

# Integrating Army Aviation into the Combined Arms Team: Operational Art in Desert Shield and Desert Storm

A Monograph

by

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## Abstract

Integrating Army Aviation into the Combined Arms Team: Operational Art in Desert Shield and Desert Storm, by MAJ Chris D. Hanna, Army, 41 pages.

The challenge of balancing the employment of aviation assets between their tactical utility and their employment in accordance with the elements of operational art has existed from the earliest days of the helicopter. Discussion and debate about the role of rotary-wing assets, particularly as part of the combined arms team, has characterized the relatively short history of Army aviation. In the past thirteen years, corps and division commanders and their staffs have had little opportunity to employ rotary-wing aviation in the application of operational art through the full range of decisive action in combat. The US Army has primarily employed Army aviation as a tactical asset, with limited consideration for its ability to achieve strategic objectives in accordance with the elements of operational art, thereby limiting the contributions of rotary-wing aircraft to the combined arms team. The story of Army aviation leading up to Desert Shield and Desert Storm is about the development of an emerging alignment between new doctrine, the ideal organization, and what would eventually become a branch. The framework for the historical case study is the doctrinal relationship between the elements of operational art and the doctrinal missions of rotary-wing aviation. The framework enables an expanded understanding of how helicopters are employed in accordance with the elements of operational art as a member of the combined arms team. Most of the elements of operational art were apparent in the case study, and were enabled, either directly or indirectly, by rotary-wing aviation. This case study illuminated the relationship between basing, operational reach, tempo, and culmination, and more specifically, their relationship to the capabilities of Army aviation. Desert Storm serves as a reminder that when rotary-wing aviation is effectively integrated into the combined arms team, it is one of the greatest assets the US Army has in the application of operational art and in accordance with the tenets of Unified Land Operations.

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## Acronyms

ACAB	Air Cavalry Attack Brigade
ACR	Armored Cavalry Regiment
ADP	Army Doctrine Publication
ADRP	Army Doctrine Reference Publication
AH	Attack Helicopter
AHB	Assault Helicopter Battalion
AO	Area of Operations
ARB	Attack Reconnaissance Battalion
ARCENT	Army Central Command
ARS	Attack Reconnaissance Squadron
CAB	Combat Aviation Brigade
CENTCOM	Central Command
CIA	Central Intelligence Agency
CGSC	Command and General Staff College
CH	Cargo Helicopter
DRS	Division Restructuring Study
EA	Engagement Area
FM	Field Manual
FOB	Forward Operating Base
GSAB	General Support Aviation Battalion
HET	Heavy Equipment Transporter
JFC-E	Joint Forces Command-East
JFC-N	Joint Forces Command-North
LOC	Line of Communication
MARCENT	Marine Central Command

MEB	Marine Expeditionary Brigade
MLRS	Multiple Launch Rocket System
OPEC	Organization of the Petroleum Exporting Countries
TAA	Tactical Assembly Area
TF	Task Force
TRADOC	Training and Doctrine Command
UH	Utility Helicopter
ULO	Unified Land Operations
USAAVNC	United States Army Aviation Center

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## Introduction

Out of Vietnam came a generation of leaders determined to get a return on the investment in pain and blood. These people became the backbone of a new Army and of an Aviation force that would shock the world with its capability in 1991.

—Dr. James W. Williams, *A History of Army Aviation*

In 1962, when Secretary of Defense Robert S. McNamara directed the Army to conduct a comprehensive review of Army aviation, after action reviews from the Korean War identified the use of rotary-wing aircraft to enhance mobility as “a vital necessity.”<sup>1</sup> Although defined in US Army doctrine, McNamara used the term “mobility” to mean all of the potential operational capabilities that Army aviation could achieve if maximized as a resource.<sup>2</sup> McNamara's guidance led to the establishment of the US Army Tactical Mobility Requirements Board. Typically referred to as the Howze Board after its president, Lieutenant General Hamilton H. Howze, the board reviewed, as described in its final report, “all essential aspects of the very complex matter which is Army aviation.”<sup>3</sup>

The Howze Board's findings addressed a wide range of issues related to observation, attack, utility, and cargo aircraft for the Army inventory, aligning specific airframes with associated missions.<sup>4</sup> The report detailed the numbers and types of airframes that specific organizations would be assigned; an array representing echelons ranging from battalion to corps, taking into consideration infantry, armor, artillery, cavalry, transportation, and special forces.<sup>5</sup> The board

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<sup>1</sup> Christopher C. S. Cheng, *Air Mobility: The Development of a Doctrine* (Westport, CT: Praeger, 1994), 36. In 1953, General James L. Collins conveyed lessons learned from the Korean War to Congress where he indicated that air mobility was vital to the frontline troops due to otherwise impassable terrain.

<sup>2</sup> “Mobility was the key to putting art into operations.” Hew Strachan, “Operational Art and Britain, 1909-2009,” in *The Evolution of Operational Art: From Napoleon to the Present*, ed. John Andreas Olsen and Martin van Creveld (New York: Oxford University Press, 2011), 112.

<sup>3</sup> United States Continental Army Command, Fort Monroe, VA, Howze Board, US Army Tactical Mobility Requirements Board Final Report, 20 August 1962, vii.

<sup>4</sup> *Ibid.*, 2-3.

<sup>5</sup> *Ibid.*, 4-5.

recommended the changes to optimize the use of Army aircraft based on the echelon and mission of each organization, including the numbers and types of aircraft that each organization should receive. Instead of centralizing Army aviation aircraft, the aircraft were divided up and distributed. The final report represented a detailed and comprehensive solution for maximizing the effectiveness of rotary-wing aviation. Yet, the board struggled to find the right balance for the employment of this limited resource.<sup>6</sup> Viewing the board's findings from a modern perspective, one can see that it sought to delineate between the tactical and the operational employment of Army aviation's rotary-wing aircraft.<sup>7</sup>

Modern US Army doctrine defines the tactical level of war as "the level of war at which battles and engagements are planned and executed to achieve military objectives assigned to tactical units or task forces."<sup>8</sup> At the tactical level, rotary-wing aviation assists the commander to achieve a position of relative advantage in battles and engagements. In addition to providing tactical support to ground force commanders at brigade and below, however, rotary-wing aviation is also a tremendous asset to the application of operational art, a term first introduced in the 1986 version of Field Manual (FM) 100-5 *Operations*.<sup>9</sup> While not an American invention, the US Army concept of operational art grew out of the idea of an operational level of war, which first appeared in the

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<sup>6</sup> Howze Board, US Army Tactical Mobility Requirements Board Final Report, 1-5.

<sup>7</sup> Ibid., 1-8.

<sup>8</sup> Army Doctrine Reference Publication (ADRP) 3-90, *Offense and Defense* (Washington, DC: Government Printing Office, 2012), 1-1.

<sup>9</sup> Field Manual (FM) 100-5, *Operations 1986* (Washington, DC: Government Printing Office, 1986), 10. Operational art was originally defined in FM 100-5 as "the employment of military forces to attain strategic goals in a theater of war or theater of operations through the design, organization, and conduct of campaigns and major operations."

previous version of FM 100-5.<sup>10</sup> According to current joint doctrine, at the operational level of war “the focus...is on the design, planning, and execution of operations using operational art.”<sup>11</sup>

Therefore, the use of rotary-wing aviation in an operational role involves employment in a manner that remains consistent with the fundamentals of operational art.

Current US Army doctrine defines operational art as “the pursuit of strategic objectives, in whole or in part, through the arrangement of tactical actions in time, space, and purpose.”<sup>12</sup>

Commanders and their staffs use ten elements of operational art described in US Army doctrine to help them ensure their operations achieve maximum effect consistent with the application of operational art.<sup>13</sup> Although “Operational art applies to all levels of warfare,” the operational planning for the employment of rotary-wing aviation typically occurs at corps and division.<sup>14</sup> Due to the headquarters-centric nature of the corps and the division, and the necessity to integrate and synchronize aviation tactical actions in the combined arms team, the responsibility for the arrangement of a multitude of tactical actions resides at their level.<sup>15</sup> The US Army division is simultaneously the highest echelon tactical headquarters and the lowest echelon headquarters that

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<sup>10</sup> Michael D. Krause and R. Cody Phillips, *Historical Perspectives of The Operational Art*, CMH pub (Washington, DC: Center of Military History, United States Army, 2005), 15, 200; Jacob W. Kipp, “The Tsarist and Soviet Operational Art, 1853-1991,” in *The Evolution of Operational Art: From Napoleon to the Present*, ed. John Andreas Olsen and Martin van Creveld (New York: Oxford University Press, 2011), 65. The term “Operational Art” was first used by the Tsarist General Officer Aleksandr A. Svechin in 1922; Field Manual (FM) 100-5, *Operations 1982* (Washington, DC: Government Printing Office, 1982), 2-3. The operational level of war was described as “the theory of larger unit operations.”

<sup>11</sup> Joint Publication (JP) 3-0, *Joint Operations* (Washington, DC: Government Printing Office, 2011), I-13.

<sup>12</sup> Army Doctrine Reference Publication (ADRP) 3-0, *Unified Land Operations* (Washington, DC: Government Printing Office, 2016), 2-1.

<sup>13</sup> *Ibid.*, 2-4. The elements of operational art include phasing/transitions, risk, culmination, center of gravity, basing, lines of effort/lines of operation, operational reach, tempo, end state/conditions, and decisive points.

<sup>14</sup> *Ibid.*, 2-1.

<sup>15</sup> Army Doctrine Publication (ADP) 3-0, *Unified Land Operations* (Washington, DC: Government Printing Office, 2016), 4-5. Although operational art is not specific to a given echelon or formation, the corps and division arrange the most tactical actions in the application of operational art, and are required to manage the integration and synchronization of aviation tactical actions with all other tactical actions.

can operate as a joint command in limited contingency operations.<sup>16</sup> As such, the division often sits at the crossroads of tactical actions and operational art, making it particularly critical that the Army optimally balances the assets available to division headquarters, thereby maximizing their capability to achieve strategic objectives.

The challenge of balancing the employment of aviation assets between their tactical utility and their employment in accordance with the elements of operational art has existed from the earliest days of the helicopter.<sup>17</sup> Discussion and debate about the role of rotary-wing assets, particularly as part of the combined arms team, has characterized the relatively short history of Army aviation.<sup>18</sup> As a result, Army aviation has gone through multiple transformations, making significant technological, organizational, and doctrinal progress over the years.<sup>19</sup> Yet, many debates remain unresolved. At the root of these longstanding issues, one finds a tension between the use of Army aviation as a tactical asset, versus its operational employment; specifically, employment in support of one or more of the elements of operational art. As early as the Korean War, commanders discussed not only tactical uses of rotary-wing aviation, but also possible methods for capitalizing on its operational potential.<sup>20</sup>

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<sup>16</sup> Field Manual (FM) 3-94, *Theater, Army, Corps, and Division Operations* (Washington, DC: Government Printing Office, 2014), 1-7.

<sup>17</sup> Cheng, *Air Mobility*, 38-41. Although the Army was beginning to divide aviation assets at the division level between the “logistical mission” and the “tactical mission,” rotary-wing assets were viewed more in terms of overcoming the difficulties of terrain and augmenting ground vehicles, and less in accordance with the elements of operational art.

<sup>18</sup> Richard P. Weinert Jr, “A History of Army Aviation, 1950-1962” (Fort Monroe, VA: Office of the Command Historian, United States Army Training and Doctrine Command, 1991), 267-72.

<sup>19</sup> *Ibid.*

<sup>20</sup> Cheng, *Air Mobility*, 96. A manual from the Transportation School in 1952 stated that “The employment of helicopter transportation will vary with the operational decisions of the commanders according to the situations existing at the time of employment. Helicopter units may be logistically employed in supply and evacuation missions or as part of a coordinated tactical operation with other air and ground forces.” Although rotary-wing aviation did not appear to be employed in accordance with the elements of operational art at the time, Army leaders at least appeared to recognize the tactical and operational roles of rotary-wing aircraft.

In what may be the first historical employment of rotary-wing aviation in accordance with the elements of operational art, long before operational art and its elements were codified in Army doctrine, the Army observed the Marine Corps execute Operation Windmill I and II in September of 1951, during the Korean War.<sup>21</sup> This operation provided support to the ground force commander, Lieutenant Colonel Franklin B. Nihart, whose Marines were determined to clear the enemy from a group of ridges near an extinct volcano known as Punchbowl.<sup>22</sup> Operation Windmill I and II is significant because Nihart's operational tempo exceeded the capabilities of his ground logistical resupply assets, threatening the operation with culmination and failure. The operational employment of aviation support during Operation Windmill I and II to move 30,848 pounds of supplies and evacuate seventy-four casualties by rotary-wing air, enabled continuation of the mission.<sup>23</sup> This demonstrated the value of the creative integration of rotary-wing aviation as part of the combined arms team. Guided by concepts that later appeared in definitions of various elements of operational art, the helicopters employed in Windmill I and II enabled Nihart's unit to avoid early culmination, while extending his operational reach and helping him keep up the tempo needed to achieve his objectives.

Although this example predates the use of the term operational art in US Army doctrine, since that time operational art has matured, and doctrine aids commanders and planners in differentiating tactical versus operational considerations. Still, key events—such as multiple organizational transitions, and more than thirteen years of operations in Afghanistan and Iraq—have stymied the evolution of operational art as it relates to the employment of rotary-wing aviation

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<sup>21</sup> Charles R. Smith, *U.S. Marines in the Korean War* (Washington, DC: History Division, US Marine Corps, 2007), 710-11. Operation Windmill I and II was an attack to clear the enemy from ridges around an extinct volcano called the Punchbowl.

<sup>22</sup> *Ibid.*, 710.

<sup>23</sup> *Ibid.*, 710-11.

as a member of the combined arms team, encouraging a tactical mindset that remains prevalent today.<sup>24</sup>

The reorganization of Army aviation over the years from a multi-role, echelon-specific force structure to the combat aviation brigade of today has masked the underlying tension between the tactical versus the operational employment of rotary-wing assets. Although the latest Army Aviation capstone doctrinal publication describes different organizations for the tactical and the operational levels, questions remain with respect to maximizing the potential of this limited asset.<sup>25</sup> Instead of focusing on different organizations, perhaps the focus should be on the US Army's operational concept of Unified Land Operations (ULO). As noted in Army Doctrine Publication (ADP) 3-0, *Unified Land Operations*, ULO serves as the "overarching doctrinal guidance and direction for conducting operations."<sup>26</sup> It follows that one must evaluate operations from the perspective of ULO to determine optimal utilization. By using ADP 3-0 as a guide, therefore, commanders can apply operational art in a way that maximizes assets while remaining consistent with US Army capstone doctrine.<sup>27</sup>

The last thirteen years of war have seen a repetitive and banal emphasis on rotary-wing aviation at the tactical level, leading to a distressing erosion of skill in its use as a member of the combined arms team as it conducts operational art. Army aviation has most commonly performed direct support roles as aerial weapons teams and executed small-scale air assaults in support of elite military forces. In another common role, rotary-wing aviation has served as a general support

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<sup>24</sup> Military Technology, "US Army Aviation Modernisation Overview," *Military Technology* 33, no. 10 (2009): 39; John L Romjue, *The Army of Excellence: The Development of the 1980s Army*, ed. Henry O. Malone and John L. Romjue, TRADOC Historical Monograph Series (Fort Monroe, VA: Office of the Command History, TRADOC, 1993), 92-94.

<sup>25</sup> Field Manual (FM) 3-04, *Army Aviation* (Washington, DC: Government Printing Office, 2015), 2-1.

<sup>26</sup> ADP 3-0, iii. ADP 3-0 provides details on the guiding doctrine of unified land operations, including the four tenets of unified land operations and a section on operational art.

<sup>27</sup> *Ibid.*

transportation platform, moving soldiers, civilians, and contractors throughout the theater on a standardized schedule driven from the ground up via air mission requests. Such employment of rotary-wing aviation in stability operations has grown so commonplace that it seems embedded in the collective consciousness of the US Army, creating a deficient understanding of rotary-wing aviation in the larger scope of decisive action in the combined arms team.<sup>28</sup> Corps and division commanders and their staffs have had little opportunity to employ rotary-wing aviation in the application of operational art through the full range of decisive action in combat. The following study contributes to the knowledge base of the future operational artist by analyzing the employment of rotary-wing assets in accordance with the elements of operational art.

The US Army today faces a problem similar to the one that McNamara directed the Army to review comprehensively in the early 1960s.<sup>29</sup> Rotary-wing aviation remains a limited resource, although time has led to a widespread acceptance of its role as part of the force, if not consensus regarding the proper nature of that role. The analysis that follows seeks to increase awareness of the potential value of Army aviation in the application of operational art—a value that recent experience of warfare seems to have pushed outside the boundaries of the Army’s cultural consciousness. This requires an investigation of the historical employment of rotary-wing assets in accordance with the elements of operational art.

This monograph evaluates the employment of rotary-wing aviation consistent with the elements of operational art in the first major conflict after the introduction of operational art in official US Army doctrine: Operations Desert Shield and Desert Storm.<sup>30</sup> This analysis provides context and support to the argument that the US Army has primarily employed Army aviation as a

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<sup>28</sup> ADRP 3-0, 3-1. Decisive action is defined as “the continuous, simultaneous combinations of offensive, defensive, and stability or defense support of civil authorities tasks.”

<sup>29</sup> J.A. Stockfish, “The 1962 Howze Board and Army Combat Developments” (Santa Monica, CA: The RAND Corporation, 1994), 39-42.

<sup>30</sup> FM 100-5, 10.

tactical asset, with limited consideration for its ability to achieve strategic objectives in accordance with the elements of operational art, thereby limiting the contributions of rotary-wing aircraft to the combined arms team. Whereas operations are ideally planned in such a way as to maximize the value of all available assets in a resource-constrained environment, an overemphasis on individual battles and engagements may cause missed opportunities to arrange tactical actions to achieve strategic objectives. By using the elements of operational art described in ULO doctrine as a guide, Army planners can strive for the “quantum increase in effectiveness” that McNamara pursued.<sup>31</sup> This study provides detailed examples from Operations Desert Shield and Desert Storm in which rotary-wing aviation served as a member of the combined arms team in accordance with the elements of operational art.

## Evolution of Operational Art

The story of the evolution of operational art is in part about transcending a tactical mindset and viewing assets and resources from a bigger picture, with greater depth and breadth. Its origins are said to be rooted in the American Civil War, when on April 4, 1864, General Ulysses S. Grant sent a letter to Brigadier General William T. Sherman, describing a campaign plan that united multiple operations “toward a common center.”<sup>32</sup> In the letter, Grant described actions that various commanders must take to achieve effects above the tactical level and reach an objective consistent with his strategy. This involved the sequencing and arrangement of the military forces available to him. Grant had embraced the breadth and depth of the theater, and in doing so, embarked on a higher form of warfare. In Sherman's reply, he astutely observed: “that we are now all to act on a common plan, converging on a common center, looks like enlightened war.”<sup>33</sup> Sherman understood

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<sup>31</sup> Stockfish, “The 1962 Howze Board,” 41.

<sup>32</sup> James J. Schneider, *Vulcan's Anvil: The American Civil War and the Foundation of the Operational Art*, Theoretical Paper No. 4 (Fort Leavenworth, KS: US Army Command and General Staff College, 2004), 39.

<sup>33</sup> *Ibid.*, 40.

that Grant was thinking on a higher level and that in so doing, he planned to use familiar resources in an unfamiliar way to achieve victory above and beyond individual battles.<sup>34</sup>

In addition to the arrangement of tactical actions in time, space, and purpose, operational art is also a cognitive approach by which commanders and planners can creatively organize and coordinate military forces.<sup>35</sup> For Grant to arrange his forces and align tactical actions in pursuit of strategic objectives, he had to think differently. He had to let Sherman and his other generals fight the battles and engagements while he focused on the campaign and major operations, making the best use of limited resources.<sup>36</sup> Grant's arrangement of forces in his campaign plan is an example of an operational focus in planning, and the operational art exists in the development of the plan itself.

For commanders and planners to maximize the resources available to them, they use critical and creative thought to generate options for the most efficient and effective use of those resources. They use specific planning tools to ensure that they are thinking and planning operationally, and not just through the lens of the tactical commander. By approaching problems operationally, commanders and planners find ways to employ forces that transcend the tactical level of war. Grant's campaign, therefore, serves as an early example of the sort of thinking that was instrumental in the emergence of operational art.

Another step in the evolution of operational art occurred when armies could no longer depend on tactical actions alone to achieve victory in a given theater. When Soviet military theorist Aleksandr Svechin fought against Japan in the 1904 Russo-Japanese War, he gained firsthand experience with an enemy that employed a new art in the arrangement of military forces in the theater of operations.<sup>37</sup> In his strategic survey of the Russian failures in the Manchurian Campaign,

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<sup>34</sup> Schneider, *Vulcan's Anvil*, 39-40.

<sup>35</sup> ADRP 3-0, 2-1.

<sup>36</sup> ADRP 3-90, 1-1; ADRP 3-0, 1-8.

<sup>37</sup> Aleksandr A. Svechin, *Strategy*, ed. and trans. Kent D. Lee (Minneapolis, MN: East View Publications, 1992), 26

he highlighted the Japanese ability to “conquer space and time to bring about concentration of combat power at the decisive point and time to press the combat to culmination.”<sup>38</sup>

The Russians, on the other hand, pursued a more tactical approach on the main force of the enemy, based on the thinking that campaigns were won in a single decisive tactical victory instead of through the arrangement of tactical actions. Writing within the context of Russian military thinking of the time, and influenced by his own combat experiences, Svechin ultimately coined the term operational art to describe the phenomenon he observed. In the preface to Svechin’s *Strategy*, Jacob W. Kipp wrote about Russian military thinking at the time that “modern war had destroyed the symmetry of the Napoleonic paradigm in which tactics were the management of forces on the field of battle and strategy the maneuver of forces to the field of battle.”<sup>39</sup> The experience of the Russo-Japanese War demanded a new vocabulary to understand and describe the requirements that the more modern war demanded to achieve victory.<sup>40</sup>

The concept of operational art is also rooted in the emergence of an increasingly capable array of technologies available for the battlefield. New technologies presented commanders with new options and more tools to integrate and synchronize. When all a commander had at his disposal was foot soldiers with swords and shields, then his options were limited to what he could accomplish with the strength of his men. As firearms and artillery materialized, the variety of options for the commander to arrange his capabilities geometrically on the battlefield multiplied. At one point, it was enough for the commander to lead his infantry into battle, but as technology

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<sup>38</sup> Svechin, *Strategy*, 28.

<sup>39</sup> *Ibid.*, 26.

<sup>40</sup> *Ibid.*, 25-26; *The Operations Process* (Washington, DC: Government Printing Office, 2012), 1-3. Understand and describe are two functions of the operations process.

advanced, the commander was required to orchestrate a symphony of combat instruments.<sup>41</sup> The challenge, and thus the necessity for operational art, was in the efficient integration and synchronization of those instruments.<sup>42</sup>

The response to new technologies caused the battlefield to grow exponentially in depth and breadth. As the accuracy and rate of fire for weapons systems increased, so did the size of the battlefield.<sup>43</sup> If soldiers stood to face the enemy in rank and file, a machine gun could annihilate their forces within minutes. Massed attacks by cavalry armed with sabers were no match for well-aimed rifle fire and artillery.<sup>44</sup> Military forces were required to spread out in response to the lethal capacity of new weapons systems.<sup>45</sup> Technology, however, was not decisive in the Russo-Japanese War. The difference was in how the commanders arranged and coordinated their forces on a battlefield with a “breadth and depth” that was “unthinkable only a half century before.”<sup>46</sup>

Today, particularly because of the technological advancements in the application of military force, the army that can most efficiently and effectively synchronize and integrate resources and firepower on its opponent has the relative advantage. The “common center” that Grant synchronized all his forces towards was the decisive point.<sup>47</sup> He sought to integrate his forces to achieve a synchronized mass at a given time and space. The example of Grant's operational art

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<sup>41</sup> “Conceptually, synchronization is similar to blending different instruments of an orchestra to produce the desired harmony and timing of a musical piece. Commanders, like musical directors, must trust the various sections to play their parts...The product - synchronization - is a maximum economy of force, with every resource used where and when it will make the greatest contribution to success so that nothing is wasted or overlooked.” Robert H. Scales, *Certain Victory: The U.S. Army in the Gulf War* (Washington, DC: Office of the Chief of Staff, US Army, 1993), 108.

<sup>42</sup> John Andreas Olsen and Martin van Creveld, eds., *The Evolution of Operational Art: From Napoleon to the Present* (New York: Oxford University Press, 2011), 1; Strachan, “Operational Art and Britain, 1909-2009,” 114-15; Svechin, *Strategy*, 28; ADP 3-0, 8.

<sup>43</sup> Schneider, *Vulcan's Anvil*, 9.

<sup>44</sup> Geoffrey Wawro, *The Franco-Prussian War: The German Conquest of France in 1870-1871* (New York: Cambridge University Press, 2003), 60.

<sup>45</sup> Schneider, *Vulcan's Anvil*, 9.

<sup>46</sup> *Ibid.*, 1-9; Svechin, *Strategy*, 28.

<sup>47</sup> ADRP 3-0, 2-5. Decisive point is an element of operational art.

highlighted simultaneity, synchronization, and depth, all of which are US Army tenets of unified land operations according to current doctrine.<sup>48</sup> The modern US Army is pursuing the same ideas albeit with more tools and resources. Campaigns and major operations are planned for the integration and synchronization of air, ground, and sea power to destroy the enemy in depth, consistent with unified land operations.<sup>49</sup> The success of this pursuit, however, is partly dependent upon how well the US Army employs rotary-wing aviation in the application of operational art.

## Background

The story of Army aviation leading up to Desert Shield and Desert Storm is about the development of an emerging alignment between new doctrine, the ideal organization, and what would eventually become a branch. The Howze Board of 1962 and the Vietnam War were major contributors to the success story of rotary-wing aviation in the US Army.<sup>50</sup> The 11th Air Assault Division (Test), established February 15, 1963, experimented with the ideas of the Howze board and made significant tactical advances that would be further developed and employed in Vietnam.<sup>51</sup> The war provided continued experimentation with the capabilities of rotary-wing aviation, advancing its role as a member of the combined arms team, which played an important function in the evolving inclusion of Army aviation in the application of operational art.

At the time, those who spoke of rotary-wing use in the Army primarily used tactical terminology, however, a tension began to develop about the echelons at which helicopters should exist within Army organizations. The beginnings of the concept of sky cavalry highlight one such

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<sup>48</sup> ADP 3-0, 8.

<sup>49</sup> Antulio J. Echevarria, "American Operational Art, 1917-2008," in *The Evolution of Operational Art: From Napoleon to the Present*, ed. John Andreas Olsen and Martin van Creveld (New York: Oxford University Press, 2011), 155.

<sup>50</sup> "Aviation entered Vietnam more than half fixed-wing. By 1970 Aviation was 80 percent helicopters." James W. Williams, *A History of Army Aviation: From its Beginnings to the War on Terror* (New York: iUniverse, 2005), 96; *ibid.*, 95-106.

<sup>51</sup> Williams, *A History of Army Aviation*, 107.

case. General Hamilton H. Howze wrote in an appendix to the 1960 Rogers Board report that “In the days when the horse provided the highest degree of battlefield mobility, it would have been a fundamental error to restrict the assignment of horses to the infantry divisions. While infantry divisions employed horses in considerable quantities, with benefit, it was necessary and desirable to group substantial percentage of all the horses in cavalry units to take proper advantage of their mobility.”<sup>52</sup>

When the Vietnam War ended, although rotary-wing aviation had made improvements, the Army as a whole had its doctrine reviewed in the wake of defeat. The new doctrine that emerged introduced two new concepts over time, that would help bring into focus many of the same challenges armies have wrestled with in history. The Army’s guiding doctrine on operations, FM 100-5, introduced the operational level of war in 1982, and operational art in 1986.<sup>53</sup>

The same 1982 version of FM 100-5 that introduced the operational level of war also introduced the concept of AirLand Battle as the doctrine of offensive warfare. By 1990, the concept of AirLand Battle had improved upon the airmobile concept, and a new era of depth and synchronization came to fruition.<sup>54</sup> According to Thomas Houlahan, author of *Gulf War: The Complete History*, “The goal of the AirLand Battle is to paralyze a numerically superior force using speed, maneuver and firepower that is both precise and massive.”<sup>55</sup> Desert Storm would see this doctrine in action, in combination with the successful application of operational art.

In November 1979, Major General James H. Merryman, Commanding General, United States Army Aviation Center (USAAVNC), wrote that the Air Cavalry Attack Brigade (ACAB)

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<sup>52</sup> Cheng, *Air Mobility*, 137.

<sup>53</sup> FM 100-5, 2-3; FM 100-5, 10.

<sup>54</sup> Thomas Houlahan, *Gulf War: The Complete History* (New London, NH: Schrenker Military Pub., 1999), 109. AirLand Battle doctrine was actually introduced in FM 100-5 in August of 1976, but was adopted as the doctrine of offensive warfare in the 1982 version of FM 100-5; FM 100-5, 2-1.

<sup>55</sup> Houlahan, *Gulf War*, 109.

was “designed to maximize the capabilities of aviation within the division.”<sup>56</sup> At the time, a Division Restructuring Study (DRS) Group had been looking to maximize the capabilities of all Army assets. The DRS was absorbed into Division 86, which was a “comprehensive force structure study” intended to “organize Army assets into the most capable fighting force for the 1980s.”<sup>57</sup> Central to the idea of an ACAB was that aviation organizations, specifically air cavalry and attack, should not be organized by specific mission, but instead should be in a single organization that conducts multiple missions.<sup>58</sup> Essentially, aviation needed a flexible organization, optimized to arrange tactical actions in time, space, and purpose to achieve strategic objectives. Over time, this idea would become the Aviation Brigade.

When Army leaders began to consider establishing Army Aviation as a standalone branch in the early 1980s, they faced several concerns. Perhaps the most significant of the concerns dealt with officers in other branches who, some feared, might not develop the experience with aviation that they needed to prepare them to employ rotary-wing assets as leaders in combined arms teams. This concern reflected a unique period in Army aviation’s development—a time when the integration of rotary-wing assets into the combined arms team approached an apex in its complexity, caused by various technological developments such as the incorporation by potential enemies of capable but relatively inexpensive counter-air assets that could make the US Army’s use of rotary-wing aviation particularly risky. Thus, at a critical point in the evolution of operational art as it relates to the employment of rotary-wing aviation as a member of the combined arms team, the threat of enemy countermeasures slowed down the transformative process.<sup>59</sup>

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<sup>56</sup> James H. Merryman, “Air Cavalry Attack Brigade,” *U.S. Army Aviation Digest* 25, no. 11 (November 1979): 2; Williams, *A History of Army Aviation*, 200.

<sup>57</sup> Merryman, “Air Cavalry Attack Brigade,” 1.

<sup>58</sup> *Ibid.*, 2-5.

<sup>59</sup> Williams, *A History of Army Aviation*, 218-20.

Despite the concerns, Army Aviation became a separate branch, and with it went a majority of the expertise in rotary-wing aviation. Meanwhile, the operational environment has continued to increase in complexity, and one finds missions like air assault operations described in US Army doctrine as “the total integration of available firepower.”<sup>60</sup> There have been examples of Army aviation being employed in accordance with the elements of operational art in US Army history, but by and large, the operational employment of Army aviation has been stymied by a particular tactical mindset—the result of thirteen years’ experience in stability operations. A historical case study of the operational employment of Army aviation may help reignite an evolution in an operational art that has been slow in the making.<sup>61</sup>

## Relationship of Army Aviation Missions to the Elements of Operational Art

The standard Combat Aviation Brigade (CAB) described in FM 3-04 *Army Aviation*, the Army’s capstone doctrinal publication for conducting aviation operations, consists of four organic rotary-wing subordinate echelons: an attack reconnaissance squadron (ARS), an attack reconnaissance battalion (ARB), an assault helicopter battalion (AHB), and a general support aviation battalion (GSAB).<sup>62</sup> Each of these organizations has mission tasks that are specific to the capabilities of their organic aircraft. When employed, they help the ground force commander win battles and engagements, and they assist in the arrangement of tactical actions in time, space, and purpose in pursuit of strategic objectives.<sup>63</sup>

US Army doctrine describes the elements of operational art as “intellectual tools” that “help commanders understand, visualize, and describe the integration and synchronization of the elements

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<sup>60</sup> Field Manual (FM) 3-99, *Airborne and Air Assault Operations* (Washington, DC: Government Printing Office, 2015), 8-1.

<sup>61</sup> Williams, *A History of Army Aviation*, 218-20; Cheng, *Air Mobility*, 148-64.

<sup>62</sup> FM 3-04, vii, 2-2.

<sup>63</sup> ADRP 3-0, 2-1.

of combat power as well as their commander's intent and guidance.”<sup>64</sup> They are tools that provide context and purpose to tactical actions. While developing an understanding of the operational environment, commanders and their staffs must be able to visualize and describe the integration and synchronization of rotary-wing aviation in the combined arms team. Enhanced familiarity with the relationship between Army aviation missions and the elements of operational art will aid them with these tasks.

A review of FM 3-04 reveals that an “Operational Impacts” section specifically identifies three of the ten elements of operational art: operational reach, basing, and risk.<sup>65</sup> Operational reach is the distance that military forces can cover, and the duration that their capabilities can be sustained.<sup>66</sup> According to Aviation doctrine, rotary-wing aviation supports operational reach by transporting “logistical supplies and personnel where they are needed, and through firepower provided by attack and reconnaissance assets.”<sup>67</sup> Therefore, not only logistical resupply, but attack and reconnaissance as well, contribute to the sustainment and extension of operational reach.

Another element of operational art described in FM 3-04 is basing. In a subsection to operational reach, the description of basing is aviation specific and provides details about the needs and capabilities a base provides for aviation. For the purpose of the case study framework, it is equally important to view basing as something that aviation helps the ground force commander achieve, not just the capabilities that aviation can provide from an appropriate base. Rotary-wing aviation support to basing includes air assaults and air movements.<sup>68</sup>

Risk is addressed as risk management in the Operational Impacts section, and is tailored to aviation operations. As an element of operational art, risk is described as an opportunity “to seize,

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<sup>64</sup> ADRP 3-0, 2-4.

<sup>65</sup> FM 3-04, 4-7.

<sup>66</sup> ADRP 3-0, 1-10.

<sup>67</sup> FM 3-04, 4-7.

<sup>68</sup> FM 3-04, 4-8.

retain, and exploit the initiative and achieve decisive results.”<sup>69</sup> The capabilities of rotary-wing aviation present the commander with dilemmas related to the balance between seeking opportunity while managing risks. When the commander determines that the reward is worthy and the risks are minimized, accepting risk in the employment of rotary-wing aviation can provide an asymmetric advantage in combat.

## Methodology

The framework for the historical case study is the doctrinal relationship between the elements of operational art and the doctrinal missions of rotary-wing aviation. The doctrinal relationship establishes a baseline framework for the case study. A survey of historical accounts of US Army helicopters in combined arms teams reveals situations in which their employment followed the elements of operational art. The employment of rotary-wing aviation in accordance with the elements of operational art serves to highlight how commanders and their staffs integrate Army aviation as a member of the combined arms team in pursuit of strategic objectives. In addition to identifying historical accounts that are consistent with doctrine, the case analysis provides examples of the employment of rotary-wing aviation in accordance with the elements of operational art for which Army Aviation doctrine has not accounted. The case analysis, therefore, serves to expand the understanding of the role Army Aviation plays as a maneuver force serving as a member of the combined arms team in the application of operational art.

To understand the role of Army aviation within the context of operational art requires consideration of the full spectrum of current rotary-wing missions assigned by doctrine. By comparing the missions to the elements of operational art, a framework emerges that can be used for historical analysis. Specifically, the framework enables an expanded understanding of how

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<sup>69</sup> ADRP 3-0, 2-10.

helicopters are employed in accordance with the elements of operational art as a member of the combined arms team.

Operations Desert Shield and Desert Storm serve as an ideal case of the employment of rotary-wing aviation as a member of the combined arms team in the application of operational art. By the time the operations took place, helicopters had been around long enough for several key things to take place. First, the Army had taken lessons learned from the Korean War to align capabilities, missions, and organizations, indicating an emerging clarity between the tactical and operational employment of helicopters. Even though working groups like the Howze Board had apparently tried to perfectly match needs and resources by assigning specific aircraft types to specific echelons, at least they had identified that helicopters can play a role that transcends the tactical level of war.

The Army had also fought in a major conflict in the interim between the Korean War and Operations Desert Shield and Desert Storm where the use of rotary-wing aviation in Army operations matured significantly. The Vietnam War provided the opportunity to evaluate helicopter operations in combat, in an environment that differed enough from Korea to provide varying perspectives on capabilities. The Vietnam War tested the ideas of air mobility and air cavalry, and offered the opportunity to evaluate the alignment of aircraft mission types and capabilities to specific echelons and organizations.

Finally, Operations Desert Shield and Desert Storm occurred in the post-Vietnam War era, after the long and iterative evolution that led to the adoption of AirLand Battle doctrine and the introduction of operational art to the US Army lexicon. Unlike Vietnam-era doctrine, the tenets of AirLand Battle are similar to the modern capstone doctrine of Unified Land Operations, which serves as a lens for the case study. Similarly, ULO provides the elements of operational art, which arose from the evolution of doctrine in the 1980s, as a framework for the case study. From this perspective, Desert Shield and Desert Storm offer a view of rotary-wing aviation in the application

of operational art that are both well-suited to analysis of the Army's first test of AirLand Battle doctrine, and useful for the operational planner as an example of how to integrate Army aviation as a member of the combined arms team for maximum effect.

## Case Study

### Strategic Context

In July of 1990, Iraqi intelligence intercepted a telephone conversation between the emir of Qatar and the King of Saudi Arabia. The conversation took place prior to an Organization of the Petroleum Exporting Countries (OPEC) meeting of Arab Gulf members, to discuss overproduction issues in the oil industry. The telephone intercept confirmed for the Iraqi President Saddam Hussein that an economic conspiracy was taking place, and that the "two rulers were plotting against Iraq's interests."<sup>70</sup> The issue for Baghdad was that the overproduction of oil by Kuwait in the spring of 1990 had depressed the price of oil to a point far below the reference price set by OPEC per barrel. With the Iraqi armed forces numbering more than 1.2 million soldiers as a result of the buildup and involvement in the Iran-Iraq War that ended in 1988, Saddam Hussein had the numbers that he needed to change the balance of power in the Arab world.<sup>71</sup>

On August 2, 1990, Iraq invaded its southern neighbor, Kuwait with a use of force intended to annex the oil rich country.<sup>72</sup> A week later, Saddam Hussein declared that Kuwait was henceforth Iraq's nineteenth province. In response, the United States spent the next five and a half months

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<sup>70</sup> Dilip Hiro, *Desert Shield to Desert Storm: The Second Gulf War* (New York: Routledge, 1992), 85.

<sup>71</sup> Hiro, *Desert Shield to Desert Storm*, 83-87, 56, 46; Herbert H. Blumberg and Christopher C. French, eds., *The Persian Gulf War: Views from the Social and Behavioral Sciences* (Lanham, MD: University Press of America, 1994), 17.

<sup>72</sup> Blumberg and French, *The Persian Gulf War*, 29.

building up forces in northeast Saudi Arabia during Operation Desert Shield, in preparation for offensive operations.<sup>73</sup>

A Central Intelligence Agency (CIA) assessment of Iraqi Divisions that would occupy Kuwait proved to be inaccurate, as new assessments indicated double the original number.<sup>74</sup> The commander of US Central Command (CENTCOM), General Norman Schwarzkopf, believed that massive troop numbers would be required to remove Iraq from Kuwait.<sup>75</sup> In late October 1990, General Colin Powell was in Washington, DC, explaining Schwarzkopf's request for doubling forces. President George H. W. Bush was anticipating a troop increase for offensive operations, but had been waiting to hear from General Schwarzkopf about exactly how many were needed. Growing concern at home about going to war for oil and of an outside event causing the Arab coalition to crumble intensified, and within just a few days of meeting with General Powell, President Bush approved a timetable for both an air and ground campaign.<sup>76</sup>

## Desert Shield

The first soldiers to arrive in the CENTCOM area of responsibility on August 8, 1990, were from the 82nd Airborne Division, which initially established positions behind a Saudi task force that was guarding the border between Saudi Arabia and Kuwait.<sup>77</sup> The Saudi leader, King Fahd, was initially reluctant about authorizing an American military buildup along the Saudi/Iraqi border. However, he realized that waiting until the last minute for Saddam Hussein to make his intentions clear had resulted in the Kuwaiti government failing to ask for help in time, leaving them

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<sup>73</sup> Williams, *A History of Army Aviation*, 236-37.

<sup>74</sup> Hiro, *Desert Shield to Desert Storm*, 227.

<sup>75</sup> H. Norman Schwarzkopf and Peter Petre, *It Doesn't Take a Hero: General H. Norman Schwarzkopf, The Autobiography* (New York: Bantam Books, 1992), 317, 425-26; Hiro, *Desert Shield to Desert Storm*, 5; Houlahan, *Gulf War*, 16-17.

<sup>76</sup> Hiro, *Desert Shield to Desert Storm*, 227-29; Houlahan, *Gulf War*, 17.

<sup>77</sup> Houlahan, *Gulf War*, 14.

vulnerable when the invasion began.<sup>78</sup> With King Fahd's approval, the US began to build a coalition while deploying troops to defend Saudi Arabia from Iraqi invasion. Guided in large part by the findings of a war fighting exercise named Internal Look, US forces conducted what Robert Scales deemed "a buildup of unprecedented speed and austerity."<sup>79</sup> Military planners had to be careful in the buildup based on the necessity to ensure safe and secure air and port operations. Army aviation was among the first elements to deploy to the Middle East.<sup>80</sup>

The initial US forces that arrived in theater were a task force from the 82nd Airborne Division that made up the first of a three-part plan called Desert Dragon.<sup>81</sup> The forces that encompassed Desert Dragon I included three infantry battalions, an AH-64 Apache attack helicopter battalion, a light tank company, 105 howitzer battalion, and a Multiple Launch Rocket System (MLRS) platoon.<sup>82</sup> This predominately light force of paratroopers secured Dhahran Air Base as well as the port of ad-Dammam. Additionally, the troops had the key task of keeping Iraqi artillery out of range of the air base and port. Attack aviation was intended for use in depth, operating at the forward edge of the small element's operational reach, to strike deep at the mobile Iraqi armored units as necessary. Although no such deep attacks were required, the presence of Desert Dragon I served to draw a line in the sand, deterring Iraqi incursions into Saudi Arabia, as well as providing a sense of calm in an otherwise unstable situation in the region. In a matter of days, rotary-wing aviation would play a key role in securing a base of operations from which to expand.<sup>83</sup>

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<sup>78</sup> Houlahan, *Gulf War*, 12-13.

<sup>79</sup> Scales, *Certain Victory*, 59-60.

<sup>80</sup> *Ibid.*, 50.

<sup>81</sup> Richard W. Stewart, *War in the Persian Gulf: Operations Desert Shield and Desert Storm: August 1990-March 1991* (Washington, DC: Center of Military History, 2010), 6-8; Scales, *Certain Victory*, 49.

<sup>82</sup> *Ibid.*, 82.

<sup>83</sup> Scales, *Certain Victory*, 82-86.

Desert Dragon II soon arrived to expand the defensive enclave occupied by Desert Dragon I. The 4-325th Airborne Infantry occupied the Port of al-Jubayl, 110 miles to the north, to enable the arrival of the 7th Marine Expeditionary Brigade (MEB). As the US forces increased in number, Army aviation forces grew as well. With two attack helicopter battalions on station as of August 24, rotary-wing aviation would soon be able to maintain a screen along the northern front of the established forces while pushing Iraqi forces deeper into Kuwait.<sup>84</sup> To conduct this screen in an area 215 by 130 miles, the aviation units required a more northern base from which to operate, and additional helicopters.<sup>85</sup> While more aviation units were activated and mobilized, Desert Dragon II used the additional forces to establish a new base to the north.<sup>86</sup>

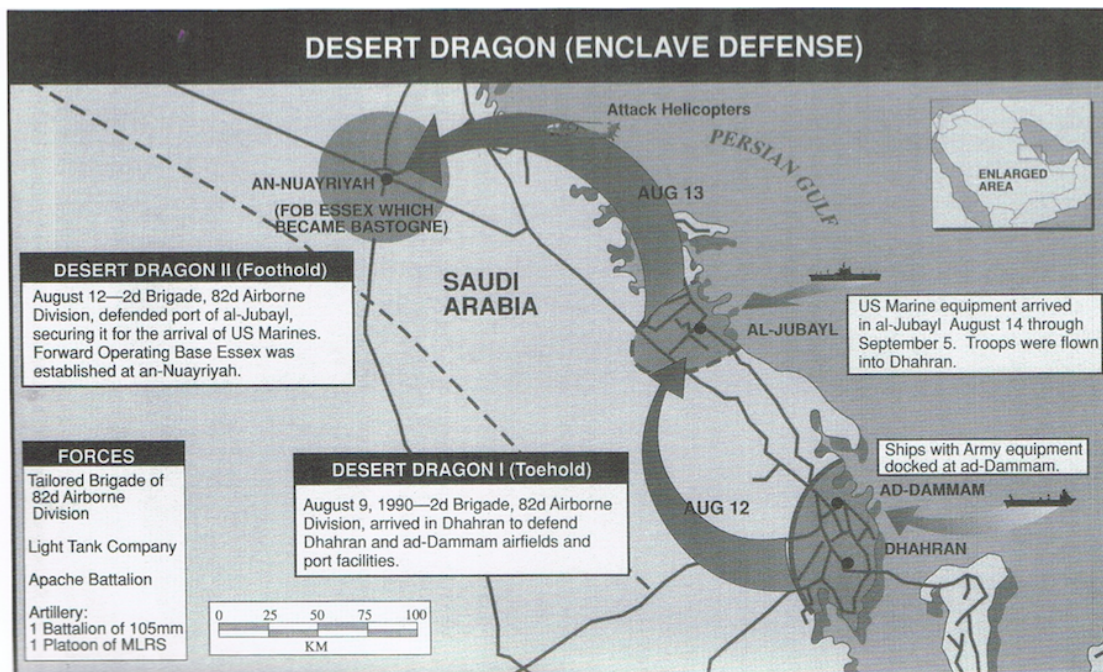


Figure 1. Desert Dragon I and II. Robert H. Scales, *Certain Victory: The U.S. Army in the Gulf War* (Washington, DC: Office of the Chief of Staff, US Army, 1993), 84.

<sup>84</sup> Scales, *Certain Victory*, 86-87; “While a screen provides minimal protection as compared to a guard or cover, Army Aviation’s lethality, speed and long range precision fires significantly enhances the level of protection and reaction time provided by a screen.” FM 3-04, 3-20; ADRP 3-90, 5-3. Screen is defined as “A security task that primarily provides early warning to the protected force.”

<sup>85</sup> Scales, *Certain Victory*, 90.

<sup>86</sup> *Ibid.*, 85.

Leading up to the combat operations of Operation Desert Storm, by August 24 the 82nd Airborne Division had established forward operating base (FOB) Essex at an-Nuayriyah, Saudi Arabia. This position, which included fifteen Apache attack helicopters, provided a defensive screen along the Iraqi Army's potential avenues of approach. The establishment of FOB Essex afforded attack helicopters the opportunity to engage the enemy more quickly and efficiently, providing additional time and space for coalition forces to react and maneuver.<sup>87</sup> Desert Dragon III began when the 24th Armored Division arrived on August 27, and significantly limited offensive options available to Saddam Hussein.<sup>88</sup>

With the arrival of the 101st Airborne Division (Air Assault), the theater continued to take shape and provide freedom of maneuver to coalition forces. On September 1, the 101st Airborne Division was ordered to replace the 82nd Airborne Division at FOB Essex, with the 82<sup>nd</sup> Airborne Division ordered to move south to protect what was becoming coalition forces rear area.<sup>89</sup> The 101st renamed the FOB Bastogne, and established area of operations (AO) Normandy north of FOB Bastogne to allow the Apache and Cobra attack helicopters freedom of maneuver to mass fires, lengthen the screen along the border, and delay a potential attack by an Iraqi armored force.<sup>90</sup>

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<sup>87</sup> Scales, *Certain Victory*, 86.

<sup>88</sup> *Ibid.*, 90.

<sup>89</sup> *Ibid.*, 92.

<sup>90</sup> *Ibid.*, 86-93.

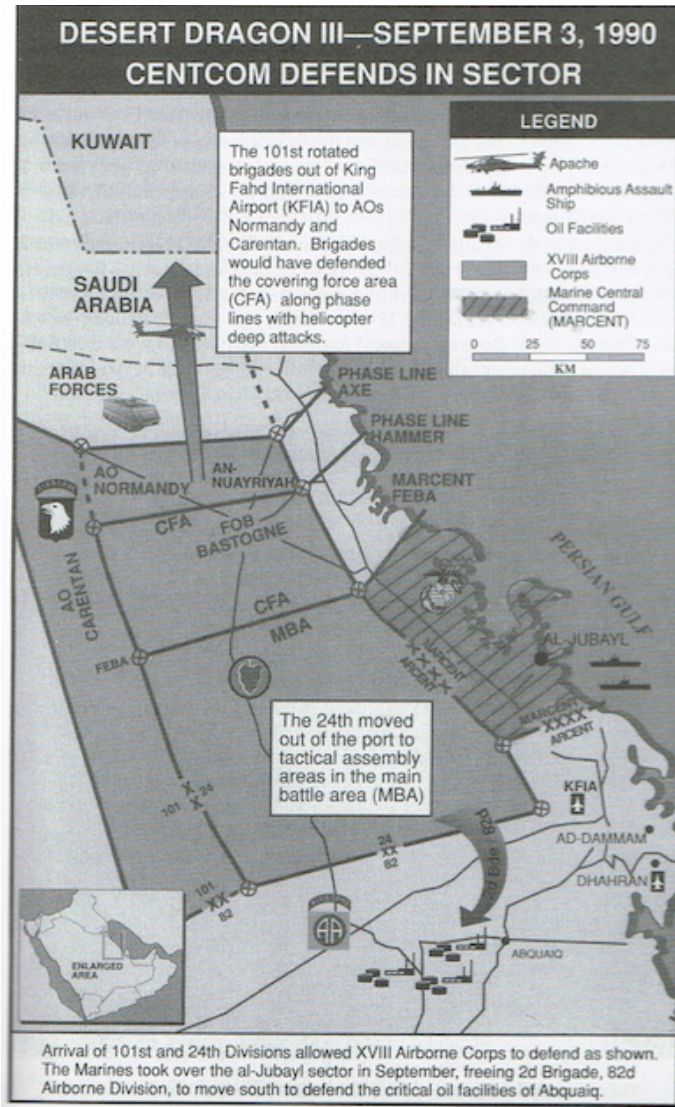


Figure 2. Desert Dragon III. Robert H. Scales, *Certain Victory: The U.S. Army in the Gulf War* (Washington, DC: Office of the Chief of Staff, US Army, 1993), 91.

Coalition actions during Operation Desert Shield confirmed and expanded the role of Army aviation as a significant member of the combined arms team. Rotary-wing aviation was ever-present, necessary, and even critical in forming the original enclave at Dhahran Air Base and the Port of ad-Dammam, conducting the move up to the Port of al-Jubayl, establishing FOB Essex (later FOB Bastogne), and enabling the emergence of a defined AO. American forces arranged the aviation units' tactical actions along the way so that they proved instrumental in the pursuit of

strategic objectives every step along the way, with their actions integrated with those of all other members of the combined arms team.

Rotary-wing aviation in Desert Shield played a role in US forces' conduct of the campaign in keeping with the elements of operational art; most notably with basing, operational reach, tempo, culmination, and risk. Army aviation support to the establishment of a FOB and the expansion of the AO provide examples of basing and operational reach. The speed and efficiency with which Apache attack helicopters could have responded to an incursion by Iraqi forces provided an environment for coalition forces to build the necessary strength to initiate the ground campaign. This ability allowed time for coalition forces to respond if necessary, thereby taking away an advantage of tempo that the Iraqi forces might have otherwise had, and preventing an early culmination to coalition forces. Buying time for coalition forces to react also reduced the inherent risk of the necessary buildup and expansion. Army aviation provided the capabilities that enabled the preparations for offensive operations.

## Desert Storm

Operation Desert Storm, consisting of an air and ground campaign into Iraq, was described by historian Kevin Hutchinson as “one of the most operationally successful wars in history,” and provided the US Army with an opportunity to test the new AirLand Battle doctrine that had become the focal point for the previous eight years.<sup>91</sup> The air campaign began on January 17, 1991, and was expected to last less than a week. However, it took another six weeks before the ground campaign began.<sup>92</sup>

A US Army Apache attack helicopter fired the first shot of Desert Storm at 2:38 a.m., January 17. Guided by ground positioning system (GPS)-equipped Air Force Pave Low helicopters,

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<sup>91</sup> Kevin Don Hutchison, *Operation Desert Shield/Desert Storm: Chronology and Fact Book* (Westport, CT: Greenwood Press, 1995), xv.

<sup>92</sup> Hiro, *Desert Shield to Desert Storm*, 319-20.

Task Force (TF) Normandy eluded radar detection and conducted a surprise attack approximately twenty miles into enemy territory. In all, eight Apache attack helicopters unloaded their armament on a series of Iraqi early-warning radar sites in An Nukhayb, a critical component of their air defense system. The destruction of the sites opened a twenty-five-mile-wide gap through which the coalition air forces passed undetected to begin a devastating air campaign, beginning with ten F-117A Nighthawk stealth aircraft. After the attack, as the TF Normandy crews were returning to base, they heard over one hundred jets pass overhead. The Desert Storm air campaign had begun with a joint, integrated and synchronized attack in depth against an enemy temporarily paralyzed by speed and lethality.<sup>93</sup>

The engagement of the An Nukhayb radar site is an example of the employment of rotary-wing aviation against a decisive point. The attack on the radar site provided a path for the air campaign to take the next step towards air superiority in the area of operations. According to Army Doctrine Reference Publication (ADRP) 3-0, “Decisive points help commanders select clear, conclusive, attainable objectives that directly contribute to achieving the end state.”<sup>94</sup> Doctrine also indicates that the decisive point applies at the both the operational and tactical level.<sup>95</sup> In this case, the decisive point was both an end state at the tactical level, as well as a tactical action in pursuit of a strategic objective. The engagement achieved a tactical end state by achieving its objective—destruction of the radar sites. This action also enabled the joint combined arms team to operate according to the elements of operational art with speed and lethality; not only in the success of the Apache deep attack, but also in the initial phase of the air campaign which penetrated all the way to

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<sup>93</sup> Scales, *Certain Victory*, 157-60; Houlahan, *Gulf War*, 24-25; Williams, *A History of Army Aviation*, 246-52.

<sup>94</sup> ADRP 3-0, 2-5.

<sup>95</sup> *Ibid.*

Baghdad, inflicting significant damage on key military infrastructure while meeting minimal resistance.<sup>96</sup>

Once the air campaign blinded Saddam Hussein, making it impossible for him or his generals to monitor the activities of coalition forces, General Schwarzkopf arrayed his forces along the Iraqi-Saudi border west of the Wadi al-Batin, in preparation for what would later be termed the “Hail Mary.”<sup>97</sup> By combining an amphibious feint in the Persian Gulf with an initial attack into southern Kuwait by Marine and Arab forces, the coalition kept Iraqi leadership focused south and east, and not to the west and north where their lines of communication (LOC) were vulnerable.<sup>98</sup> Saddam Hussein had accepted risk by assuming that coalition forces would not strike that far deep into Iraq. Little did he know that he would eventually be cut off from his base of supply, and in a fight for the survival of the Iraqi Army. Before the coalition ground campaign began, however, joint and coalition air forces needed time to cripple the Iraqi Army’s ability to prosecute an effective fight.<sup>99</sup>

The ground campaign of Desert Storm finally began at 4:00 a.m. on February 24, when, as Scales wrote, “two artillerymen hundreds of miles apart pulled the lanyards on their howitzers,” 620,000 airmen, soldiers, and marines attacked an Iraqi force 545,000 strong.<sup>100</sup> Along the CENTCOM front on Iraq’s southeast border with Saudi Arabia, arrayed generally west to east, was Army Central Command (ARCENT) consisting of the US Army’s XVIII Airborne Corps and VII Corps, followed by the Arab Joint Forces Command-North (JFC-N), Marine Corps Forces Central (MARCENT), and an additional Arab Joint Forces Command-East (JFC-E). In what would be

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<sup>96</sup> Houlahan, *Gulf War*, 24-25

<sup>97</sup> Williams, *A History of Army Aviation*, 243.

<sup>98</sup> “A line of communications is a route, either land, water, and/or air, that connects an operating military force with a base of operations and along which supplies and military forces move.” Field Manual (FM) 3-90-1, *Offense and Defense Volume 1* (Washington, DC: Government Printing Office, 2013), 1-6.

<sup>99</sup> Scales, *Certain Victory*, 145-47, 373.

<sup>100</sup> *Ibid.*, 216.

coined “The Great Wheel,” the coalition forces in the ARCENT area of operations drove north and then circled east, cutting off the Iraqi force’s line of communication to central Iraq.<sup>101</sup> This massive encirclement took advantage of the stationary defensive posture of Iraqi forces strung out from Kuwait to Basrah, and as far west as As-Salman and As-Samawah, but mostly concentrated along the northeast Saudi border and deep southeast Iraq. The western edge of the wheel was the XVIII Airborne Corps, tasked with sealing off the main engagement area from the rest of Iraq.<sup>102</sup>

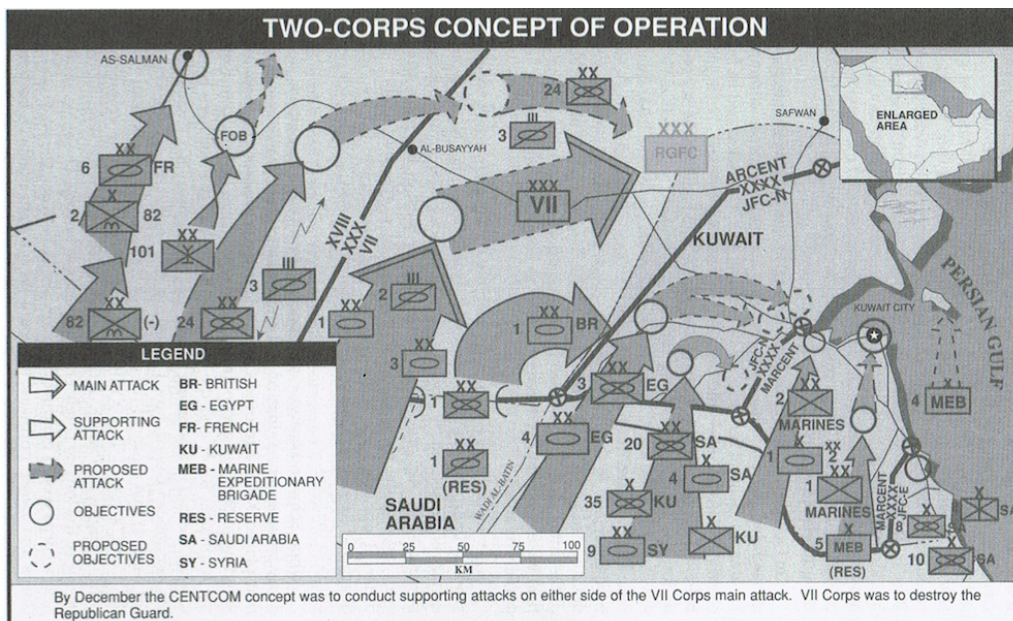


Figure 3. The Great Wheel. Robert H. Scales, *Certain Victory: The U.S. Army in the Gulf War* (Washington, DC: Office of the Chief of Staff, US Army, 1993), 130.

With the French 6th Light Armored Division and the 82d Airborne Division protecting his left flank, Lieutenant General Gary E. Luck, commander of the XVIII Airborne Corps, ordered the 101st Airborne Division to attack deep into Iraq with final objectives in the Euphrates River Valley, to cut the line of communication supporting the forward deployed Iraqi units. The plan included the French 6th Light Armored Division as the initial main effort, attacking quickly to secure the town

<sup>101</sup> “The Army was equally fortunate to be given time by Saddam to create from the tenets of AirLand Battle a plan for a sweeping end-around maneuver that soldiers would nickname ‘the Great Wheel.’” Scales, *Certain Victory*, 108.

<sup>102</sup> Scales, *Certain Victory*, 216; Hiro, *Desert Shield to Desert Storm*, 380-81.

of as-Salman, then becoming a supporting effort, providing a screen on the western flank of the XVIII Airborne Corps. With as-Salman captured and the screen in place, the 101st would conduct a massive air assault, followed on the ground by the new main effort, the 24th Infantry Division. The 3rd Armored Cavalry Regiment (ACR) would screen the eastern flank, which formed the boundary with the VII Corps. They would become the main effort after arriving in the Euphrates River Valley.<sup>103</sup>

Day one of the ground campaign saw one of the largest air assaults in military history. On February 24, 1991, after a two-hour weather delay, the 101st Airborne Division, supported by the 18th Aviation Brigade, air assaulted into Iraq from tactical assembly area (TAA) Campbell, as the XVIII Airborne Corps' main attack, to a location that would become FOB Cobra. The establishment of FOB Cobra, approximately 110 miles behind enemy lines, was made possible by forty CH-47 Chinook cargo helicopters and sixty UH-60 Blackhawk utility helicopters, with both Apache and Cobra attack helicopters providing a screen for the operation.<sup>104</sup> The FOB would serve as a logistical hub for the XVIII Airborne Corps, as it had the furthest distance to travel in the Great Wheel plan. In all, it took 300 helicopters to transport all the 101st soldiers and equipment. After approximately one hundred Chinooks released their loads at FOB Cobra, the base had a refuel site with 200,000 gallons of fuel, began continuous patrols of Highway 8, and assisted in finding an ideal location for a follow-on air assault, which planners soon located sixty miles from FOB Cobra.<sup>105</sup>

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<sup>103</sup> Scales, *Certain Victory*, 148.

<sup>104</sup> Stewart, *War in the Persian Gulf*, 38.

<sup>105</sup> Scales, *Certain Victory*, 220; Frank N. Schubert and Theresa L. Kraus, *The Whirlwind War: The United States Army in Operations Desert Shield and Desert Storm* (Washington, DC: Center of Military History, United States Army, 1994), 175.

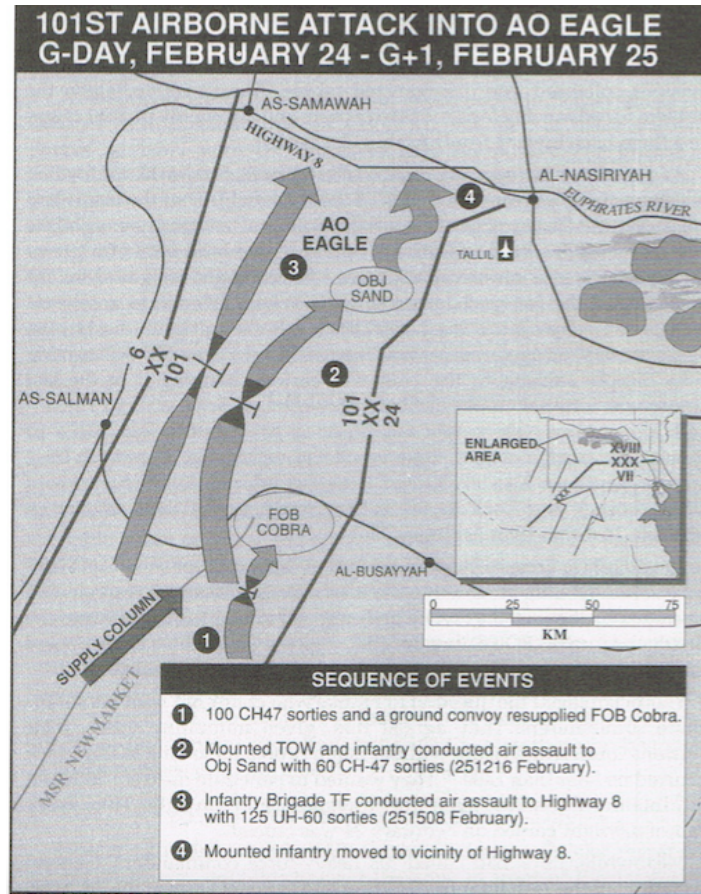


Figure 4. 101st Airborne Attack into AO Eagle. Robert H. Scales, *Certain Victory: The U.S. Army in the Gulf War* (Washington, DC: Office of the Chief of Staff, US Army, 1993), 221.

After the initial establishment of FOB Cobra, with the associated fuel and supplies to continue north, the 3rd Brigade of the 187th Infantry Regiment (the “Rakkasans”) then conducted an air assault of an infantry brigade task force from TAA Campbell to an area along Highway 8, just east of As-Samawah.<sup>106</sup> Thirty Chinook cargo helicopters and sixty-six Blackhawk utility helicopters hauled the brigade to the vicinity of Highway 8, refueled at FOB Cobra and returned to base. Faced with the opportunity to accelerate tempo, Colonel Robert Clark, commander of the 3rd Brigade, had decided to move the assault five hours earlier than initially planned based on the

<sup>106</sup> Houlahan, *Gulf War*, 245.

recent success of the XVIII Airborne Corps. Weather forced another decision to launch even earlier, or wait until the next day, but Colonel Clark accepted prudent risk, and chose to launch.<sup>107</sup>

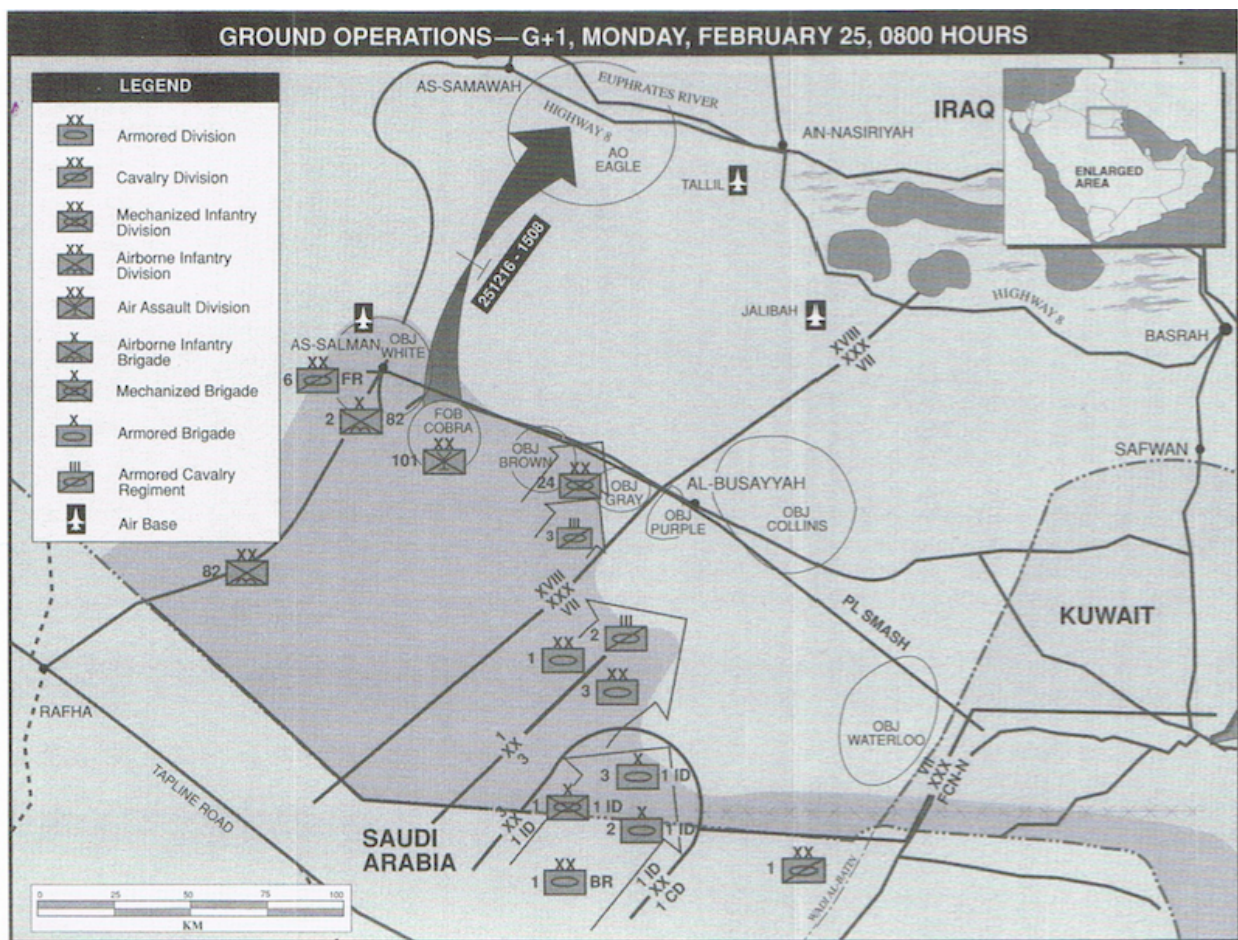


Figure 5. Ground Operations – G+1. Robert H. Scales, *Certain Victory: The U.S. Army in the Gulf War* (Washington, DC: Office of the Chief of Staff, US Army, 1993), 390-2.

This air assault operation rapidly achieved the objective of severing of the enemy’s line of communication—an achievement that represented a decisive point in the encirclement action known as the Great Wheel. With their LOC severed once the 101st landed on Highway 8, Iraqi forces were effectively cut off from resupply. This event came as a surprise to the Iraqi leadership, who placed little emphasis on their right flank, accepting risk due to the perceived improbable

<sup>107</sup> Houlahan, *Gulf War*, 245-47.

nature of an attack from the west.<sup>108</sup> Saddam Hussein and his generals made this error in judgement largely because they lacked the ability to visualize the speed and depth of a modern, helicopter-enabled deep attack. Rotary-wing aviation provided the operational reach and tempo necessary on the western edge of the wheel, achieving surprise while closing the main highway to the Iraqi rear and trapping the bulk of Iraqi forces. The breadth and depth of the battlefield was overcome by the ability to quickly project power forward.

Having accomplished this feat in approximately 31 hours, rotary-wing aviation played a significant role in the application of operational art, consistent with seven of its ten elements: decisive points, lines of operation, basing, tempo, culmination, operational reach and risk. Each of these elements likely helped the XVIII Airborne Corps and 101st Airborne Division plan these first tactical actions.<sup>109</sup> The elements of operational art are particularly useful because they complement and balance each other in the art and science of planning. Decisive points and basing provides connections along lines of operation, linking forward troops to bases of operation in the rear. The desire for tempo is balanced by the concerns of operational reach and culmination. Risk provides the ultimate balance to military operations, as described in ADRP 3-0: “Experienced commanders balance audacity and imagination with risk and uncertainty to strike at a time and place and in a manner wholly unexpected by enemy forces.”<sup>110</sup> These first tactical actions had taken seven of the ten elements of operational art into account, and indicated how rotary-wing aviation enables tactical actions in pursuit of strategic objectives as an essential member of the combined arms team.

By the third day of the ground war in Desert Storm, Army aviation played an instrumental role in multiple tactical actions to achieve strategic objectives, and would be called upon in pursuit

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<sup>108</sup> Scales, *Certain Victory*, 373.

<sup>109</sup> *Ibid.*, 220-21

<sup>110</sup> ADRP 3-0, 2-10.

of the final strategic objective: victory.<sup>111</sup> With the western escape route for the Iraqis effectively sealed off along Highway 8 by the 24th Infantry Division, a secondary escape route was still open to the northeast.<sup>112</sup> The Great Wheel was making its way around the main body of Saddam Hussein's Army, but Highway 6 running parallel to the Tigris River north out of Basrah was still available for an Iraqi withdrawal.<sup>113</sup> After signals intelligence picked up indications that Saddam Hussein was planning to move tanks north using his heavy equipment transporters, a race began to cut off the withdrawing Iraqis.<sup>114</sup> Additional intelligence indicated that the Iraqis might use pontoon bridges to withdraw north.<sup>115</sup> Coalition planners, therefore, established an engagement area centered on Highway 6, where coalition joint fires and deep attack capable forces could interdict and destroy the retreating formations.<sup>116</sup>

Early in the morning on February 27, the 3rd ACR secured Objective Tim, a location ninety-five miles east of FOB Cobra and southwest of Jalibah.<sup>117</sup> At approximately 9:00 a.m. that morning, the first serial of the 101st Airborne Division landed at the objective with an infantry battalion, an artillery battalion, air defense and engineers in what would eventually become FOB Viper.<sup>118</sup> This FOB would serve as the next step by establishing a base capable of extending coalition forces' operational reach well behind enemy lines.<sup>119</sup>

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<sup>111</sup> Schwarzkopf and Petre, *It Doesn't Take a Hero*, 542-47; Rick Atkinson, *Crusade: The Untold Story of the Persian Gulf War* (Boston: Houghton Mifflin, 1993), 456.

<sup>112</sup> Scales, *Certain Victory*, 258-60.

<sup>113</sup> *Ibid.*, 303.

<sup>114</sup> Atkinson, *Crusade*, 439.

<sup>115</sup> Schwarzkopf and Petre, *It Doesn't Take a Hero*, 546.

<sup>116</sup> Tom Clancy and Fred Franks, *Into The Storm: A Study in Command* (New York: Putnam, 1997), 431.

<sup>117</sup> Scales, *Certain Victory*, 302-03; Atkinson, *Crusade*, 456.

<sup>118</sup> Scales, *Certain Victory*, 303.

<sup>119</sup> Clancy and Franks, *Into The Storm*, 431.

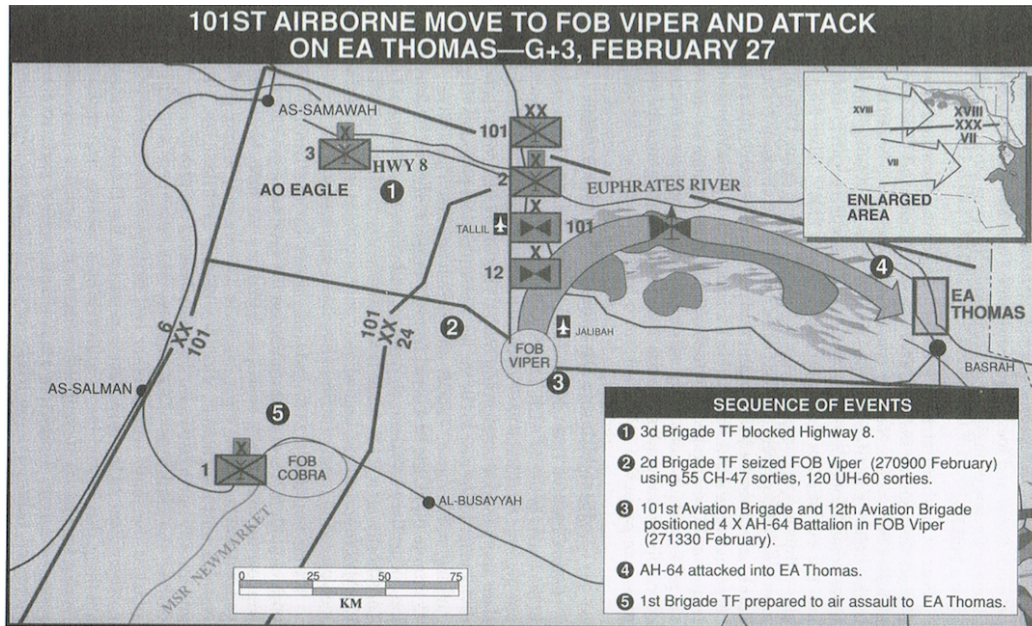


Figure 6. 101st Airborne Move to FOB Viper and Attack on EA Thomas. Robert H. Scales, *Certain Victory: The U.S. Army in the Gulf War* (Washington, DC: Office of the Chief of Staff, US Army, 1993), 304.

About four hours after the first serial arrived, 2nd Brigade of the 101st Airborne Division, consisting of approximately 500 infantry soldiers with 60 antitank high mobility multipurpose wheeled vehicles (HMMWV), and 18 light (105mm) howitzers in support, Objective Tim had transformed to FOB Viper.<sup>120</sup> The FOB additionally had enough fuel and ammunition to provide initial support for four attack helicopter battalions, two from the 101st CAB and two from the 12th CAB.<sup>121</sup> Schwarzkopf assessed the destruction of Saddam’s Republican Guard, his fiercely loyal and elite armored forces that remained the last effective forces in his army, as a necessary step towards victory. By trapping them in Kuwait, the coalition would bring the conflict closer to completion.<sup>122</sup>

<sup>120</sup> Houlahan, *Gulf War*, 267-68; Scales, *Certain Victory*, 303.

<sup>121</sup> Atkinson, *Crusade*, 456; Scales, *Certain Victory*, 303.

<sup>122</sup> Scales, *Certain Victory*, 314.

The hasty nature of the air assault and follow on attacks into EA Thomas and the speed with which they were conducted soon made fuel and ammunition supplies a potential limiting factor. Bad weather slowed the flow of supplies, but when the weather cleared, thirty Chinook cargo helicopters bypassed FOB Cobra and continued to Saudi Arabia to facilitate quicker resupply for ongoing attack operations. Some Chinooks were loaded with 2,000 gallons of fuel, while others carried eight tons of ammunition, and they returned quickly enough to maintain the necessary tempo in a time of near culmination. That evening ground vehicles established a line of communication between FOB Cobra and Viper, but in a critical moment, rotary-wing aviation was an indispensable enabler.<sup>123</sup>

The attacks into EA Thomas resulted in the destruction of many enemy vehicles, but no tanks were to be found. The concern about friendly ground forces reaching Highway 6 in a timely manner continued, so as the conflict ended, the 101st was readying itself for another air assault. Its goal was to block the escape route along Highway 6, but a cease-fire stopped the assault from becoming a reality.<sup>124</sup>

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<sup>123</sup> Scales, *Certain Victory*, 305.

<sup>124</sup> *Ibid.*, 303-08.

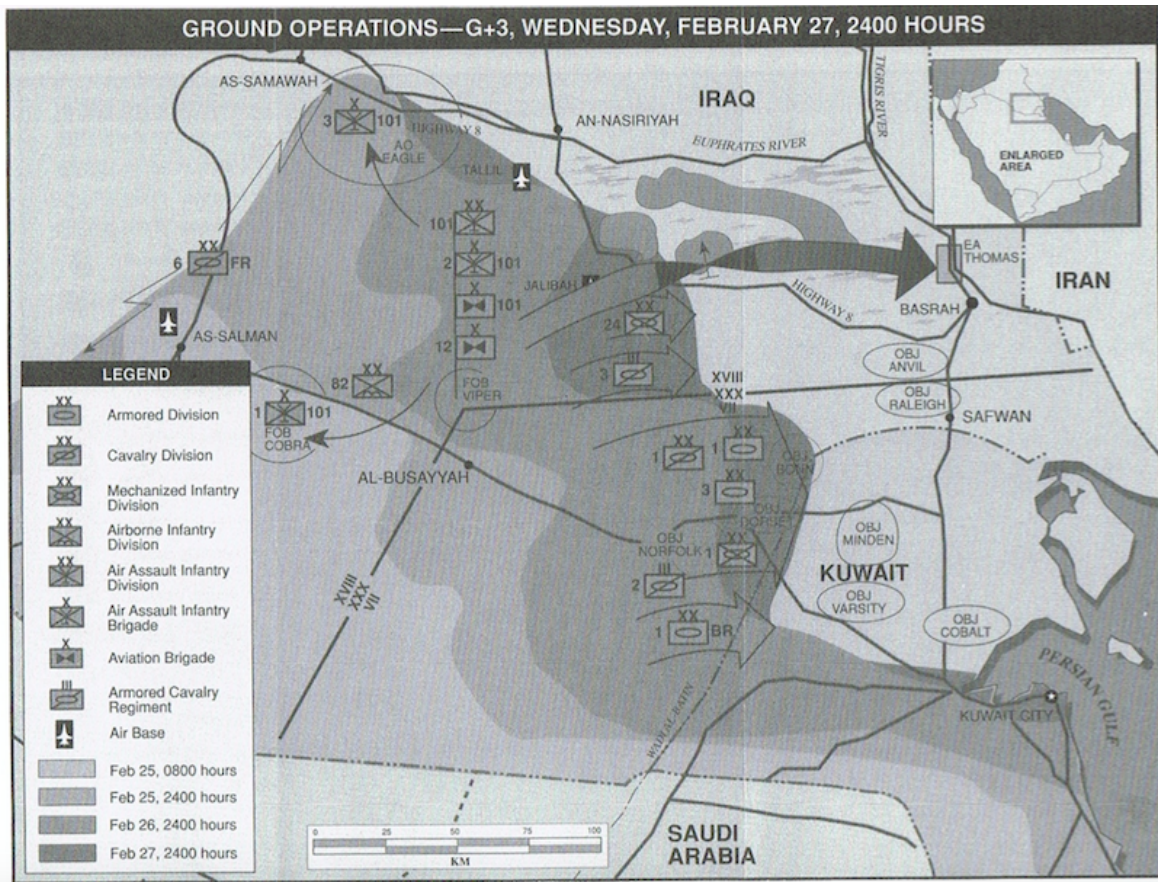


Figure 7. Ground Operations – G+3. Robert H. Scales, *Certain Victory: The U.S. Army in the Gulf War* (Washington, DC: Office of the Chief of Staff, US Army, 1993), 390-5.

As the end of the ground campaign approached, the Commander needed to reach deep quickly; the capability of Army aviation provided the asymmetric advantage he needed in speed and depth to conduct the planned deep operation. In the process of conducting another air assault and attack mission deeper behind enemy lines, Army helicopters assisted in the attempt to trap the Republican Guard in Basrah. The flexibility of aviation formations to cross-level and transition command and support roles made it achievable for the 12th CAB to assist the 101st in their attack into EA Thomas, poised to destroy the remaining Iraqi formation.<sup>125</sup>

<sup>125</sup> Scales, *Certain Victory*, 303, 14.

Throughout the operation, Army aviation served an instrumental role at the tactical level, and in the application of operational art. Rotary-wing aviation functioned as the eyes and ears of the Commander, finding, fixing and destroying forward enemy elements. Aviation also provided timely and efficient air assault operations to seize key terrain, helping to shape the battlefield and extend operational reach.

## Conclusion

Historical accounts of Operations Desert Shield and Desert Storm illustrate Army aviation's role as a key member of the combined arms team, particularly because of the unique capability of rotary-wing aircraft to assist in the application of operational art. The case study illustrated most of the elements of operational art, and revealed the important contributions of Army aviation, which enabled operational art—either directly or indirectly—in combined arms actions throughout the campaign. Army helicopters were instrumental from the beginning of the air campaign and were a major player in forcing the campaign's conclusion. Whether it was a synchronized and simultaneous attack in depth on a radar site to ensure freedom of maneuver, or an air assault and attack deep behind enemy formations, rotary-wing aviation was a valued member of the combined arms team.

This case study illuminates the relationship between basing, operational reach, tempo, and culmination, and more specifically, their relationship to the capabilities of Army aviation. The ability for helicopters to reach and base deep more quickly than ground assets better enabled the tempo required to achieve the ultimate strategic objective in Desert Storm; Saddam Hussein's capitulation. If the 101st Airborne Division had not been able to mount another major air assault to establish a second FOB from which to cut off the escape of the remainder of the Iraqi Army, then a ceasefire may not have been reached so quickly, and many more of Saddam's troops would have escaped before the coalition completed its encirclement.

The capabilities of Army aviation with respect to basing, operational reach, tempo, and

culmination also ensured that the creative arrangement of tactical actions required to accomplish the Great Wheel plan were possible. In Desert Shield, Army helicopters based forward, extended operational reach, and provided security operations to buy time in the event of an enemy attack, thereby giving friendly commanders time to control tempo and protect against a forced culmination. In Desert Storm, Army helicopters also facilitated the Great Wheel by air assaulting deep on the western flank, cutting enemy lines of communication, and establishing a base from which operations could reach deeper north and east into enemy territory.

The case study also revealed that at least part of the success of Desert Storm occurred because of the operational focus and planning driven by AirLand Battle doctrine, the US Army's operational doctrine at the time.<sup>126</sup> If a similarity in tenets between AirLand Battle and Unified Land Operations is an indication that ULO has evolved from AirLand Battle, then it is important to note that Desert Storm served as a test bed for AirLand Battle, supporting further development of the doctrine. A key aspect of AirLand Battle that was instrumental in Desert Storm, and should not be overlooked as ULO evolves, was the integration of Army aviation into the combined arms team. Today, the tenets of simultaneity, depth, synchronization, and flexibility serve as a culmination of an evolution in the US Army's operational doctrine that is not only linked to AirLand Battle, but is inseparably linked to the capabilities of Army aviation.<sup>127</sup> Desert Storm serves as a reminder that when rotary-wing aviation is effectively integrated into the combined arms teams, it is one of the greatest assets the US Army has in the application of operational art and in accordance with the tenets of Unified Land Operations.

The same issues addressed in the background to the case study are worthy of discussion today: Army Aviation as a branch, doctrine, and organization. In Army Aviation, most aviation

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<sup>126</sup> FM 100-5, 2-1. The 1982 version of FM 100-5 states "The Army's basic operational concept is called AirLand Battle doctrine."

<sup>127</sup> ADP 3-0, 8.

positions are within the Combat Aviation Brigade and below, where most Aviation officers and expertise resides for entire careers. This brigade and below focus may have the result of producing officers that are overly tactically-minded, out of necessity and because of their environment. Army aviators may lack an understanding of how their resources are employed in accordance with operational art. Their relative absence from staff positions at division and higher echelon deprives these organizations of their knowledge, skills, and abilities, while limiting aviation officers' ability to gain a broader perspective and to provide peer mentorship and guidance to other officers with respect to aviation knowledge. Army Aviation is a relatively insulated branch, and the Army combined arms centers may not be able to fill the void, even at a year-long course like the Command and General Staff College (CGSC).

There are a few things that may help ensure the necessary understanding of how to employ rotary-wing aviation in the application of operational art in the combined arms team. The first recommendation is specific to doctrine. The capstone Army Aviation doctrine, FM 3-04, could expand its "Operational Impacts" section to include all the elements of operational art as they relate to Army aviation, thereby synchronizing with ADRP 3-0. Presently, the operational impacts section addresses operational reach, depth, and risk by name. Although culmination is not mentioned, sustainment is covered in the section. Tempo, decisive point, and end state and conditions are found throughout the manual, but are not included in the operational impacts section. The remaining elements of operational art are not in the publication at all. Although many of the ideas that relate to the elements of operational art are addressed throughout the manual, organizing and addressing them all in one section will provide significant fidelity to the employment of rotary-wing aviation in accordance with operational art.<sup>128</sup>

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<sup>128</sup> FM 3-04, 4-7 - 4-10; ADRP 3-0, 2-4 - 2-10.

Secondly, Desert Shield and Desert Storm serve as excellent case studies in operational art, and the US Army's actions in these campaigns shares much in common with today's operational doctrine, ULO. While the US Army continues to grapple with the challenge of counterinsurgency operations, it must also bring conventional operations like Desert Storm back into the limelight. If Desert Storm supported AirLand Battle doctrine, and was indeed a precursor to ULO, then it is the closest historical link currently available that binds the elements of operational art and the tenets of ULO. As such, it is recommended that Desert Shield and Desert Storm remain in the curriculum for both CGSC and the School for Advanced Military Studies (SAMS). The US Army should not leave the lessons learned from Desert Storm too far behind.

Finally, as it relates to organization, and the potential for any "Howze Boards" of the future, the US Army's operational doctrine should guide the decisions made. Maximizing Army aviation capabilities requires efficient and effective application of operational art, not the perfect alignment of aircraft to organization. This application of operational art requires a flexible organization, like today's combat aviation brigade, as well as creative planning by corps and divisions staffs to enable the aviation brigade to arrange tactical actions most efficiently. An aviation brigade that understands its role in the combined arms team assists with reaching maximum capabilities. The more knowledgeable commanders and their staffs are in the employment of rotary-wing aviation in the application of operational art, the better the Army will be at maximizing aviation capabilities.

If there is a correlation between success in war and the sound application of operational art, then understanding the role Army aviation plays in the arrangement of tactical actions in pursuit of strategic objectives is not only valuable, but necessary. Victory in war, even with an advantage in overwhelming firepower, is a slippery prospect and requires an appropriate arrangement of achievable tactical actions. Army aviation greatly expands the realm of the possible, and has the potential to provide a significant advantage in speed and reach. In this way, Army helicopters

provide immense capabilities as a member of the combined arms team, and may be the necessary asymmetric tool that tips the relative advantage in future wars.

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