Game.”

or at least familiar culture. The American Civil War provided an environment more easily understood by its leaders, increasing the potential for effective employment of reflexive control. The richness of primary source material available pertaining to the American Civil War provides a case study well suited for employing the framework and examining reflexive control in a distinctly American context of a truly decisive campaign.

On a final note, the purpose of the subsequent analysis exists to neither praise Grant, nor condemn Pemberton. Historians have well documented Pemberton's shortcomings as a leader and the associated friction within his own chain of command. Likewise, Grant had his own well-documented internal friction with his subordinate, General McClelland, ultimately resulting in his relief during the siege of Vicksburg. These issues are largely beyond the scope of this analysis and require exploration only as they pertain to their effects on Grant and Pemberton's operational approaches. Consideration of Pemberton, the primary target of Grant's employment of reflexive control, does require understanding his decisions based on his understanding of his operational environment, as it existed at the given time. As with military leaders today, Grant and Pemberton both were constrained by the capabilities and limitations of their information and decision-support systems. Such limitations affect the ability to understand their environment and shape visualization of that environment based on subjective observation framed by personality, experience, and bias. They were also constrained to the systems of their time in describing and directing their operations. Clausewitz's fog and friction of war manifested differently in space and time in the 19th century context; however, the resulting effects of uncertainty, fear, and death timelessly speak to the modern military leader with insight from the past.

“Reflexive Control” in the Vicksburg Campaign

Great military campaigns manifest not through brilliant tactical victories, but rather when strategic understanding governs tactical actions. Though often overshadowed by the Chancellorsville and Gettysburg campaigns in the Eastern Theater, Grant’s Vicksburg campaign of 1863 meets this standard. The US Army’s Center of Military concludes that it “remains valuable as a case study for the military profession, noting joint force cooperation, leadership, adaptability, and campaign design as specific topics for consideration.”²⁹ Within Grant’s operational art and in his evolving design, a vision exploiting reflexive control arose and thus informed his planning and execution. Operational art is 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.”³⁰ US Army doctrine continues by offering various elements that compose operational art and its design. However, neither historical analysis nor contemporary employment of these elements becomes clear without first understanding the strategic context which frames operational art and manifests as tactical action.

Prologue

As a new year dawned in 1863, “these united States of America” found themselves in their 20th month of civil war without end in sight. Although the northern Union achieved successes in 1862, such as the seizure of New Orleans and Baton Rouge, Louisiana and Memphis, Tennessee, the war in public perception was not going well. The Army of the Potomac did blunt

²⁹ Christopher R. Gabel, *The Vicksburg Campaign: November 1862-July 1863* (Washington, DC: Center of Military History, United States Army, 2013), 61.

³⁰ Army Doctrine Reference Publication 3-0, *Operations* (Washington, DC: Government Printing Office, 2016), 2-1.

Robert E. Lee's first invasion of the North at Sharpsburg, Maryland, giving President Abraham Lincoln the opportunity to issue the Emancipation Proclamation to refocus strategic messaging to domestic and foreign audiences that slavery presented the main driver of conflict. However, the bloody Union defeat at the Battle of Fredericksburg, Virginia in December 1862 capped a string of victories by Lee's Army of Northern Virginia, resulting in considerable loss of life and the firing of many of Lincoln's generals. The Union and Confederacy would not reconcile, and 1863 began with the Union needing to gain marked advantage over the Confederacy before either foreign recognition of Southern independence or Northern war weariness further degraded the strategic vision of preserving the Union.

Lincoln and his General-in-Chief Henry Halleck looked to the Western Theater and the opportunity presented by the Mississippi River to issue a moral as well as physical blow to the Confederacy. While the Union capture of several cities denied Confederate economic access to the Gulf of Mexico and foreign markets, the fortified cities of Port Hudson, Louisiana and Vicksburg, Mississippi denied that same access for the Union. Lincoln understood that re-opening the river represented significant economic interests to the Northwestern states, currently providing the majority of military force to the Western Theater.³¹ Lincoln and Halleck understood that seizing control of the Mississippi River would sever east-west running lines of communication within the Confederacy, thus achieving a strategic military advantage. Finally, such a victory would bolster Union morale, demoralize the Confederacy, and deter foreign involvement in the conflict. To achieve this goal of opening the Mississippi, the War Department tasked Major General Nathaniel Banks to seize Port Hudson, and the seizure of Vicksburg to Grant. Lincoln summarized his vision of Vicksburg's strategic importance, "Vicksburg is the key. The war can never be brought to a close until the key is in our pocket."³²

³¹ Gabel, *The Vicksburg Campaign*, 9.

³² *Ibid.*, 7.

Grant faced a significant operational problem-set. As with many leaders in the American Civil War, Grant and his foe, Pemberton, served together in the Mexican-American War and could call upon personal knowledge of the other in their consideration of the other's actions.³³ Pemberton, commander of the Department of Mississippi and East Louisiana, had at his disposal five divisions of up to 43,000 men.³⁴ Confederate President Jefferson Davis personally tasked Pemberton with the retention of Vicksburg; however, Pemberton also held other requirements to secure his area of operation against Union raids or attack on the Mississippi state capitol, Jackson. Pemberton invested significant resources in fortifying Vicksburg to deter direct assaults and deny use of the Mississippi River to Union ships. In addition to Vicksburg itself, Confederate forces possessed the ability to defend from the bluffs along the Mississippi River, providing key terrain against river born attacks. Immoderate rain and the flooding of the Mississippi River disrupted operations in the floodplain. Grant also faced pressure for updates and signs of progress from Washington, DC driven by political pressure on Lincoln, as well as pressure to cooperate with General Banks as neither received the designation of what US doctrine calls the "main effort." Thus, Grant's environment contained significant risk, both to force owing to tactical dispositions, and political risk owing to the strategic context. As such, Grant felt forced to weigh his decisions on not only the desire for tactical advantage, but also the nature of the conflict both within and above his own area of responsibility.

Grant's initial operational approach to seize Vicksburg had failed in the closing days of 1862. Advancing south from Tennessee on 26 November, Grant moved along the Mississippi Central Railroad, detaching forces to secure his line of communication, and establishing a base at Holly Springs. Pemberton employed subordinate commands to defend water obstacles such as the Tallahatchie and Yalobusha Rivers. However, competing demands to provide security elsewhere

³³ J.F.C. Fuller, *The Generalship of Ulysses S. Grant* (Millwood, NY: Kraus Reprint Co., 1977), 378.

³⁴ Gabel, *The Vicksburg Campaign*, 15.

in the state denied Pemberton sufficient force to conduct a deliberate defense outside Vicksburg. Grant tasked his subordinate Major General William Tecumseh Sherman to return to Memphis, assemble another force, and attack Vicksburg directly via the Mississippi River. Grant intended to present Pemberton multiple dilemmas, creating a situation whereby either Sherman's force or Grant's would achieve superior combat power to penetrate Confederate defenses. Despite Pemberton's inability to mass against Grant, he authorized General Earl van Dorn to attack Grant's line of communication. Van Dorn's cavalry raid on Holly Springs on 20 December destroyed Grant's base and compelled his withdrawal back into Tennessee. Sherman, still operating under the belief that Grant was advancing, landed 30,000 men in flooded ground north of Vicksburg on 26 December. With Grant no longer threatening Jackson and Vicksburg from the north, Pemberton redeployed force to the defense of the Mississippi River and, on 29 December, prevented Sherman from seizing a foothold on the bluff line in the Battle of Chickasaw Bayou. Despite Pemberton's unwillingness to mass combat power at the expense of security operations, Grant's first attempt at Vicksburg failed as the Confederates anticipated his concept of operation, attacked a critical vulnerability, and compelled his withdrawal. As a result, Sherman's four divisions suffered 208 killed, 1,005 wounded, and 563 missing in an attack synchronized with another action no longer occurring. Grant's defeat required him to reframe his operational design and determine new ways to capitalize on Pemberton's vulnerabilities and patterns of behavior, namely trying to secure everywhere at the expense of mass in an area defense.³⁵

³⁵ Gabel, *The Vicksburg Campaign*, 20.

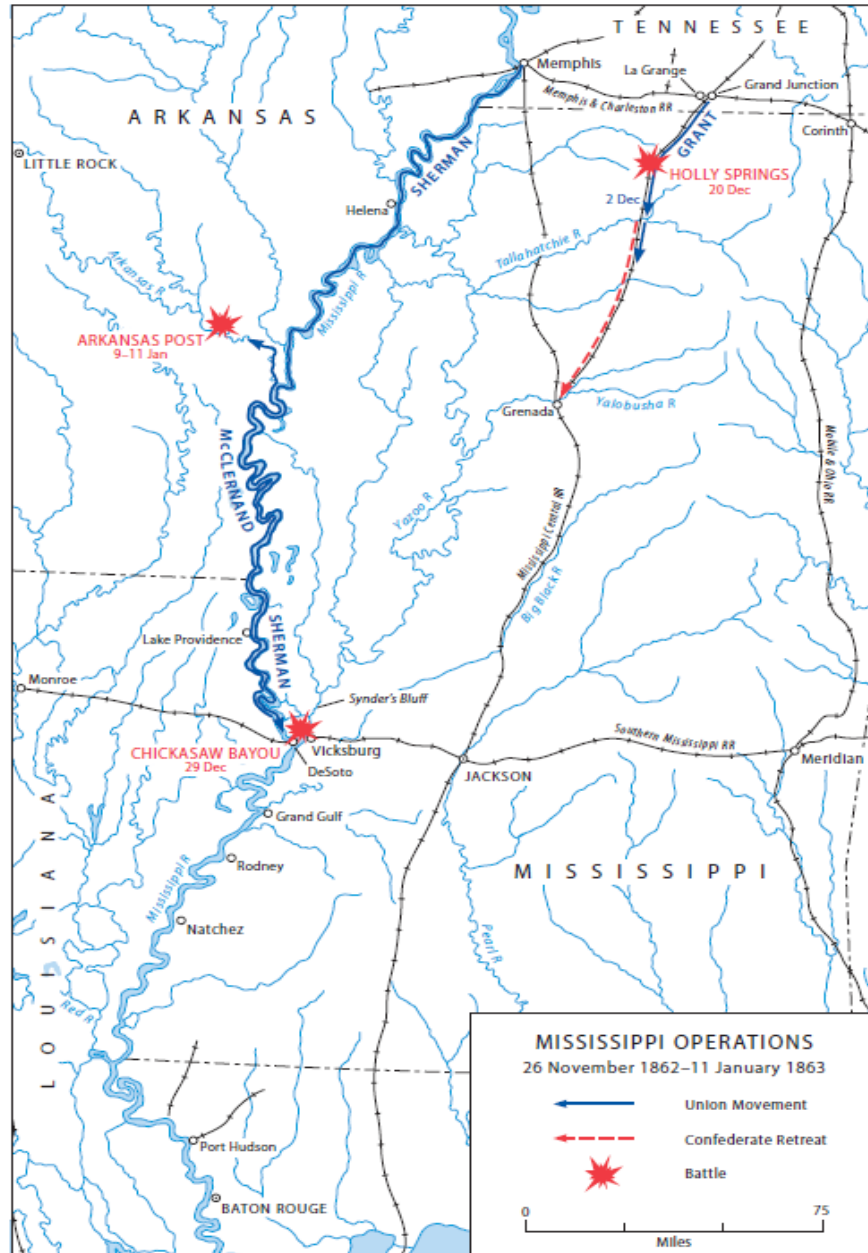


Figure 2. Mississippi Operations 26 November 1862-11 January 1863. Gabel, Christopher R., *The Vicksburg Campaign: November 1862-July 1863* (Washington, DC, United States Army Center of Military, 2013), 22.

Grant decided on a new operational approach employing the Mississippi River. This would reduce risk to lines of communication as the Union maintained control of the Mississippi River north of Vicksburg. Grant also enjoyed an excellent relationship with his Navy counterpart, Admiral David Porter. Lincoln, however, had apportioned the river to Major General McClelland, a Democratic politician from Illinois. Following the defeat at Chickasaw Bayou,

recently arrived General McClelland took command of Sherman's force and seized Fort Post, Arkansas with Admiral Porter on 11 January. Grant dubbed this a "wild goose chase," a distraction from the objective of Vicksburg. However, it did increase the proficiency and confidence within the force following a defeat.³⁶ On 13 January, Grant relieved McClelland as commander of the operation against Vicksburg via the Mississippi River, incorporating his force into the ~43,000 man Army of the Tennessee. The Army would now consist of three corps: XIII Corps under McClelland, XV Corps under Sherman, and XVII Corps under Major General James McPherson. Though the fall of Vicksburg was still six months away, Grant now set in motion his design to compel Pemberton to provide the opportunities Grant would exploit to gain marked advantage.³⁷

Deception and Dilemmas

Grant had several options to attack Vicksburg via the Mississippi River, however all of them required a foothold on the bluffs of the east bank of the Mississippi River. Vicksburg's defenses deterred a direct assault unless Confederate forces could be compelled to leave the city unguarded. Similarly, the defeat at Chickasaw Bayou reinforced the difficulty of assaulting the bluff line north of Vicksburg against a foe with internal lines of communication. As such, Grant boldly decided to cross his force south of Vicksburg. In his memoirs, Grant would claim, "From the moment of taking command in person I became satisfied that Vicksburg could only be turned from the south side."³⁸ However, the guns of Vicksburg stood between Grant and any viable crossing sites, and the same winter weather and flooded low areas as at Chickasaw Bayou favored Pemberton and his ability to mass against any crossing. Thus, before any such crossing, Grant

³⁶ John Y. Simon, *The Papers of Ulysses S. Grant*, Vol. VII (Carbondale and Edwardsville: Southern Illinois University Press, 1979), 209.

³⁷ Gabel, *The Vicksburg Campaign*, 26.

³⁸ Scott, *Official Records*, Series I, Volume XXIV, Part I, 44.

required the disruption of Confederate information collection systems and dispersal Pemberton's forces. Additionally, Grant needed to buy time before political pressure from Washington, DC forced his hand. Therefore, Grant embarked on a series of projects to busy his army, satisfy Lincoln, and begin applying reflexive control against Pemberton while waiting for favorable weather.

From January through April, the Army of the Tennessee and Porter's naval force conducted five operations referred to as "the Bayou Expeditions." On 24 January, Grant resumed a canal project just west of Vicksburg aimed at diverting the river and creating a bypass of Vicksburg. Pemberton's forces immediately observed this activity. President Lincoln placed considerable hope in the canal's success. While Grant continued to update Washington on the canal's progress, he quickly lost hope in its success. He noted, however, "Our labors, however, have had the effect of making the enemy divide his forces and spread their big guns over a great deal of territory."³⁹ Another attempt, simultaneous to the canal, began on 3 February when XVII Corps cut a natural levy to maneuver Porter's gunboats through a swollen bayou. This attempted to access the bluff line by way of the Yazoo River. Pemberton learned of the threat within six days, compelling the establishment of "Fort Pemberton."⁴⁰ Porter's gunboats proved unable to overcome this fortification, in large part, due to the inability to maneuver infantry through the flooded terrain to support naval attacks. Grant and Porter abandoned the Yazoo Pass expedition on 22 March with Pemberton retaining forces at Fort Pemberton, well northeast of Vicksburg. The so-called Lake Providence expedition also began on 3 February. This expedition also sought to breach a levy to facilitate maneuver, in this case by creating a route to the Red River in Louisiana, thus bypassing Vicksburg. Despite increased water levels, this route proved impassable for Porter's ships. With support from Sherman's XV Corps, Porter tried another route

³⁹ Ibid., 14.

⁴⁰ Scott, *Official Records*, Series I, Volume XXIV, Part I, 399.

through Steele's Bayou in an attempt to gain a foothold on the bluff line north of Vicksburg. The Confederates identified the threat and compelled the task force's withdrawal when the Confederates attempted to block the entrance and exit to the bayou and capture the force. The final Bayou Expedition, the Duckport Canal, succeeded in creating a bypass of Vicksburg to New Carthage, Louisiana, however on 18 April the Mississippi River receded and removed the canal's utility after only five days use.⁴¹

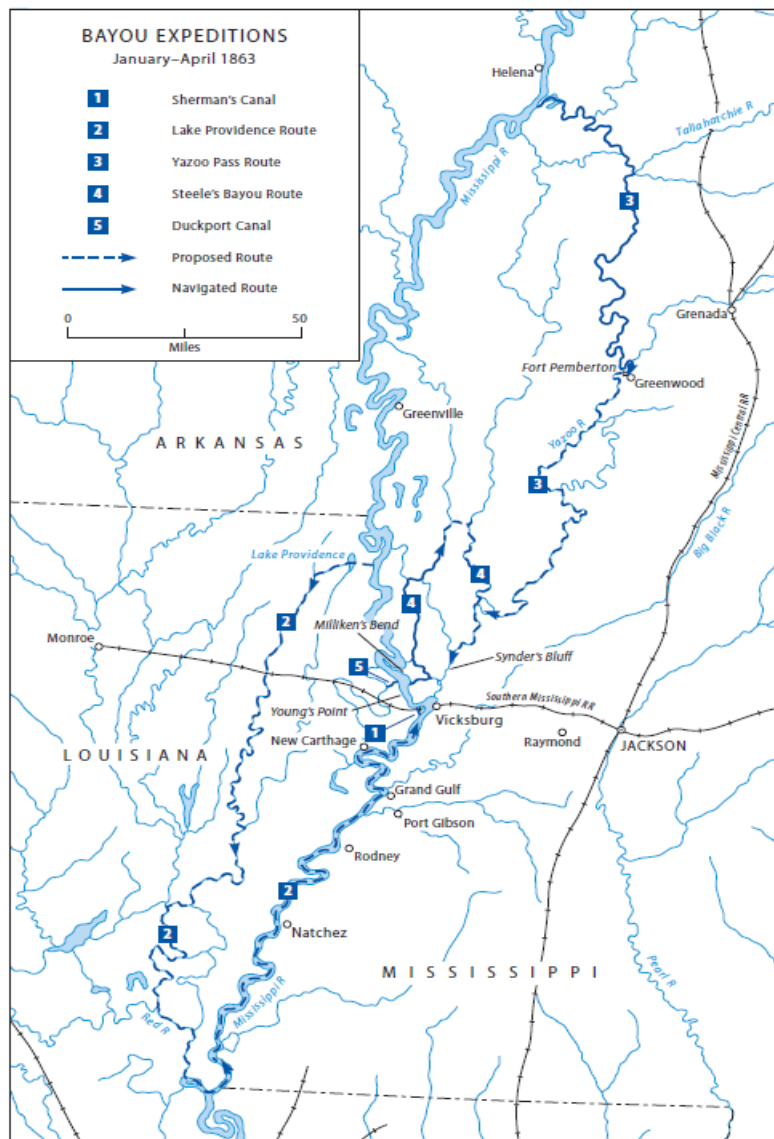


Figure 3. Bayou Expeditions. Gabel, Christopher R., *The Vicksburg Campaign: November 1862-July 1863* (Washington, DC, United States Army Center of Military, 2013), 28.

⁴¹ Gabel, *The Vicksburg Campaign*, 29.

Grant's assertion that his force would only be able to cross the river south of Vicksburg proved correct. The activity through the wet season, however, was not without positive effect. Union soldiers and sailors gained increased experience in joint operations. Grant, despite negative publicity at perceived delays and setbacks, reduced Lincoln's political risk sufficiently that he retained his command and could continue executing his approach. Of highest operational importance, Grant had begun setting conditions within the mind of his opponent. After defeating Grant and Sherman in December, Pemberton saw the Union's flailing in the bayous as futile. Though Pemberton identified as early as 6 February that Grant could attempt crossing the River south of Vicksburg, he felt "100,000 could not have taken Vicksburg."⁴² Pemberton during this time busied himself with administrative affairs, assuming that Grant must either abandon his campaign on the river in favor of another over-land attempt, or launch an amphibious assault directly on the city. These assumptions guided Pemberton's perceptions of risk, permitting him to disperse his force as Grant desired. As J.F.C. Fuller explains, "All this bayou warfare ... was a gigantic bluff to deceive his own enemy, to deceive the politicians, and to deceive his own troops, so that when he moved the enemy might be surprised."⁴³

To ensure surprise, Grant also needed to disrupt Pemberton's decision making to reduce the risk of Confederate forces massing against his crossing. Grant achieved this with a series of operations to disrupt information collection systems in conjunction with the Bayou Expeditions. On 3 April, Major General Fredrick Steele landed his division in vicinity of Greenville, Mississippi. The threat to the populace and local economy compelled the detachment of a brigade from Vicksburg to assist in countering Steele. Grant tasked Steele to remain at Greenville to interdict Confederate provisioning, presenting Pemberton another dilemma by fixing a portion of

⁴² Scott, *Official Records*, Series I, Volume XXIV, Part III, 597.

⁴³ Fuller, *Generalship of U.S. Grant*, 134.

his force. Grant observed that Steele's operation, in addition to destroying significant economically valuable material, "... shows that the enemy are still holding that position."⁴⁴

While Pemberton focused north, Grant's main body on the west bank of the Mississippi moved south to New Carthage, bypassing Vicksburg. On 4 April, Confederate General John Bowen moved two brigades from his division across the river to observe Union movements. Though Bowen confirmed the disposition of Grant's XIII Corps on 9 April, an overloaded Pemberton became convinced that Grant had begun withdrawal by river to Memphis. He noted, "The enemy is constantly in motion in all directions," and assumed Grant's design incorrectly.⁴⁵ His misperception resulted in Pemberton promising 4,000 reinforcements from his department to Braxton Bragg in eastern Tennessee on 11 April, and doubling that number to 8,000 the following day.⁴⁶ By 15 April, however, Pemberton held the reinforcements, discovering Grant had not withdrawn and suspecting "a ruse."⁴⁷ Then, on the night of 16 April, Admiral Porter's fleet famously ran the guns of Vicksburg, with additional transports following on 22 April. Confederate records demonstrate that despite Bowen's reporting, Pemberton did not identify the changes within his environment, and his false assumptions drove him to assume risk exactly as Grant intended.

Grant's most decisive effect against Pemberton's cognition resulted from a cavalry raid led by Colonel Benjamin Grierson from 17 April - 2 May. Over the course of sixteen days, Grierson's brigade rode across the length of the state of Mississippi from Tennessee, east of Jackson, and to Union held Baton Rouge leaving destroyed stores, rail lines, and telegraph wire in their wake. Grant synchronized this raid to correspond with the over-land movement of his army

⁴⁴ Scott, *Official Records*, Series I, Volume XXIV, Part I, 29.

⁴⁵ *Ibid.*, 250.

⁴⁶ *Ibid.*, 251.

⁴⁷ *Ibid.*

south of Vicksburg and Porter's fleet running the guns of Vicksburg.⁴⁸ In his report of the fall of Vicksburg, Grant wrote he intended, "to make a raid through the central portion of the State of Mississippi ... for the purpose of creating a diversion in favor of the army moving to the attack on Vicksburg." He concluded that, "The notice given this raid by the Southern press confirms our estimate of its importance."⁴⁹ Confederate records confirm this assessment. On the same day Grierson's raid began, Pemberton withdrew Bowen's brigades from the west bank of the Mississippi, still assuming Grant must either assault Vicksburg directly or withdraw. To meet what he now perceived as his greatest risk to his district, he stripped Bowen's division, south of Vicksburg, of its cavalry to chase Grierson.⁵⁰ Pemberton already lacked cavalry, as General Van Dorn had been detached to General Braxton Bragg after Grant's December defeat. Additionally, Pemberton specifically noted he was "compelled to employ infantry against Grierson's cavalry."⁵¹ In addition to further dispersing forces, Pemberton's decision to detach the Bowen's cavalry would deprive the not-yet-formed Army of Vicksburg of badly needed information collection capability. All subsequent decisions Pemberton would make in the campaign occurred with insufficient information to make timely and well-informed decisions. Grant justly praised Grierson, acknowledging the significance of his effort; "This raid was of great importance, for Grierson had attracted the attention of the enemy from the main movement against Vicksburg."⁵²

Grant had one more decision he required Pemberton to make to set conditions for the crossing. Grant planned to assault and seize the Confederate fortifications at Grand Gulf as his foothold on the bluffs east of the Mississippi, and could not afford Pemberton shifting reinforcements from Vicksburg to General Bowen's division. To this end, Grant attempted to

⁴⁸ Simon, *Grant's Papers*, Volume VII, 407.

⁴⁹ Scott, *Official Records*, Series I, Volume XXIV, Part I, 58.

⁵⁰ Scott, *Official Records*, Series I, Volume XXIV, Part III, 783.

⁵¹ Scott, *Official Records*, Series I, Volume XXIV, Part I, 255.

⁵² Ulysses S. Grant, *Personal Memoirs of U.S. Grant* (New York: The Library of America, 1990), 326.

play on Pemberton's assumption that Union forces might attack Vicksburg from the north. Grant, therefore, asked Sherman of the acceptability of conducting a demonstration by landing forces north of Vicksburg to threaten Haines' Bluff. Grant's thinking as an operational artist merits consideration here as his request to Sherman expressly considered Washington's political risk should the Northern population perceive the demonstration to be a defeat. Sherman agreed with the plan, grumbling that the tactical needs of the army were "none of the people's business."⁵³ Grant explained his visualization, "My object was to compel Pemberton to keep as much force about Vicksburg as I could, until I could secure a good footing on high land east of the river. The move was eminently successful and, as we afterwards learned, created great confusion about Vicksburg and doubts about our real design."⁵⁴ In fact, XV Corps' demonstrations did *not* deceive the Confederates. Pemberton and his commander in Vicksburg, General Carter Stevenson, had for days continued to reject Bowen's correct assessment of Grant's course of action. However, with Porter's fleet south of Vicksburg, both Pemberton and Stevenson came to realize Sherman's mission to be "a demonstration."⁵⁵ Pemberton, still largely focused on Grierson's cavalry raid, began to comprehend the threat to Grand Gulf. Regardless, the idea of the direct assault on Vicksburg, reinforced by Sherman's feint, achieved the desired effect. Though Pemberton reluctantly created a reserve of two brigades with a planning priority to reinforce Bowen's Division, those orders were not received until the evening of 30 April; too late to alter coming events.⁵⁶

⁵³ Simon, *Grant's Papers*, Volume VIII, 130.

⁵⁴ Grant, *Memoirs*, 318.

⁵⁵ Scott, *Official Records*, Series I, Volume XXIV, Part I, 273.

⁵⁶ *Ibid.*, 675.

Outmaneuvering the Confederacy

The naval attack on 29 April against Grand Gulf failed to suppress Confederate defenses sufficiently to assault the works. However, Grant adapted to unanticipated opportunity by crossing the Mississippi River farther south on 30 April after an escaped slave reported an undefended crossing site near Bruinsburg. Pemberton's distraction on security operations, rigid terrain-centric prioritization of retaining Vicksburg, and false assumptions reinforced by Union maneuver combined in Pemberton assuming multiple risks in Grant's favor. By 1500 on 30 April, Pemberton learned Grant had crossed the Mississippi with an Army of unknown size.⁵⁷ Pemberton's superior, General Joseph E. Johnston, ordered, "If Grant crosses, unite all your troops to beat him. Success will give back what was abandoned to win it." In testimony to Grierson's disruption of Confederate communications, Johnston issued this order on 2 May.⁵⁸ Fuller praises, "Four months of ruse and feints, of wrestling with swamps, bayous and forests, of labours seldom equaled in war, were the mist which covered this landing."⁵⁹ By nightfall on 30 April, Grant secured a foothold on the bluff line and visualized his next actions. Grant confidently observed:

When this was effected I felt a degree of relief scarcely ever equalled [*sic*] since. Vicksburg was not yet taken it is true, nor were its defenders demoralized by any of our previous moves. I was now in the enemy's country, with a vast river and the stronghold of Vicksburg between me and my base of supplies. But I was on dry ground on the same side of the river with the enemy. All the campaigns, labors, hardships and exposures from the month of December previous to this time that had been made and endured, were for the accomplishment of this one object."⁶⁰

Grant now set about exploiting success. Once consolidated, McClernand's XIII Corps began movement to contact to the east, making initial contact with elements of General Bowen's

⁵⁷ Scott, *Official Records*, Series I, Volume XXIV, Part I, 210.

⁵⁸ *Ibid.*, 247.

⁵⁹ Fuller, *Generalship of U.S. Grant*, 137.

⁶⁰ Grant, *Memoirs*, 321.

division shortly after midnight near Port Gibson on 1 May. Grant directed McClernand to “push the enemy” and, despite complex terrain greatly favoring Bowen’s skillful defense, Union mass overcame Bowen’s force. Grant’s Army lost 131 killed, 719 wounded, and 25 missing. The Confederates sustained 60 killed, 340 wounded, and 387 missing in a delaying action.⁶¹ With Bowen’s defense of Port Gibson turned, Bowen’s division withdrew north of the Big Black River. The following day, McPherson’s XVII Corps seized a foothold on the north side of Big Bayou Pierre and occupied Port Gibson, establishing Grant’s base on the east bank of the Mississippi.⁶²

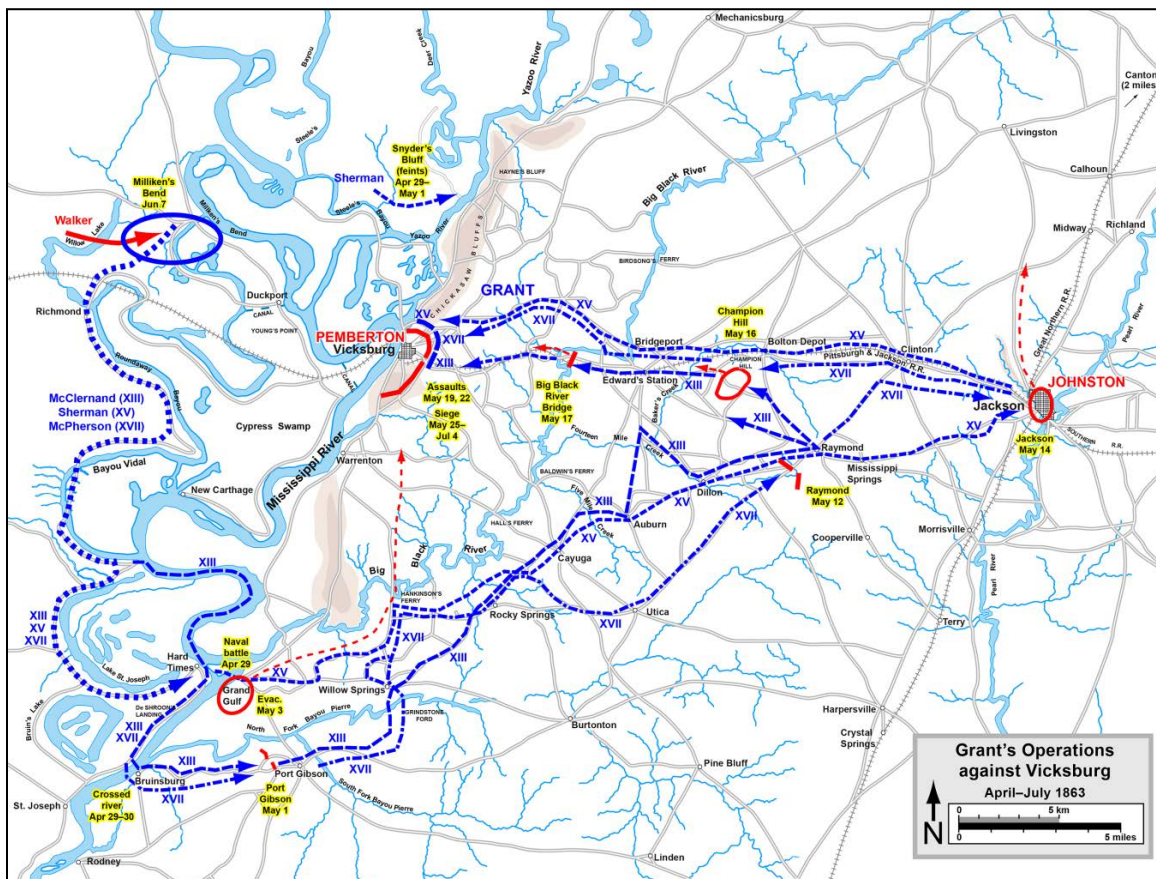


Figure 4. Grant’s Operations against Vicksburg. Jespersen, Hal, Cartography Services, 2012, accessed on November 24, 2016, <http://www.cwmaps.com/freemaps/VicksburgCampaignAprilJuly63.png>.

With Port Gibson in hand, Grant faced a decision with strategic implications. Grant still operated with the guidance to cooperate with General Banks against Port Hudson. However,

⁶¹ Gabel, *The Vicksburg Campaign*, 39.

⁶² Scott, *Official Records*, Series I, Volume XXIV, Part I, 32.

Grant assessed that dividing his force to reinforce Banks, not yet prepared to attack Port Hudson, would squander the operational surprise of his crossing, allowing the Confederates to reinforce and reorient their defense. Grant decided, "I therefore determined to move independently of Banks, cut loose from my base, destroy the rebel force in rear of Vicksburg and invest or capture the city."⁶³ To accomplish this, Grant needed time to consolidate his entire force and then compel Pemberton, now personally commanding his forces from Vicksburg, to expose his force outside of Vicksburg's defenses.

To create the time needed to mass additional force, Grant manipulated Pemberton's assumption that the Army of the Tennessee would strike for Vicksburg directly. Though the army as a whole paused to reinforce and resupply, Grant maintained contact with Bowen's force retrograding north.⁶⁴ Grant did not seek decisive engagement, however; that would come later, after he massed his whole force and had drawn Pemberton out. In his report, Grant wrote, "While lying at Hankinson's Ferry waiting for wagons, supplies, and Sherman's Corps ... demonstrations were made, successfully, I believe, to induce the enemy to think that route and the one by Hall's Ferry, above, were objects of much solicitude to me."⁶⁵ Both Pemberton's writings and actions attest to the effectiveness of Grant's reflexive control; for two days, Pemberton prepared to defend near Hankinson's Ferry.⁶⁶ The option of attacking Grant in the severely restrictive terrain near the bluff line did not present Pemberton a suitable or acceptable option, in part due to his determination to retain Vicksburg and the possibility of direct attack from the north. Grant therefore achieved sufficient time to secure his base and bring up XV Corps.

While Pemberton prepared to defend along the Big Black River at Hankinson's Ferry, Grant resumed careful movement with McClernand's XIII Corps probing northeast toward

⁶³ Grant, *Memoirs*, 328.

⁶⁴ Scott, *Official Records*, Series I, Volume XXIV, Part I, 34.

⁶⁵ *Ibid.*, 50.

⁶⁶ Scott, *Official Records*, Series I, Volume XXIV, Part III, 829.

Jackson on 4 May. By 9 May, Sherman's XV Corps rejoined the army, and Grant commenced his new concept of operations, informing Halleck on 11 May, "you may not hear from me again for several days."⁶⁷ Grant correctly assumed that Pemberton held the majority of his forces near Vicksburg with "with smaller forces at Haines' Bluff and Jackson."⁶⁸ He next assumed Pemberton would not mass these forces against him. He therefore decided, "to throw my army between his and fight him in detail."⁶⁹ Grant thus advanced along three mutually supporting lines of operation with Edwards and its rail station as the principle objective. The army moved light, foraging from the countryside and limiting resupply from Grand Gulf to ammunition and limited food. By placing his army between Vicksburg and Jackson, Grant intended to sever Pemberton's line of communication, thus compelling engagement. Pemberton perceived the threat to Edwards on 5 May, and frantically set to redeploying forces and requesting reinforcements, especially cavalry.⁷⁰ Though Pemberton's lack of cavalry continued to deny intelligence on Grant's dispositions, the next week would be the only portion of the campaign where Pemberton's assumption of Grant's course of action would be correct. Expecting Grant to pivot west toward Vicksburg, Pemberton ultimately decided to orient his defense on the natural linear obstacle of Fourteen Mile Creek. Pemberton, however, also had the dilemma of providing security for the state capitol. General John Gregg and one brigade, brought up by Pemberton from Port Hudson, arrived at Jackson on 8 May and received the task to move to Raymond, screen Jackson against expected raids, and to attack Grant's rear guard when the Union forces pivoted west.⁷¹ Simultaneously, General Johnston, reassigned on 9 May to take command of operations in Mississippi, also headed for Jackson with reinforcements.

⁶⁷ Scott, *Official Records*, Series I, Volume XXIV, Part I, 36.

⁶⁸ Grant, *Memoirs*, 330.

⁶⁹ *Ibid.*

⁷⁰ Scott, *Official Records*, Series I, Volume XXIV, Part I, 835.

⁷¹ *Ibid.*, 324.

Thus, after a day's pause, McPherson's XVII Corps made unexpected contact with Gregg's brigade on 12 May. Friction and uncertainty characterized this battle. Gregg, assuming he faced Grant's rear guard, aggressively committed his force. However, over the hot, dusty, and confused day Union numerical superiority ultimately compelled Gregg to withdraw to Jackson's hastily prepared defensive works. Grant records Union losses at 66 killed, 339 wounded, and 37 missing. Confederate losses were 100 killed, 305 wounded, and 415 captured.⁷² Gregg's action at Jackson bought Pemberton and Johnston little time, however. Johnston would arrive on 13 May with 6,000 men to telegraph the government in Richmond, "I am too late."⁷³ The tempo of Grant's maneuver had already sapped Johnston's will for decisive battle. Conversely, Pemberton finally left Vicksburg the evening of 12 May to take command of the three division ad hoc "Army of Vicksburg," leaving two divisions to defend against the ever present threat of a direct assault.⁷⁴ Pemberton, a man with no experience maneuvering a force of its size, a force that had never maneuvered above division level and lacked confidence in its commander, now prepared for battle outside Vicksburg's defenses. Compounding this, Pemberton did not yet know that the Battle of Raymond had occurred, and thus had no way of knowing that his assumptions of Grant's designs were now invalid.

Grant's "Crossroad" and Reframing

Grant's refined understanding of the threat demanded he reassess his plans. The aggressive Confederate action at Raymond suggested that reinforcements from Jackson would present a sizable threat to his rear. Worse, reinforcement of Pemberton would increase the probability of facing a fair fight. Grant now faced his own dilemma and responded by reframing his operational design rather than sticking with his existing plan. With Gregg's brigade in retreat

⁷² Ibid., 331.

⁷³ Ibid., 215.

⁷⁴ Ballard, *Pemberton*, 151.

and additional reinforcements assumed en route, Grant saw an emergent opportunity and, on the night of 12 May, issued new orders. His immediate objectives changed to Jackson and defeat of Confederate forces there in order to prevent the enemy from massing combat power.⁷⁵ While Grant's army marched against Jackson on 13 May, Pemberton continued to send orders to Gregg thinking him still defending at Raymond.⁷⁶

Grant's decision to attack Jackson relied on the assumption that Pemberton would not suddenly turn aggressive. Grant arrived at this assumption based on his knowledge of Pemberton, his military system, and his pattern of behavior thus far. In fact, and to the chagrin of his subordinate commanders, Pemberton remained set on allowing Grant attack him on ground of his choosing, lest he move too far from Vicksburg.⁷⁷ However, Grant acknowledged the risks of this assumption being wrong, namely the threat of attack to his rear or his lines of communication. Grant felt his reduced reliance on logistics from Grand Gulf, combined with Pemberton's lack of cavalry, reduced risk to his communications. However, Grant's new plan included a subordinate operation to encourage Pemberton's passive behavior. In his orders to McClernand's XIII Corps, Grant described and directed, "Edwards Station is evidently the point on the railroad the enemy have most prepared for receiving us, therefore I want to keep up appearances of moving upon that place ... you will then move tomorrow to keep up this appearance."⁷⁸ Pemberton would not learn of the Battle of Raymond until the morning of 14 May, during the Battle of Jackson. He was also unaware of Grant's shift against Jackson until it was too late for him to prevent disaster.⁷⁹

On the rainy morning of 14 May, Sherman and McPherson's two corps converged on Jackson. Confederate forces, significantly outnumbered and without strong defensive works,

⁷⁵ Grant, *Memoirs*, 332.

⁷⁶ Scott, *Official Records*, Series I, Volume XXIV, Part III, 873.

⁷⁷ Ballard, *Pemberton*, 151.

⁷⁸ Simon, *Grant's Papers*, Volume VIII, 208.

⁷⁹ Scott, *Official Records*, Series I, Volume XXIV, Part I, 261.

fought a delay as Johnston slipped away. Grant recorded the cost as 41 killed, 228 wounded, and 21 missing while inflicting 845 casualties and capturing 17 guns.⁸⁰ In addition to Confederate stores destroyed before the withdrawal, Sherman's XV Corps would spend 15 May destroying material and infrastructure of military value. By accepting prudent risk, Grant precluded Johnston from joining with Pemberton and triggered the cancellation of additional reinforcements en route to Jackson from Port Hudson.⁸¹ Johnston and his force, while still a threat requiring consideration by Grant, would play no significant role in the remainder of the campaign. Against Pemberton, Grant had now gained and maintained decision making superiority. Johnston's 13 May dispatch to Pemberton, received during the Battle of Jackson, caused Pemberton to believe that Johnston was combat effective in Jackson. Moreover, the message directed Pemberton immediately to attack the rear of Union forces identified at Clinton "If practicable."⁸² After a council of war with his more aggressive subordinate commanders, Pemberton, ever reluctant to distance from Vicksburg, finally resolved to transition to offense. To balance Johnston's enemy focus of destroying Grant with Jefferson Davis' essential task of retaining Vicksburg, Pemberton decided not to attack Clinton, but rather to the southeast in an attempt to sever Grant's communications and provoke a defensive engagement on ground of Pemberton's choosing.⁸³ So it was that Pemberton's Army of Vicksburg, worn from days marching against an elusive threat, trudged exhausted onto Champion Hill on the night of 15 May.

The Battle of Champion Hill, described in the introduction, provided Grant the decisive victory of the campaign. The significance of the battle lies not in how Grant fought it. Champion Hill was a blunt affair with little tactical finesse, characterized on the Union side by friction between Grant and his subordinate McClelland's passive interpretation of cautiously worded

⁸⁰ Grant, *Memoirs*, 337.

⁸¹ Gabel, *Vicksburg*, 45.

⁸² Scott, *Official Records*, Series I, Volume XXIV, Part I, 261.

⁸³ *Ibid.*, 262.

orders. Indeed, Grant perhaps missed an opportunity to destroy the Army of Vicksburg. Rather, the significance of Champion Hill in Grant's operational art is that the battle happened at all. Grant, learning Pemberton's disposition on the night of 14 May and receiving a captured dispatch directing Pemberton to join with Johnston, wasted no time in maneuvering against the Army of Vicksburg. Grant forced Pemberton to fight without benefit of prepared defenses and a linear water obstacle as Pemberton wished. The decisive defeat of the tired and disgruntled Army of Vicksburg emerged deliberately because of Grant's operational design. The battle cost Pemberton almost 4,000 casualties, the separation of General Loring's division, and deterred Johnston, with Loring, from assisting in the defense of Vicksburg. Pemberton was a beaten man, and moreover, he knew it.

Epilogue: The Fall of Vicksburg

The Union victory of Champion Hill ensured Vicksburg's fall. Pemberton had no other course of action available to him than to fall back to Vicksburg. However, Pemberton made one more assumption that delayed his retrograde. Pemberton assumed Loring and his division would seek to rejoin the Army of Vicksburg, and Pemberton therefore occupied prepared defensive positions on the west *and* east side of the Big Black River to defend the crossing site long enough to cover Loring's assumed retrograde. This created new risk to his force, offering Grant another opportunity to attrit Pemberton's force. Grant tasked Sherman's XV Corps to flank Pemberton by crossing the Big Black River to the north to compel his withdrawal, at which time Grant intended to assault the Confederate positions. This course of action proved unnecessary. One of McClernand's brigade commanders exercised bold initiative, exploiting dead space in the observation and fields of fire of the Confederate defenses, assaulting and routing the Confederate defenses before either Grant or Pemberton expected. Grant, ever the opportunist, commenced the general attack to reinforce an unexpected success that caught many Confederates on the wrong

side of a water obstacle. Grant recorded Union losses at 39 killed, 237 wounded, and three missing for 1,751 Confederates and 18 guns captured.⁸⁴ Pemberton staved off complete disaster by burning the bridges over the river, delaying Grant's pursuit as the beaten commander of a beaten army returned to Vicksburg. Pemberton bemoaned, "Just thirty years ago I began my military career at the US Military Academy, and today ... that career is ended in disaster and disgrace."⁸⁵

As Grant's army reached Vicksburg on the evening of 18 May, Sherman's XV Corps occupied high ground north of Vicksburg and linked with the Mississippi River, restoring the army's access to its river born lines of communication. Grant recorded the psychological impact of the occasion:

In a few minutes Sherman had the pleasure of looking down from the spot coveted so much by him the December before on the ground where his command had lain so helpless for offensive action. He turned to me, saying that up to this minute he had felt no positive assurance of success. This, however, he said was the end of one of the greatest campaigns in history and I ought to make a report of it at once. Vicksburg was not yet captured, and there was no telling what might happen before it was taken; but whether captured or not, this was a complete and successful campaign.⁸⁶

Union attempts to exploit the campaign's momentum by assaulting Vicksburg on 19 and 22 May did not succeed, and the Army of the Tennessee transitioned to reduce Vicksburg by siege. Pemberton, knowing Vicksburg must inevitably fall, resolved to retain the city as long as possible, stating "I still conceive it to be the most important point in the Confederacy."⁸⁷ Though Johnston would continue to direct Pemberton to break out of Vicksburg and join forces with him, the Confederates never seriously attempted such a course of action. The Confederacy, seeking to exploit the success of Robert E. Lee's early May victory at Chancellorsville, instead launched a

⁸⁴ Grant, *Memoirs*, 353.

⁸⁵ Ballard, *Vicksburg*, 317.

⁸⁶ Grant, *Memoirs*, 354.

⁸⁷ Scott, *Official Records*, Series I, Volume XXIV, Part I, 273.

second invasion of the North instead of weakening the eastern theater in favor of Mississippi. With no relief expected, morale and health of the force failing, Grant reinforced to strength of 90,000, and a Union assault expected, Pemberton surrendered Vicksburg on 4 July, 1863, one day after Lee's defeat at Gettysburg.⁸⁸ The Civil War Trust, drawing from multiple primary sources, estimates the assaults and siege cost the Union 806 killed, 3,940 wounded, and 164 missing. The Confederate losses, however, were 805 killed, 1,938 wounded, 129 missing, and 29,491 captured.⁸⁹ Concurrently, General Banks had himself laid siege to Port Hudson on 21 June. After the fall of Vicksburg, it too surrendered on 9 July. Lincoln memorialized, "The Father of Waters again goes unvexed to the sea."⁹⁰

The strategic impact of these events generated a measure of success that altered the course of the war. Between Gettysburg and the loss of the Mississippi River, Confederate leaders began to realize, barring foreign intervention, the war trended toward defeat.⁹¹ On 28 July 1863, Confederate Chief of Ordnance General Josiah Gorgas was one among many who captured the psychological impact on the South:

Events have succeeded one another with disastrous rapidity. One brief month ago we were apparently at the point of success. Lee was in Pennsylvania, Harrisburg, and even Philadelphia. Vicksburg seemed to laugh all Grant's efforts to scorn. ... Now the picture is just as somber as it was bright then. ... It seems incredible that human power could effect such a change in so brief a space. Yesterday we rode on the pinnacle of success—today absolute ruin seems to be our portion. The Confederacy totters to its destruction.⁹²

Thus it was that Grant, after months of setback and delay, delivered a lightning campaign with a tempo his opponents could not match, governed by a design aimed not merely at seizing an

⁸⁸ Gabel, *The Vicksburg Campaign*, 57.

⁸⁹ "Vicksburg," Civil War Trust, accessed November 25, 2016, <http://www.civilwar.org/battlefields/vicksburg.html?tab=facts>.

⁹⁰ Gabel, *The Vicksburg Campaign*, 59.

⁹¹ Fuller, *Generalship of U.S. Grant*, 376.

⁹² Sarah W. Wiggins, *The Journals of Josiah Gorgas 1857–1878* (Tuscaloosa: University of Alabama Press, 1995), 75.

objective but by manipulating his foe's cognition to defeat his strategy. Herein lies the excellence of the Vicksburg campaign; Grant's genius lay in patterns of strategic thought, not tactical excellence. Reflexive control theory offers military leaders one way of encouraging such patterns, especially when considering how to interact with other actors to create emergent opportunity.

Reflexive Control in Operational Art

Grant's operational art in the Vicksburg campaign offers military leaders a superb example of employing the reflexive control phenomenon by design. By operational maneuver, Grant compelled the Confederates to decide and act in a pre-calculated manner no fewer than seven times during the campaign to facilitate Grant's transitions. The campaign can be divided into four general phases: shaping, foothold and consolidation, defeat of fielded forces, and exploitation and seizure of Vicksburg. In the first three phases, Grant's employment of reflexive control helped create emergent opportunity within his environment, setting conditions for transition to the next phase. The tables below, by column, summarize and assess Grant's actions and subsequent effects within his environment. These show the relationship between Confederate assumptions and risk, Grant's "reflexive idea," that is, Lefebvre's "specially prepared information," and its means of communication, and finally the resulting change in the environment.

Grant's "Reflexive Control"

In the shaping phase, Grant degraded Pemberton's decision making ability, compelled him to disperse combat power, especially cavalry, and ensured Pemberton would not mass against him until his army seized a foothold on the east bank of the Mississippi River. He accomplished this by execution of the "Bayou Expeditions" and three other shaping operations: Steele's operation, Grierson's raid, and Sherman's demonstration. A critic might argue against Fuller that Grant did not design the Bayou Expeditions to confound Pemberton. Even if one discounts Grant's assertions following the campaign, his contemporary writings confirm he held little faith in the projects despite his optimistic reports to Washington. Furthermore, Grant's writings and his careful sequencing of events demonstrate the design governing the Steele, Grierson, and Sherman shaping operations. Finally, Sherman's demonstration achieved its desired effect despite

Pemberton’s understanding that it was a feint, highlighting that the desired effect of reflexive control can be only temporary. Delaying the enemy from making a good decision can be just as effective as compelling him to make a poor one. Thus, Pemberton’s decisions created the opportunity by which the Army of the Tennessee seized its foothold.

Table 1. Reflexive Control in Grant’s Shaping Phase, January-April, 1863.

<u>Grant's Desired Effect</u>	Reduce enemy confidence in situational awareness and delay decisionmaking in order to prevent massing of combat power against the Army of the Tennessee.	Dispersal of Confederate combat power in order to prevent massing against the Army of the Tennessee.	Ensure Confederate defensive main effort remains at Vicksburg in order to seize foothold at Grand Gulf (later Bruinsburg).
<u>Confederate Assumption</u>	Vicksburg secure against Grant. Confederate forces sufficient to preclude further attacks from river.		Grant's most likely course of action is a resumed overland campaign. Most dangerous is a direct attack. (Both assumptions incorrect)
<u>Confederate Perceived Risk</u>	Political. Need to protect lives and property throughout Mississippi.		Weakening Vicksburg defense increases threat of direct Union attack.
<u>Reflexive Idea</u>	Confusion/doubt. Decision support system saturated.	Confirmed assumptions: futility of river expeditions; greater threats across Mississippi.	Reinforce assumption of threat of direct attack.
<u>Means of Communication</u>	River Expeditions (January-April). Steele's operation (4-22 April). Grierson's raid (17 April-2 May).		Sherman's demonstration (29-30 April).
<u>Confederate Action</u>	Bowen's cavalry detached against Grierson (27 April) Pemberton personally directing action against raid.	Establishment of Ft. Pemberton (February). Retention of forces in Vicksburg. Fortification of Warrenton and Grand Gulf (March-April). Cavalry forces remains in northern Mississippi (duration). Bowen's cavalry, some infantry detached to pursue Grierson's raid (27 and 20 April). Pemberton nearly sends 8,000 soldiers to Bragg (~12 April).	Two brigade reserve created from Stevenson, prepared to reinforce Bowen. Despite correctly assuming Sherman's operation a feint, reserve not activated in time to participate in Battle of Port Gibson.
<u>Confederate Created Risk</u>	Reduced quality of information collection, reduced trust in collection, inaccurate common operating picture.	Inability to mass combat power against Army of the Tennessee, even after identification of threat against Grand Gulf. Risk compounded by disruption of decision making.	
<u>Emerged Opportunity and Assessment</u>	Freedom of maneuver to south of Vicksburg and ability to cross river when weather permits. <u>Grant's reflexive control effective.</u>	After failure to seize Grand Gulf by direct assault, Union lands unopposed at Bruinsburg. Bowen defeated at Port Gibson; terrain highly favorable to defender but Bowen lacks sufficient strength and supply. Compels Confederate withdrawal from Grand Gulf. Grand Gulf occupied, becomes US base. <u>Grant's reflexive control effective.</u>	

Grant exploited the seizure of the foothold by rapidly moving to contact, defeating Bowen at Port Gibson, compelling the Confederate withdrawal from Grand Gulf, and allowing Grant to establish his base. Grant then employed reflexive control by reinforcing Pemberton’s assumption that Grant would promptly attack Vicksburg from the south. Though Pemberton may not have endeavored to eject Grant as per Johnston’s orders, the threat presented by McPherson’s XVII Corps bought Grant three days to build combat power in Mississippi in order to resume offensive operations.

Table 2. Reflexive Control in Grant’s Foothold and Consolidation Phase, 1-4 May, 1863.

<u>Grant's Desired Effect</u>	Confederates defend direct southern approach to Vicksburg in order to allow time for consolidation and resumption of Union offense.
<u>Confederate Assumption</u>	US most likely course of action is direct attack north to Vicksburg. (Incorrect)
<u>Confederate Perceived Risk</u>	US will exploit foothold across Big Black River, directly threatening Vicksburg. Pemberton perceives risk from both north and south of Vicksburg.
<u>Reflexive Idea</u>	Confirm false assumption: Union will directly attack on Vicksburg from south.
<u>Means of Communication</u>	McPherson and XVII Corps "follow the enemy," retain foothold north of Big Bayou Pierre.
<u>Confederate Action</u>	Confederates executes area defense south of Vicksburg.
<u>Confederate Created Risk</u>	Pemberton gives Grant three days to consolidate. Continues to deny reinforcement of field forces from Vicksburg garrison.
<u>Emergent Opportunity and Assessment</u>	Space and time to consolidate, secure base and lines of communication, and resume offensive operations. <u>Grant's reflexive control effective.</u>

Grant’s design to compel Pemberton into engagement outside Vicksburg’s defenses stands apparent in both his writing and actions. By threatening Pemberton’s line of communication, Pemberton, by his own admission, felt compelled to advance to the Big Black River and later Fourteen Mile Creek. Upon making unexpected contact with Gregg’s brigade at Raymond, Grant rapidly developed and executed a branch plan to seize Jackson, defeat Johnston, and deny Pemberton reinforcement. After the Battle of Jackson and upon learning Pemberton’s disposition and mission, Grant was effectively operating two full decision making cycles ahead of Pemberton. Boyd’s “observe-orient-decide-act” loop and Grant’s ability to maneuver faster and more effectively within Pemberton’s mind highlights the decisiveness of the psychological shock Grant delivered. The emergent opportunity and resulting victory at Champion Hill was the final condition Grant needed to achieve. Though Vicksburg would not surrender until 4 July, Grant sealed its fate on 16 May.

Table 3. Reflexive Control in Grant's Defeat of Fielded Forces Phase, 5-16 May, 1863.

<u>Grant's Desired Effect</u>	Draw Army of Vicksburg away from defenses in order to destroy force prior to attacking Vicksburg.	Ensure Pemberton remains passive, creating no threat to rear during attack on Jackson.	Prevent further reinforcement of Army of Vicksburg via Jackson.
<u>Confederate Assumption</u>	US most likely course of action now perceived as attack toward Edwards Station to sever line of communication with Jackson, then cross Big Black River.	US most likely course of action still perceived as attack toward Edwards Station to sever line of communication. (No longer correct)	Reinforcements (inter and intratheater) en route via Jackson. (Correct)
<u>Confederate Perceived Risk</u>	Allowing US forces to sever road/rail line to Jackson isolates Vicksburg from resupply, reinforcement, and telegraph communication.		Risk against Jackson limited to a raid; main risk remains against Vicksburg.
<u>Reflexive Idea</u>	Confirm correct assumption of threat to line of communication.	Maintain validity of now false Confederate assumption.	Reinforcement of Army of Vicksburg not feasible or acceptable.
<u>Means of Communication</u>	Army of the Tennessee's executed scheme of maneuver.	McClelland's XIII Corps maintains appearance of advance on Edwards Station.	Capture of Jackson.
<u>Confederate Action</u>	Pemberton takes the field, forms "Army of Vicksburg," awkwardly moves east to defend along Big Black River, then 14 Mile Creek. Garrison retained in Vicksburg.	Army of Vicksburg passive. Johnston compelled to withdraw under pressure by superior force on 14 May. Pemberton only chooses to attack Grant after ordered by Johnston. Preparing to attack Grant's line of communication on 16 May.	Johnston retrogrades and makes no serious attempt to link up. Inter-theater reinforcements abort mission and return to parent units.
<u>Confederate Created Risk</u>	Blind and understrength "army" with no maneuver experience seeking engagement against a force of unknown size and disposition.	Defeat of fielded forces in detail. Army of Vicksburg leaving prepared defenses along linear water obstacles.	Increased risk to mission and force of Army of Vicksburg.
<u>Emerged Opportunity and Assessment</u>	Decisive battle, however unexpected risk/opportunity identified after Battle of Raymond. <u>Grant's reflexive control partially effective, however Grant must reframe his design based on identified change in the environment.</u>	Defeat of Johnston, destruction of war material in Jackson, isolation of Vicksburg, and conditions set for decisive battle with Pemberton. <u>Grant's reflexive control effective.</u>	Grant able to mass combat power against Pemberton. Army of Vicksburg decisively defeated at Champion Hill. Exploitation permits rapid success at Big Black and investment of Vicksburg. Pemberton short one division, thousands of men, and reduced field artillery capability. Johnston presents no credible threat to siege. Pemberton does not attempt breakout. <u>Though unable to seize Vicksburg by direct assault, Grant's reflexive control effective.</u>

Grant's visualization of the linkage between strategic effects and tactical actions also deeply influenced Grant's own risk calculus throughout the campaign. In particular, disregarding Washington's guidance to link with General Banks merits specific consideration. Grant later reflected, "I knew well that Halleck's caution would lead him to disapprove of this course; but it was the only one that gave any chance of success."⁹³ Indeed, as the assault against the Confederate defenses on the Big Black River unexpectedly began on 17 May, Grant received the telegram from Halleck advising him to link with General Banks and attack Port Hudson and

⁹³ Grant, *Memoirs*, 328.

Vicksburg sequentially with a combined force. Halleck sent the message on 11 May, the day Grant severed himself from communication with Washington, DC. Grant deliberately disregarded guidance that, in attempts to reduce political risks at the strategic level, threatened mission failure. Had he obeyed, Grant would have squandered the opportunity to achieve his true purpose. Herein lies an important lesson for military leaders who will find themselves in operating environments characterized by degraded communications due to electro-magnetic, space, and cyber threats. Sun-Tzu's assertion that "there are ... commands from the ruler not to be obeyed" may seem the antithesis to duty.⁹⁴ However, Chief of Staff of the Army General Mark A. Milley agreed, "The willingness to disobey specific orders to achieve the intended purpose, the willingness to take risks to meet the intent ... are all going to have to be elevated in the pantheon of leader traits."⁹⁵ So too did Lincoln agree, writing Grant after the fall of Vicksburg, "I thought you should go down the river and join Gen. Banks; and when you turned Northward East of the Big Black, I feared it was a mistake. I now wish to make the personal acknowledgment that you were right, and I was wrong."⁹⁶

Grant's Vicksburg campaign offers military leaders a wealth of considerations regarding operational art, operational design, and the habits of mind that drive their effective employment. Such patterns of strategic thought go beyond simply framing ends, ways, and means as implied by doctrine. Rather, the effective employment of operational art to link tactical action to strategic effect demands higher order thinking. Design provides a problem solving methodology where military leaders may seek to employ and defend against the phenomenon of reflexive control within operations and campaigns.

⁹⁴ Sun-Tzu, *Art of Warfare*, 135.

⁹⁵ C. Todd Lopez, "Milley: Army on cusp of profound, fundamental change," US Army, October 6, 2016, accessed November 25, 2016, https://www.army.mil/article/176231/milley_army_on_cusp_of_profound_fundamental_change.

⁹⁶ Gabel, *The Vicksburg Campaign*, 63.

Reflexive Control by Design

The design methodology offers organizations a method for comprehending complex problems across broad environments. It is not merely a series of staff actions and briefings culminating in orders production. Rather, it exists to link a commander's vision with execution. In unfamiliar environments, design provides a framework to evolve the commander's intent. Leaders should not misinterpret doctrine and infer that design consists of linear steps preceding detailed planning. As with Grant in 1863, commanders best employ operational design as a continuous iterative process occurring *concurrently* with other processes throughout the entire operation or campaign. Design provides commanders a way to evolve their understanding of the environment and maintain their vision and intent as living systems that may consciously address reflexive control. Figure five offers a visualization of the cognitive process incorporating reflexive control within design.

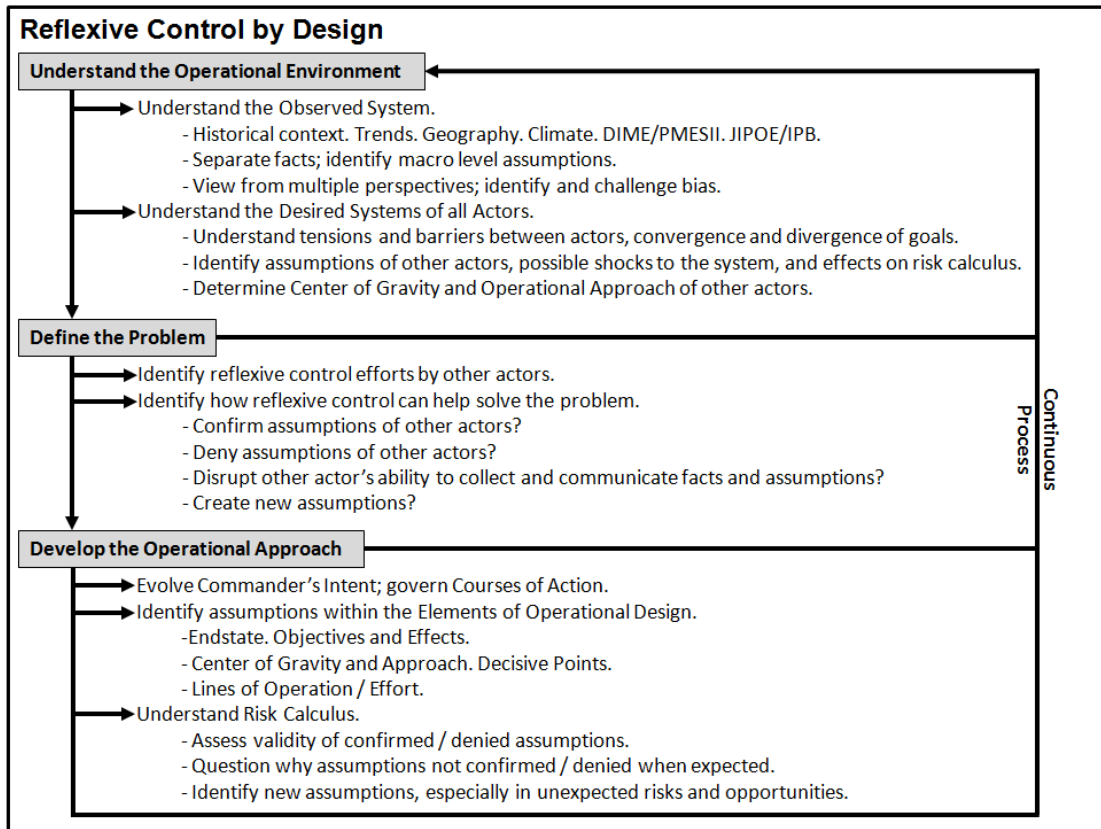


Figure 5. Reflexive Control by Design. *Source:* Author.

This framework offers a way leaders might better leverage their environmental understanding of the human domain to exploit adversary decision making against available options. Leaders seek to understand their environments as complex systems, both as objectively as possible, as well as through the subjective lenses of other actors. They orient on assumptions and risk of other actors within the system, and consider what specific ideas could alter the decision making of others. Reflexive control theory provides a frame for evaluating the assumptions and risk calculus of actors within the system, act in a manner to manipulate adversary decision making by confirming assumptions, creating new assumptions, and overloading decision making processes. Thus, leaders may employ operational art to achieve strategic effect by affecting subtle changes within a system to create a kind of unity of effort with other actors, as Grant did with Pemberton.

As with mission analysis in MDMP, understanding the operational environment is the most important part of design. Here, organizations seek systematic understanding of the environment as a complex adaptive system. Grant contended with the conflicted loyalties of the populace, frigid floods to stifling heat, severely restrictive terrain, and foes who served together before the war. Thus, systematic understanding includes history, culture, geography, climate, and trends of activity. These assist analysis of facts and assumptions to best understand the system as observed. In considering reflexive control, leaders challenge biases while identifying facts and assumptions, allowing identification of macro level assumptions about the environment.

Within an evolving understanding, organizations also consider the perspectives and designs of other actors. After his initial reverse in 1862, Grant gained and maintained a firm understanding of Pemberton's mission, operational approach, and terrain oriented vision. When considering reflexive control against such understanding, leaders continuously ask, "what assumptions are being made, and how do they affect risk calculus?" Understanding assumptions,

the designs of other actors, and an intimate knowledge of their decision making systems and risk calculus helps define the military problems that are solvable.

Defining the problem, the portion of design that logically summarizes the context of the environment to the mission, requires more than the defining of end state conditions. Had Grant limited his operational design to rigid orientation on his army seizing Vicksburg, he may have discouraged his ability to reframe in the changing environment and adapt to emergent opportunity. As then, organizations now should consider how reflexive control efforts by other actors create barriers to mission success. Additionally, understanding the problem may reveal how employing reflexive control may help address the problem. Leaders consider whether to confirm, deny, or create assumptions in the minds of other actors to promote greater unity of effort, even against adversaries. An adequately defined problem should envision how the reflexive control phenomenon can threaten or support the commander's operational art.

In Grant's case, the problem he envisioned led him to conclude his best approach as the least conventional; seizing a foothold on the east bank of the Mississippi *south* of Vicksburg and compelling Pemberton to give battle outside the city's defenses. Developing the operational approach evolves from the defined problem as the commander's vision to solve the problem. This portion of design provides the core for the commander's intent. Commanders, assisted by staffs, consider the desired, advantageous future, orient their design against the center of gravity of the problem, determine decisive points that attack the center of gravity, directly or indirectly, and link those decisive points along lines of operation or effort that lead to what doctrine calls "end state conditions." Reflexive control provides another method of exposing critical vulnerabilities of an adversary's center of gravity and offers possible insight of how decisive points create marked advantages.

Within this iterative process, staffs enable the commander to employ and defend against reflexive control by evolving risk analysis and decision support tools. Leaders update these tools

with the evolving understanding of the environment. As with Grant, design should be a continuous process within the mind of the commander and the collective consciousness of the organization. As such, the tools created to support design and the detailed planning it informs are living documents. Leaders facilitate this by continuously assessing assumptions, employing information collection to turn assumptions into facts, and analyzing why collection did not confirm or deny assumptions when expected. Leaders should pay particular attention to emerging assumptions, especially regarding unexpected risks or opportunities, consciously considering their effects on the risk calculus and decision making of their commander.

Conclusion

Grant's Vicksburg campaign masterfully achieved strategic effects by tactical actions across time and space, governed by an evolving operational design. Through understanding of his adversaries' assumptions and resulting risk, Grant repeatedly compelled Pemberton to act in a manner that created emergent opportunity within Grant's environment, directly resulting in the siege and ultimate surrender of Vicksburg. His operational art exhibited great flexibility, allowing the Army of the Tennessee to transition faster than its foes when changes within the environment demanded it. While Grant's own decisions and accepted risks may have seemed a gamble to his superiors and subordinates, in fact he maneuvered with conscious intent of exploiting his foe's decision making. Grant's employment of the military instrument of national power destroyed a Confederate army, seized decisive terrain, and thus achieved a major political objective, shocking the Confederate system in its effect. As such, analysis of Grant's operational design offers military leaders insight on how arrangement of the elements of operational art within the context of the environment better enables commanders to manage risk, manipulate adversaries, exploit opportunity, and better link tactical actions to achieve strategic effect.

Though Grant's essential task, seize Vicksburg, was terrain oriented, he designed his maneuvers around creating advantageous change within his environment. Grant's maneuvers compelled Pemberton to make decisions and take actions that created emergent opportunity in keeping with Grant's design. Grant's genius is not merely that he seized Vicksburg with bold maneuvers; his genius lay in employing physical maneuvers to exploit his opponent's own cognition, manipulating his decisions, and ultimately shattering his physical force and psychological will. In so doing, Grant's mission accomplishment became a foregone conclusion. Reflexive control theory, employed by design, offers one way whereby military leaders may seek to emulate such strategic patterns of thought.

However, there is no one correct problem solving methodology. The emotions, flaws, ignorance, and the biases of humanity eternally affect cognitive processes. As such, reflexive control theory does not offer a panacea for success in military design. Ultimately, reflexive control by design offers observations and tools that may enable leaders to better employ operational art to craft plans that might work rather than ones that will fail. The design methodology offers a way for organizations to understand and visualize their environments as a complex adaptive system, describe problems that can be solved, and in direction of better-informed actions, address those problems. Now, more than 150 years beyond Vicksburg, the United States faces challenges in a complex world instantly connected across multiple domains. To employ or defend against reflexive control, military organizations require deep understanding of their environments. To build teams characterized by strategic thinking, they should begin by emphasizing critical and creative thinking. As General Milley's comments attest, leaders facing the complex operational and strategic problems of the future *cannot* accept "doing what they are told" as the capstone of professional prowess. The speed and lethality of modern warfare requires critical and creative thinking to address complex problem sets. Promoting compliance and risk

aversion over mental agility and boldness is morally bankrupt, hollow rhetoric that pays its deficit with blood and treasure.

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