The Decline of Air Assault Operations

A Monograph

by

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In 1965 during the Vietnam War, air mobility negated impenetrable terrain to find, fix, and destroy the enemy. In the 1989 invasion of Panama, Joint Task Force-South simultaneously seized or engaged twenty-seven objectives in large part because of the flexibility inherent in air assault operations. In 1991 during Desert Storm, air assault operations resulted in one of military history's deepest and quickest operational envelopments. In 2001 during Operation Enduring Freedom, the Army once again relied upon air assault operations. However, for Operation Anaconda, one significant factor differed than before—a misalignment of ways and means.

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Abstract

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In 1965 during the Vietnam War, air mobility negated impenetrable terrain to find, fix, and destroy the enemy. In the 1989 invasion of Panama, Joint Task Force-South simultaneously seized or engaged twenty-seven objectives in large part because of the flexibility inherent in air assault operations. In 1991 during Desert Storm, air assault operations resulted in one of military history's deepest and quickest operational envelopments. In 2001 during Operation Enduring Freedom, the Army once again relied upon air assault operations. However, for Operation Anaconda, one significant factor differed than before—a misalignment of ways and means.

The Army's application of modularity to combat aviation brigades equally divided air assault capacity to each of the Army's active component divisions regardless of the types of assigned brigade combat teams. This disregarded history, overlooked current doctrine, and is already affecting the future acquisition of vertical lift.

Contents

Acknowledgments

I thank my supporting and loving family—Lesley, Tristan, and Rachel. As family members of a soldier, each of you has gracefully endured a life of unacknowledged sacrifice and willingly done so with grace, humility, and indomitable spirits. I wear a coat of many colors, patterns, and textures. The colors represent a group of Chief Warrant Officers: Pat Trotter, Lee Glowacki, Tony Swann, Bert Shober, Wade Boynton, Lawrence "Five Oh" Thomas, Steve "Big Perm" Conway, Joe Vanover, and Jerry Hamilton—all of which patiently molded a very stubborn lieutenant into an aviator. The patterns of the coat represent a group of leaders: Master Sergeant (R) Bruce Saunders, Sergeant Major Reginald Thomas, Command Sergeant Major Brian Hauke, Command Sergeant Major James Snyder, Chief Warrant Officer Five Joe Roland, Lieutenant Colonel (R) T. G. Taylor, Lieutenant Colonel (R) Edward Rawlins, Lieutenant Colonel (R) Nathaniel Gustin, Colonel (R) T Bradley Ninness, Colonel Michael Higginbotham, Colonel Alan Pepin, Colonel John Kline, and Brigadier General (R) Kelly Thomas—all of which directly transformed an Army private into a field grade officer. The textures of the coat represent different crucible events throughout my career. The most challenging of which occurred on May 30, 2007, when enemy shot down and killed five of my soldiers during an air assault operation in the Sangin Valley, Hellmand Province, Afghanistan. Chief Warrant Officer Three Christopher Allgaier, Chief Warrant Officer Two Joshua Rodgers, Staff Sergeant Charlie Bagwell, Sergeant Brandon Hadaway, and Sergeant Jesse Blamires made the ultimate sacrifice for their nation—a debt that cannot be paid.

Acronyms

ABCT	Armored Brigade Combat Team
AH	Attack Helicopter
AHB	Assault Helicopter Battalion
AMF	Afghanistan Military Forces
AOC	Army Operating Concept
AOE	Army of Excellence
ATTP	Army Tactics, Techniques, and Procedures
AVCOE	Aviation Center of Excellence
AVN	Aviation
BCT	Brigade Combat Team
CAB	Combat Aviation Brigade
CH	Cargo Helicopter
FOB	Forward Operating Base
GSAB	General Support Aviation Battalion
GWOT	Global War on Terrorism
HBCT	Heavy Brigade Combat Team
IBCT	Infantry Brigade Combat Team
INF	Infantry
JTF	Joint Task Force
LZ	Landing Zone
MEDEVAC	Aero-medical Evacuation
OEF	Operation Enduring Freedom
PDF	Panamanian Defense Forces
PZ	Pickup Zone
ROAD	Reorganization Objective Army Division
SAMS	School of Advanced Military Studies

SBCT	Stryker Brigade Combat Team
SOF	Special Operation Forces
TF	Task Force
UH	Utility Helicopter
ULO	Unified Land Operations

Introduction

Background

The idea of vertical envelopment is over two hundred and thirty years old. Napoleon Bonaparte considered employing vertical envelopment to attack England by crossing the English Channel with 2,500 hot air balloons. In 1918 during World War I, Brigadier General Billy Mitchell recommended issuing parachutes to troops from the First Division and dropping the division behind enemy lines in order to seize the fortress of Metz until Allied troops arrived. Seventeen years later, the Breguet-Dorand 314 Gyroplane made history as the first helicopter to fly and inspired Igor Sikorsky to develop and fly the VS 300 in 1940. Just ten years later, at the start of the Korean War, Brigadier General Edward B. Craig referred to the Sikorski S-51 helicopter as the emergency weapon of his brigade, based on its ability to perform a wide range of missions including evacuation of the wounded, aerial observation, resupply, and posting of guards on outlying terrain.[1]

It was only a matter of time before the concept of vertical envelopment and the invention of the helicopter combined to give military commanders another form of maneuver on the battlefield. Now, nearly seventy years later, helicopters have emerged as essential means to movement and maneuver in the US Army. The Army uses helicopters to conduct reconnaissance, attacks, sustainment, aero-medical evacuation (MEDEVAC), and vertical envelopment—also known as air assault operations.

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[1] Ben Franklin to Jan Ingenhousz, letter, January 17, 1784, accessed on September 17, 2015, http://legacy.fordham.edu/halsall/mod/franklin-science.asp; Walter Boyne, *How the Helicopter Changed Modern Warfare* (Gretna: Griniger, 2011), 41, 46-47; Spencer C. Tucker and Priscilla Mary Roberts, ed., *Encyclopedia of World War II* (Santa Barbara: ABC-CLIO, 2004), 67-68; Jean Boulet, *History of the Helicopter as Told by Its Pioneers 1907-1956* (Paris: Editions France Empire, 1982), 90.

Air assaults maneuver at almost four times the speed of mechanized forces to concentrate overwhelming combat power against an unexpected enemy. They are an awesome combination of technology, maneuver, agility, and tenacity. As defined in US Army doctrine, "An air assault is a vertical envelopment conducted to gain a positional advantage, envelop, or turn enemy forces that may or may not be in a position to oppose the operation."[2] The thick jungles of Vietnam, the vast desert sands found in Kuwait and Iraq, and the perilous mountains found in Afghanistan limit US Army commanders' ability to maneuver on the ground but do not prevent combat operations when those commanders have the capability to air assault. [3]

In 1963, the Army activated the 11th Air Assault Division (Test) based on the Howze Board's recommendations. Commanded by Brigadier General Harry W. O. Kinnard, at Fort Benning, Georgia, the division tested and fleshed out air mobility operational concepts during simulated mid-intensity conflicts. In March of 1965, because of a combination of multiple successful tests and an increased soldier requirement in South Vietnam, the US Army converted the 11th Air Assault Division (Test) into the 1st Calvary Division (Airmobile) and prepared it for deployment. The Vice Chief of Staff, Creighton W. Abrams, ironically remarked, "Is it not fortuitous that we happen to have this organization in existence at this point in time?"[4]

Seven months later the 1st Cavalry Division arrived in An Khe, Vietnam. The division's purpose was to take advantage of the speed and flexibility of Army aircraft to engage in ground combat. To accomplish this, 1st Cavalry Division consisted of over 400 aircraft, nearly 16,000

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[2] Field Manual (FM) 3-99, *Airborne and Air Assault Operations* (Washington, DC: Government Printing Office, 2015), 8-1.

[3] Field Manual (FM) 71-100-3, *Air Assault Division Operations* (Washington, DC: Government Printing Office, 1996), 1-5.

[4] Andrew F. Krepinevich, *The Army and Vietnam* (Baltimore: Johns Hopkins University Press, 1986), 118-27; John J. Tolson, *Airmobility 1961-1971* (Washington, DC: Government Printing Office, 1999), 61. Quotation from Tolson, *Airmobility 1961-1971*.

soldiers, and over 1,600 vehicles. 1st Cavalry Division's success in Vietnam fueled an unprecedented expansion of Army Aviation in Vietnam. 1st Aviation Brigade controlled all helicopters in Vietnam other than those assigned to airmobile divisions. It supported assault operations by flexibly creating scalable, tailorable task forces.[5]

After Vietnam, from the mid-1970s through the 1980s, the 101st Airborne Division nurtured the air assault concept, and it reached full maturation in time for Operation Desert Storm. The air assault's maturation process included new helicopters; the squad-carrying UH-60 Blackhawk, and the improved CH-47D Chinook. Additionally, improved night vision goggles and night flying training expanded what used to be predominately day operations to the night. 101st Airborne Division (Air Assault) developed the tactics, techniques, and procedures to employ these emerging technologies and methods as they applied specifically to air assault operations.[6]

AirLand Battle, the US Army's approach to generate and apply combat power, emerged during the same time as air assault operations matured. AirLand Battle is

> based on securing or retaining the initiative to accomplish the mission by throwing the enemy off balance with a powerful blow from an unexpected direction and following up rapidly and continuously to achieve the higher commander's goals.[7]

Operation Just Cause in 1989 is a clear example of how air assaults changed from being exclusively tactical. The Army now used air assault operations to strike into the enemy's unprotected vitals to unbalance at the operational level.[8]

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[5] Field Manual (FM) 57-35, *Airmobile Operations* (Washington, DC: Government Printing Office, 1960), 3-4; Tolson, 68.

[6] Field Manual (FM) 71-100-3, *Air Assault Division Operations* (Washington, DC: Government Printing Office, 1996), xiv.

[7] Field Manual (FM) 100-5, *Operations* (Washington, DC: Government Printing Office, 1986), 14.

[8] *Air Assault Division Operations*, xiv.

In 1991, instead of facing the Red Horde, the US Army found itself in the Persian Gulf to force Iraq out of Kuwait. Like 1st Cavalry Division (Airmobile) in Vietnam, 101st Airborne Division (Air Assault) would combat test its newest tactics, techniques, and procedures. 101st Airborne Division, using firepower, mobility, and total integration of ground and aviation forces, maneuvered on the battlefield to operationally envelop Iraqi forces and extend coalition forces' lines of communication. To accomplish this, 101st's Modified Table of Equipment included 160 lift helicopters (128 UH-60s and 32 CH-47s). In terms of combat power, 101st Airborne could air assault one brigade and its habitual attachments out to 150 kilometers every 24-hours for 8 straight days.[9]

In 1993, the US Army transitioned into a new era of warfare that created the foundation of its current operating concept. The Army pivoted toward joint, combined, and full-dimension operations because of many factors. The 1986 Goldwater-Nichols Act prompted emphasis on joint operations, the fall of the Soviet Union caused a shift in focus to military operations other than war, and a decreased defense budget necessitated a reliance on synergistic effects of combined arms. These factors and further Army refinement to its operating concept resulted in Full Spectrum Operations.[10]

The 9/11 attack by al Qaeda ushered in the Global War on Terrorism (GWOT). The Army's deployment to Afghanistan in 2001 and Iraq in 2003 necessitated the Army's organizational transformation to modularity. Afghanistan and Iraq's terrain, the enemy's reliance on roadside improvised explosive devices, and the sheer size of both countries placed a high demand on helicopter support. Modularity was the right solution for the Army's aviation

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[9] *Air Assault Division Operations*, xiv.

[10] Field Manual (FM) 100-5, *Operations* (Washington, DC: Government Printing Office, 1993), ii; Bill Benson, "The Evolution of Army Doctrine for Success in the 21st Century," *Military Review* Special Edition, Mission Command (March-April 2012), 49-54.

organizational structure at the height of GWOT. It divided all of its aircraft equally between all CABs and all of its CABs divided equally between all divisions. This construct simplified rotational deployments and provided equitable support to the demands of war in two theaters.

Problem Statement

Modularity divided the Army's air assault helicopters (30 UH-60s and 12 CH-47s per CAB) evenly across all divisions regardless of light, heavy, or Stryker designated. This means that the 101st Division, with three light infantry brigades, possesses the same amount of lift assets as the 1st Cavalry Division, with two armored and one Stryker brigade. At historical readiness rates, a CAB can assault only one infantry battalion per lift—this does not include vehicles, artillery pieces, or additional equipment based on operational need. For divisions like the 1st Cavalry Division, with inherent mobility of tanks and infantry fighting vehicles, this lack of aviation lift is of little concern. However, the 10th, 25th, 82nd, and 101st light infantry divisions are practically air immobile.

Methodology

David McCullough rhetorically asked, "How can we know who we are and where we are going if we don't know anything about where we have come from and what we have been through, the courage shown, the costs paid, to be where we are?"[11] In the context of the foregoing analysis, this highlights the fact that identifying current problems with the US Army's capability to conduct air assault operations requires understanding the history of air assault operations. The use of historical observation to imitate organization and stratagems is not new, but neither is the misuse of historical observation. If used correctly, history serves as the medium to reach the point

[11] David McCullough, *Brave Companions: Portraits in History* (New York: Simon & Schuster, 1992), 3.

of incontrovertible truth. If misused, it serves as an unsuitable medium that fails to sort out the internal logic of complex relationships and falls short in projecting trends into new situations where particulars differ from past events.[12]

Carl von Clausewitz's *Kritik* or critique, critical analysis, evaluation, and interpretation, is a prescriptive method to ensure historical analysis rests, to the extent possible, on incontrovertible truth. Acknowledging the difficulty of identifying with certainty single causes for complex events, Clausewitz warns the critical thinker to avoid arbitrary assumptions, always digging deeper to justify cause and effect assertions with objective analysis of evidence. This led Clausewitz to base his critical approach on three requirements: "The discovery and interpretation of equivocal facts, the tracing of effects back to their causes, and the investigation and evaluation of means employed."[13]

Clausewitz's *Kritik* serves well as the framework for the rise and fall of air assault operations in the US Army. Analysis of five air assaults from three historic eras—Vietnam, late 1980s to early 1990s, and the Global War on Terrorism reveals the causal relationships between organizational structure and the ends, ways, and means of air assault operations. The operations themselves represent the ends, the application of the air assaults within an operating concept represents the ways, and the aircraft type or seats-per-lift represent the means. A lift refers to, "Each time all aircraft assigned to the mission pick up soldiers or equipment and set them down on the landing zone."[14] Therefore, seats-per-lift is a metric that identifies how many soldiers each

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[12] Azar Gat, *A History of Military Thought* (New York: Oxford University Press, 2001), 3; Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), 157; Stephen Biddle, *Military Power: Explaining Victory and Defeat in Modern Battle* (Princeton: Princeton University Press, 2004), 10.

[13] Clausewitz, 156.

[14] Army Tactics, Techniques, and Procedures (ATTP) 3-18.12, *Air Assault Operations* (Washington, DC: Government Printing Office, 2011), 6-5.

lift transports. Seats-per-lift is an important metric for analysis because as an air assault's seats-per-lift increases, its risk of operational failure decreases.[15]

References in the following argument includes after action reports, peer-reviewed historians, and first-hand accounts. Organization structures and operating concepts derive from Army publications, peer-reviewed historians, and other governmental documents. Finally, analysis of the causal relationships connects the facts, organizational structures, operating concepts, and means in order to produce evidence to question the US Army's current approach to air assault operations and introduce recommendations for a new approach.

A logical approach to historical analysis requires selection of appropriate case studies. According to two experts in the use of case studies in social science, "One should select cases not simply because they are interesting, important, or easily researched using readily available data. Rather, case selection should be an integral part of a good research strategy to achieve well-defined objectives of the study."[16] To this end, this examination is a comparative analysis of the following air assault operations: The Battle of LZ X-Ray and Operation Junction City, Vietnam; Operations Just Cause, Panama; Operation Desert Storm, Persian Gulf, and Operation Enduring Freedom, Afghanistan.

Analysis of several historical events in combination enables logical deduction of a doctrine to solve the problem under investigation. These selections span the entire life of the air assault, range from low to mid-intensity, and include three different geographic locations. More importantly, a different set of organizational structures, ways, and means affected their ends. This interrelationship relates directly back to the problem under examination: currently, the US Army's four light infantry divisions possess a combat aviation brigade with capabilities identical

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[15] Clausewitz, 171.

[16] Alexander L. George and Andrew Bennett, *Case Studies and Theory Development in the Social Sciences* (Cambridge: MIT Press, 2005), 83.

to those of its more mobile mechanized divisions. The analysis reveals gaps between the ends, ways, and means of air assault operations caused by this illogical organizational structure, and recommends changes based on the implications of this problem for US Army air assault capability in the future.

Thesis

Army Aviation's organizational structure fails to support large-scale air assault operations for infantry brigade combat teams because of a misalignment of ways and means that govern the conduct of these operations. Ironically, the *US Army Operating Concept* quotes Sir Michael Howard's sage advice, "No matter how clearly one thinks, it is impossible to anticipate precisely the character of future conflict. The key is to not be so far off the mark that it becomes impossible to adjust once the character is revealed."[17] Currently, the US Army's air assault gap is too far off the mark to adjust to the character of either past or future conflict.

Vietnam

Air Assault Operations in Vietnam

Vietnam was the birthplace for air assault operations for the US Army. The tactical concept of infantrymen flying aboard helicopters to seize terrain and engage the enemy became the Army's preferred method to fight the North Vietnamese Army. This capability was the final product of a self-critical post-Korean War Army, a cadre of visionary senior leaders, and vital political support from Washington, DC. As a result, the US Army successfully executed airmobile operations in Vietnam because of properly aligned ways and means.

Beginning in 1961, President John F. Kennedy ushered in a new approach to foreign policy that negated Eisenhower's unlimited war emphasis. Under Kennedy's direction, Secretary

[17] TRADOC Pamphlet 525-3-1, *Army Operating Concept* (Fort Eustis: Government Printing Office, 2014), iv.

of Defense Robert McNamara presided over a dramatic expansion and reorganization of the Army. The strategic goal was to defend a Soviet attack on Western Europe, conduct limited conventional wars along the lines of the Korean conflict, and maintain the ability to fight so-called brush-fire wars in the Third World. To support this strategy, the Army implemented Reorganization Objective Army Divisions (ROAD). These universal divisions included 15,000 men, and based on need, consisted of three interchangeable brigades of any combination of infantry, mechanized, armor, and airborne. Conceptually, today's Army divisions maintain many of the characteristics of the ROAD structure. [18]

In October 1961, President Kennedy sent General Maxwell Taylor to determine how the United States might better assist South Vietnam against subversion and guerrillas. General Taylor recommended giving the South Vietnamese Army airborne mobility to overcome severely restricted terrain reminiscent of the Korean Peninsula. President Kennedy promptly responded by ordering the US Army's limited aviation assets to South Vietnam. From 1962 until the major buildup of US forces in 1965, Army aviation units struggled to keep pace with increased airmobile lift requests. This demand on aviation assets, specifically lift helicopters, justified the Army's need to expand its airmobile means.[19]

Back home, the Army set out to align the airmobile concept with resources, organization, and training to fight atomic and non-atomic wars. The Howze Board recommended the Army

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[18] Krepinevich, 115; George C. Herring, "The 1st Cavalry and the Ia Drang Valley: 18 October-24 November 1965," in *America's First Battles 1776-1965*, ed. Charles E. Heller and William A. Stofft (Lawrence: University Press of Kansas, 1986), 302; John J. McGrath, *The Brigade: A History, Its Organization and Employment in the US Army* (Fort Leavenworth: CSI Press, 2004), 61.

[19] Russell F. Weigley, *The American Way of War: A History of United States Military Strategy and Policy* (Bloomington: Indiana University Printing Press, 1973), 458; The BDM Corporation, *A Study of Strategic Lessons Learned in Vietnam, Volume VI Conduct of the War* (McLean: BDM, 1980), 16-7.

increase its aircraft allocation from 50 to 101 for every infantry division. Additionally, it advised the development of two types of airmobile divisions—Infantry and Cavalry—consisting of 459 aircraft in order to be 100 percent transportable by air. Further, the board envisioned the airmobile division as a closely integrated team that relied on aerial reconnaissance to find and fix the enemy, helicopters to transport troops, artillery, and provide direct aerial fire support, and an inherent capability to command and control from the sky.[20]

In 1963, based on those recommendations, McNamara ordered the organization, training, and testing of the 11th Air Assault Division (Test) to fit within the Army's ROAD structure. Two years later, the Army activated this test unit, redesignated the 1st Cavalry Division (Airmobile), and ordered it to deploy to South Vietnam. Commanded by the newly promoted Major General Kinnard, the division represented the most advanced technology in the world and depended on mobility and firepower provided by the helicopter to find, close with, and destroy the enemy. More than 400 CH-47 Chinook, UH-1 Iroquois, and CH-54 Tarhe helicopters were to fly the division's 16,000 men, artillery, and ground vehicles in South Vietnam.[21]

The 1st Cavalry Division (Airmobile) was the first division-size echelon to deploy to the Vietnam War. Unsurprisingly, it was the first to conduct a division-level operation against the enemy. This first of many such operations took place in the Ia Drang Valley during the fall of 1965 against the 32nd, 33nd, and 66th North Vietnamese regiments. The Ia Drang Valley's severely restrictive terrain seemed ideal for the airmobile tactics of the 1st Cavalry.[22]

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[20] William F, Train, "The Atomic Challenge," *Military Review* 30 (November 1956), 5; J. A. Stockfisch, *The 1962 Howze Board and Army Combat Development* (Santa Monica: RAND, 1994), 12, 15, 22-24; Lieutenant Colonel Donald Harrison, Developments in Airmobility in the US Army, *US Army Aviation Digest* 15 (June 1969), 24.

[21] Richard Goldstein, "Harry W. O. Kinnard, Who Said One Word Would Do, Dies at 93," *The New York Times*, January 10, 2009; Tolson, 3-61; Herring, 304; McGrath, 64.

[22] The BDM Corporation, 16-7; Herring, 64-65.

The Battle of LZ X-ray was the most intense of the Ia Drang Campaign, and executed just as the Howze Board envisioned. Lieutenant Colonel Harold "Hal" Moore, Commander, 1st Battalion, 7th Cavalry selected a landing zone (LZ) at the base of the Chu Phong massif based on size, suitability and suspected proximity of the enemy. CH-47 Chinook helicopters repositioned 105mm Howitzers into Firebase Falcon to support operations in vicinity of LZ X-Ray. At An Khe Base, airmobile troops boarded the division's first lift of sixteen UH-1 Iroquois helicopters and departed for the thirty-one kilometer flight. Brigadier General Richard Knowles, 1st Cavalry Division's Deputy Commanding General, likened the airmobile concept to using a pogo stick: "This is a whole new pogo concept—jump to an area to fight and chew up another enemy—you couldn't get into this area by ground, you just couldn't."[23]

For protection, aerial and indirect fires suppressed the enemy to ensure unimpeded landings of eight UH-1s per serial. Upon landing, airmobile troops secured a small perimeter atop the 2,400 foot high LZ that measured roughly the size of a football field. They sought cover and called in fires from Firebase Falcon to expand their perimeter. Approximately every fifty minutes thereafter a subsequent lift of troops massed on LZ X-ray until LTC Moore's entire 450-man battalion arrived. Throughout the three-day, two-night battle, MEDEVAC crews continuously flew casualties from LZ X-ray to medical facilities. CH-47 and UH-1 helicopters continuously conducted aerial resupply, while artillery, aerial rockets, and Close Air Support increased the airmobile force's firepower to defeat the enemy. The battle of LZ X-ray represented one of two

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[23] Herring, 314-315; "The Battle of Ia Drang Valley," reported by Morley Safer and Walter Cronkite, aired on November 29, 1965, on CBS News, accessed December 9, 2015, https://archive.org/details/gov.archives.arc.653177; Harold G. Moore and Joseph L. Galloway, *We Were Soldiers Once…and Young, Ia Drang Valley—the Battle that Changed the War in Vietnam* (New York: Random House, 1992), 59-74; Colonel Harold Moore, *After Action Report, Ia Drang Valley Operation, 1st Battalion, 7th Cavalry, 14-16 November, 1965* (9 December, 1965), 2-3.

organizational approaches to air mobility. The 1st Cavalry Division homogenously fought the battle with minimal external support. [24]

However, the US Army during the Vietnam War consisted mostly of dispersed divisional and separate brigades not designated airmobile. The Army heterogeneously modified, combined, redesignated, and repurposed these units. Although not designated as airmobile, these units predominately relied on helicopters from the 1st Aviation Brigade for mobility. By 1967, the 1st Aviation Brigade consisted of four groups of sixteen battalions and three air cavalry squadrons totaling more than 2,000 aircraft and 25,000 personnel. It further task organized into scalable and tailorable task forces as required to support ground forces. [25]

In 1967, Operation Junction City illustrated the Army's heterogeneous approach to air mobility. Ground forces from the 1st, 4th, and 25th Infantry Divisions and 173d Airborne Brigade supported by the 1st Aviation Brigade formed the II Field Force to execute the two-month Operation. Both the 1st and the 25th Infantry Divisions controlled four maneuver brigades of four battalions each, with varying capabilities (infantry, mechanized, airborne, and cavalry). For aviation support, three separate aviation groups controlled thirteen assault helicopter companies and assault support helicopter companies for a total of 210 UH-1s and 39 CH-47s.[26]

Tactically, the initial airmobile operation inserted eight battalions of 5,100 soldiers into separate blocking positions that resembled a horseshoe. On average, each battalion required

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[24] Herring, 316-319; "The Battle of Ia Drang Valley," CBS News; Harold G. Moore and Joseph L. Galloway, *We Were Soldiers Once*, 59-74, 115-128; Joseph L. Galloway, "Ia Drang – The Battle That Convinced Ho Chi Minh He Could Win," *HistoryNet*, accessed December 10, 2015, http://www.historynet.com/ia-drang-where-battlefield-losses-convinced-ho-giap-and-mcnamara-the-u-s-could-never-win.htm; Colonel Harold Moore, *After Action Report, Ia Drang Valley Operation*, 2-3.

[25] Boyne, 136-137.

[26] McGrath, 67-69. MAJ G. C. Lorenz et al., *Operation Junction City Vietnam 1967 Battle Book* (Fort Leavenworth: Combat Studies Institute, 1983) 6, 10.

between sixty UH-1 and six CH-47 helicopters to complete its assault of personnel and artillery. One of the eight battalions parachuted in by Air Force aircraft. The necessity of this airborne assault remains a matter of debate. However, this display of operational flexibility freed sixty UH-1 helicopters and six CH-47s and improved the air assault's seats-per-lift. As a result, lift assets successfully assaulted all soldiers into blocking positions in two lifts within a five-hour span.[27]

Ends, Ways, Means Analysis of Air Assault Operations

Based on lessons from the Korean War, the Army embraced the idea of using helicopters to increase mobility. The Vietnam era served as the proof of concept for this idea. The Howze Board was foundational for air assault operations. Its recommendations properly aligned the beginnings of a doctrine, helicopter requirements to provide appropriate means, and an organizational structure that emphasized appropriate seats-per-lift and mission focus. The Army implemented the board's recommendations on a smaller scale, but adhered to the interrelationship between the ways and means to ensure the effectiveness of air assault operations.

Three primary factors emerge from air assault operations during the Vietnam War that attest to their effectiveness. The first is the standard way in which the Army executed airmobile operation. The Howze Board initially conceived the doctrine or standard way to conduct air assaults. The 11th Air Assault Division (Test) improved this doctrine, and the 1st Cavalry Division continually refined and shared it with non-divisional airmobile task forces throughout the war. Much of this doctrine remains relevant in present day air assaults—a testament to its founders.

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[27] II Field Force, *Combat Operations AAR*, dated August 9, 1967; Lorenz et al, 13-22; 173d Airborne Brigade, *Combat After Action Report—Operation Junction City for 22 February 1967 to 13 April 1967 (Phases 1 and 2)*, dated 8 August 1967, 113; For the debate on the necessity of the airborne assault see Lewis Sorley's letter to the editor of the *Army Times*, March 21, 2016, 8.

Ways are important; however, the procurement and deployment of an adequate number of aircraft played a key role in the effectiveness of air assaults in Vietnam. Before 1965, air assaults on a large scale were simply not possible because there were not enough aircraft available. However, the 1st Cavalry Division's 1965 arrival to Vietnam brought with it over 400 additional aircraft and by 1967 that number increased by an additional 2,000. For the first time in history, the Army had enough seats to fly soldiers into the fight.

Organizational structure is important for air assault operations because it affects integration and seats-per-lift. Air assault organizational structure in the Vietnam War morphed into two distinct structures. 1st Cavalry Division (Airmobile) executed the Battle of LZ X-Ray as a homogenous unit that trained, deployed, and fought together with an emphasis on the inherent integration of aviation and ground forces. Conversely, II Field Force, a corps-sized conglomeration, executed Operation Junction City heterogeneously as a scalable and tailorable task force of aviation and ground forces from separate units. These two organizational structures differ from the Army's current construct; therefore, a closer analysis of the Army's two-approach method is required.[28]

In 1973, Lieutenant General John Tolson, commander of 1st Cavalry Division (Airmobile) in Vietnam from 1967-1969, examined the differences in the Army's two-approach method. He argued there is much more to air mobility than just using helicopters. He identified integration as the primary difference between the Army's two methods. He believed integration is the essence of air assault operations and total integration is only possible in a unit that owns its helicopters. He further qualified his claim:

> The tactical advantages of the airmobile division can be summed up as follows: increased efficiency due to the repeated association of units; thorough integration of its assets

[28] Bernard W. Rogers, *Cedar Falls-Junction City: A Turning Point* (Washington DC: Government Printing Office, 1974), 150-52.

> because of close association and command relationships; and the ability to take a different conceptual approach because of its assured assets. The impact of organizational and command relationships has a direct and distinct impact on the quality of support. There is no denying that general support units rarely tend to identify closely with the supported unit, at least not as closely as organic units. This is a simple truism of human nature.[29]

Carl von Clausewitz's *Kritik* warned the critical thinker to avoid arbitrary assumptions such as this one, and to dig deeper to justify cause and effect assertions. Evidence from air assault operations like Operation Junction City does not support Tolson's assertion—a fact he alluded to by his own admission:

> In the latter years, especially 1967 and 1968, there were enough aviation assets to satisfy almost every requirement for airmobility in every division. Many of the nonairmobile divisions, and rightly so, were very proud of their air assault techniques and had developed highly refined operating procedures with their supporting aviation companies. The question then arises as to the need for a special organization which has over 400 helicopters assigned to it on a full-time basis.[30]

After Action Reports of Operation Junction City, separately written by 1st Infantry Division, 4th Infantry Division, 173d Airborne Brigade, and 12th Aviation Group corroborate a counterargument to the Army's requirement to field specialized integrated units for air assault operations.

Measured by amount of lift aircraft used and the total amount of soldiers flown into the engagement area, Operation Junction City was the largest airmobile operation in the Vietnam War. Only once during the operation, which included 80,000 aviation sorties and 19,000 tons of resupply did a ground unit not receive the aviation support it requested. The units involved experienced no other decrease of efficiency or quality due to a lack of integration. Rather, evidence points to increased efficiency commonly inherent in organizational flexibility. This reinforces the idea that a scalable and tailorable aviation task force can provide the same quality

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[29] Tolson, 254.

[30] Tolson, 253-54.

of support to ground forces as General Tolson's fully integrated and homogenous aviation concept. [31]

The Army's two organizational structures for air assault operations supported appropriate seats-per-lift. 1st Cavalry Division consisted of 156 UH-1s and 48 CH-47s or 2,137 seats-per-lift—nearly four 567-man battalions. The II Field Force task organized with 210 UH-1s and 39 CH-47s or 2,835 seats-per-lift—exactly five 567-man battalions. In relation to the enemy, terrain, and military objectives examined in the Battle of LZ X-Ray and Operation Junction City, the Army's two organizational structures for air assault operations properly supported both ways and means.[32]

The foundation of air assault operations is an alignment of doctrine, amount of helicopters by type, and organizational structure. Simply put, these are the ways and means of air assault operations and the Vietnam era illustrates a proper alignment of ends, ways, and means for air assault operations. The Army's exponential growth of helicopter procurement in the 1960s provided the required means necessary to implement air mobility in the Vietnam War. Furthermore, a standardized and refined doctrine ensured effective application of air assaults. This became even more important when the Army adopted two organizational structures for air assaults. General Tolson's assertion about the benefits of 1st Cavalry Division's organizational structure demonstrates the criticality of mission focus to the success of air assaults. However,

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[31] 1st Infantry Division, *AAR—Operation Junction City for 22 February 1967 to 15 April 1967*, dated 8 May 1967, 2, 15-19, 150-51, 170-73; 173d Airborne Brigade (Separate), *Combat AAR—Operation Junction City for dates 22 February 1967 to 13 April 1967 (Phases 1 and 2)*, dated 8 August 1967, 11-15, 53-59; 12th Aviation Group, *Operational Report—Lessons Learned, Headquarters, 12th Combat Aviation Group for Quarterly Period ending 30 April 1967*, dated 2 October 1967, 1-6, 14-15; Lorenz et al., 13, 19-22.

[32] The seats-per-lift formula used for UH-1s is 85% of 156 UH-1s multiplied by 7 seats per helicopter. The seats-per-lift formula used for CH-47s is 72% of 48 CH-47s multiplied by 35 passengers per helicopter. These calculations account for historical readiness rates that remain constant between all case studies.

evidence from Operation Junction City suggests those same benefits can apply to non-airmobile designated units like the II Field Force. Fortunately, both structures supported appropriate seats-per-lift, a fact that is no longer true based the Army's current organizational structure.

Operations Just Cause and Desert Storm

Air Assault Operations in Operations Just Cause and Desert Storm

Seven months separated the end of Operation Just Cause and the deployment for Operation Desert Storm. Individually, each conflict was relatively short, offers a small sample of air assaults to examine, and lacks the necessary depth for unequivocal evidence. Together, they serve well because both occurred under the same operating concept and organizational construct. Each consisted of one major offensive operation, over different terrain, with a different strategic goal; however, both used the air assault to achieve operational level effects. Combined, Operations Just Cause and Desert Storm illustrate the Army's proper alignment of ends, ways, and means regarding air assault operations.

America's political leaders, from the end of Vietnam through the early 1980s, had little appetite to counter further Soviet proxy moves. Congress, largely influenced by neo-isolationists, significantly decreased the defense budget. This fairly represented the public mood that in the wake of the Vietnam War had a "come home, America" sentiment. Also in Vietnam's wake, the US Army found its weapons development process a full generation behind Soviet progress. As a result, the military could do little beyond its commitment to the North Atlantic Treaty Organization alliance while laying the foundation for a new generation of weapons. [33]

In 1983, the Army created and designated the Aviation branch to manage the new generation of weapons including the AH-64 Apache, UH-60 Blackhawk, the upgraded CH-47D,

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[33] Douglas W. Skinner, *Airland Battle Doctrine* (Alexandria: Center for Naval Analysis, 1988), 1. John L. Romjue, *From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982* (Fort Monroe: US Army Training and Doctrine Command, 1984), 5-16.

and aviation-specific night vision goggles. The new Blackhawk and upgraded Chinook increased the speed, lift, and range of air assault operations. However, just as important, night vision goggles improved air assault survivability by allowing nighttime operations. This leap in technology allowed the Army to adapt new air assault methods to fit within its new operating concept.[34]

In 1982, the Army adopted AirLand Battle as its new operating concept. As its name indicates, AirLand Battle emphasized a multi-dimensional battlefield. Its biggest shift from previous operating concepts was its emphasis on the operational level of war. AirLand Battle focused on the rapid mobility of soldiers and equipment while avoiding decisive engagements by the enemy's choosing. Its four tenets: initiative, depth, agility, and synchronization could also describe air assault operations. In fact, the 1987 FM 90-4, *Air Assault Operations*, proclaimed air assaults provide commanders the ability to react rapidly to tactical opportunities, conduct deep attacks or raids beyond the forward line of troops, strike the enemy from any direction, and delay a much larger force while avoiding decisive engagements.[35]

To support AirLand Battle, the Army transformed its organizational structure into the Army of Excellence (AOE). Under AOE, the Army assigned an aviation brigade to every division and corps. At the division level, the Army designed these brigades for combined arms operations at the tactical level. For corps, the Army designed aviation brigades for combined arms operations at the operational level of war. The glaring exception to the AOE construct was the 101st

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[34] John A. Wickham, "Army Aviation Branch" (Washington, DC: Department of the Army, 15 Feb, 1984); Boyne, 277, 323, 326-27, 341; Frank W. Tate, "Aviation as a Branch, Eighteen Years After the Decision" (Fort Leavenworth, KS: School of Advanced Military Studies, 2001), 26-35.

[35] Field Manual (FM) 100-5, *Operations* (Washington, DC: Government Printing Office, 1982), 2-1; Field Manual (FM) 90-4, *Air Assault Operations* (Washington, DC: Government Printing Office, 1987), 1-2.

Airborne Division (Air Assault). Based on its unique mission profile, General John A. Wickham, US Army Chief of Staff from 1983-1987, who commanded the 101st Airborne Division (Air Assault) from 1976-1978 and a battalion in 1st Cavalry Division (Airmobile) in Vietnam, retained the 101st Airborne's Vietnam-era organizational construct of to allow operations across the entire depth and width of the battlefield.[36]

Operation Just Cause illustrates an air assault conducted by a non-air assault designated unit. During the US Army's 1989 invasion of Panama. Task Force (TF) Aviation was a brigade-level headquarters commanded by 7th Infantry Division's Aviation Brigade Commander, Colonel Douglas Terrell. TF Aviation was responsible for the command and control of all conventional Army aviation assets assigned to Joint Task Force-South (JTF-South), Commanded by Lieutenant General Carl Stiner. JTF South controlled nearly 26,000 personnel including elements of US Army South, the 82nd Airborne Division, 7th Infantry Division (Light), Joint Special Operations Task Force, and assets from the US Marines and Air Force.[37]

Colonel Terrell task organized TF Aviation into two battalion-level task forces—TF Hawk and TF 1-228. TF Hawk combined assets from the 7th Infantry Division and 1-228th Aviation Regiment. It consisted of two assault helicopter companies of fifteen with thirty-three total UH-60s and one attack company with five AH-64s and three OH-58s. 1-228th Aviation Regiment was the forward deployed aviation unit in Panama before the onset of Operation Just Cause. It became TF 1-228 once reinforced by 7th Infantry Division attack aircraft and elements

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[36] John L. Romjue, *The Army of Excellence, The Development of the 1980s Army* (Fort Monroe: Training and Doctrine Command, 1993), 25-26, 126; John Sloan Brown, *Kevlar Legion: The Transformation of the U.S. Army, 1989-2005* (Washington, DC: Center of Military History, 2011), 21, 298-99; McGrath, 86-92; Field Manual (FM) 1-111, *Aviation Brigade* (Washington, DC: Government Printing Office, 1986), A-1, B-1; Field Manual (FM) 1-111, *Aviation Brigade* (Washington, DC: Government Printing Office, 1990), 1-10 and 1-11.

[37] Lieutenant Colonel Douglas I. Smith, *Army Aviation in Operation Just Cause* (Carlisle Barracks: Pennsylvania, 1992), 22, 26, 37; R. Cody Phillips, *Operation Just Cause: The Incursion into Panama* (Washington DC: Center of Military History, 2004), 3, 18-19.

of 18th Aviation Brigade. It consisted of one command aviation company of fifteen UH-1s, a medium lift helicopter company of nine CH-47s, an attack aviation team of two AH-64s, and a small aeromedical evacuation detachment of five UH-60s. As part of JTF-South's plan to simultaneously seize or engage twenty-seven objectives, TF Aviation executed four simultaneous air assaults into separate landing zones. TF Aviation conducted each assault under the concealment of darkness—the first conventional air assault operation conducted using night vision goggles.[38]

TF Hawk conducted the largest of the four conventional air assaults based on total aircraft. This air assault supported two infantry companies and consisted of fourteen UH-60s. The first lift departed from Pickup Zone (PZ) Fort Kobbe and flew four miles to Landing Zone (LZ) Fort Amador. This was a short flight, but it crossed the Panama Canal to a peninsular landing area that by ground had only a single avenue of approach using the 3,000-foot long Bridge of the Americas. Fort Amador was a joint headquarters building for US Army South and Panama Defense Forces (PDF). Upon landing, the assault force secured US facilities, blocked the main gate, and isolated the PDF cantonment area within one hour.[39]

TF 1-228 conducted the other three simultaneous air assaults to the small town of Gamboa, the Renacer Prison, and Cerro Tigre. A lift of one UH-1 and two CH-47s supported the company-level air assault to Gamboa. The route of flight was just over twenty-two miles from PZ Sherman to LZ Vulture. Upon landing, Alpha Company, 3-504 Infantry accomplished their its mission of protecting 160 American workers and disarming a small PDF detachment outside the town—including female counter-intelligence soldiers of the *Fuerzas Femininas*.[40]

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[38] Lieutenant Colonel Douglas I. Smith, *Army Aviation in Operation Just Cause* (Carlisle Barracks: Pennsylvania, 1992), 42, 46. Phillips, 19

[39] Smith, 46-49; Phillips, 13.

[40] Smith, 53; Phillips, 28.

Simultaneously, Charlie Company, 3-504th Infantry assaulted the El Renacer Prison using two prongs—air assault and landing craft. The El Renacer Prison was on the opposite side of the Chargres River from Gamboa. TF 1-228 used one lift of two UH-1s to air assault a platoon from PZ Sherman to LZ Hawk while the other two platoons assaulted the canal bank using landing craft. Within minutes of landing, ground forces isolated the prison guards and freed sixty-four political prisoners.[41]

Ten miles downriver, Bravo Company, 3-504 Infantry conducted its air assault to Cerro Tigre—a PDF logistics complex. TF 1-228 used two UH-1s and two CH-47s to conduct one lift from PZ Sherman. Of the four air assaults, this one had the most friction. Originally, the planned LZ was inside the complex; however, a last minute intelligence update forced the use of an alternate. Just before takeoff, one of the two CH-47s experienced a maintenance malfunction (inoperable Auxiliary Power Unit) that forced the use of a backup Chinook. Back on track, the flight of four helicopters departed PZ Sherman, but along the route, the CH-47s diverted due to poor visibility caused by clouds and fog. This resulted in the two CH-47s arriving at the landing zone ten minutes late. Fortunately, Bravo Company met little resistance and was able to secure the installation within four hours. In total, TF Aviation, a scalable and tailorable task organized aviation unit, conducted four company-size air assaults in one night in support of JTF-South.[42]

In contrast, Operation Desert Storm illustrates an air assault operation conducted by an air assault division—101st Airborne Division (Air Assault). Operation Desert Storm was much larger than Operation Just Cause. It involved a robust coalition of ground forces led by the US Army, facing the entire Iraqi Army. The 101st Airborne Division was one of seven US Army divisions divided between two corps—VII and XVIII Airborne Corps. Additionally, I Marine

[41] Smith, 49-51; Phillips, 28-29.

[42] Smith, 55; Phillips, 29-30, 44.

Expeditionary Force and various coalition brigades combined for over 500,000 soldiers. Along with other XVIII Airborne Corps units, the 101st Airborne Division's mission was to cover the left flank of the VII Corps and coalition forces, and strike deep inside Iraq to prevent retreating Iraqi troops from escaping across the Euphrates River.[43]

In accordance with the coalition plan, the 101st Airborne Division would rapidly penetrate 260 kilometers by air assault along the western flank of the coalition main body to the Euphrates River. The division's tasks included destroying Iraqi reserve forces along the route, isolating Iraqi Forces from Baghdad along Highway 8, and eventually setting a block north of Basrah, Iraq to prevent the Iraqi Army from reinforcing its forces in Kuwait. If successful, the 101st Airborne Division and the XVIII Airborne Corps would trap Iraqi forces in Kuwait and XII Corps armor units would liberate Kuwait by destroying Iraq's invading force.[44]

On February 24, 1991, the 101st Aviation Brigade augmented by the 18th Aviation Brigade and commanded by Colonel Tom Garrett began the air assault. 1st Brigade, 101st Division flew aboard 60 UH-60s and 40 CH-47s from Tactical Assembly Area Campbell 150 kilometers to Forward Operating Base (FOB) Cobra. Three lifts and over 300 helicopter sorties later, the brigade seized FOB Cobra by way of history's largest air assault. However, FOB Cobra was only an intermediate logistics base with massive refueling and rearming points that served as a springboard for the division and corps.[45]

The next morning, 3rd Brigade, 101st, departed from Tactical Assembly Area Campbell, refueled at FOB Cobra, and assaulted a total of 249 kilometers to two landing areas along the

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[43] McGrath, 94; Deputy Undersecretary of Strategy and Resources, *Conduct of the Persian Gulf War, Final Report to Congress* (Washington, DC: Office of Secretary of Defense, 1992), 323-25; Major General J. H. Binford Peay, III, interview by Major Robert K. Wright, Jr., June 5, 1991, *Air Assault in the Gulf*, transcript, Department of the Army Oral History Activity, US Army Center of Military History, Washington, DC, 10.

[44] Peay, interview, 10-11; *Conduct of the Persian Gulf War*, 360-61.

[45] Peay, interview, 12; *Conduct of the Persian Gulf War*, 361-62.

Euphrates Valley. Using 60 CH-47 sorties and 125 UH-60 sorties, this air assault effectively cut Highway 8—the main road between Baghdad and Iraqi forces in Kuwait. Two days later, 2nd Brigade assaulted 152 kilometers from FOB Cobra to establish FOB Viper—another springboard for follow-on operations. The 101st accomplished this using 55 CH-47 sorties and 120 UH-60 sorties. Meanwhile, the division planned one last air assault from FOB Cobra to Engagement Area Thomas that never occurred due to a ceasefire that ended the war. In sum, the 101st Airborne Division (Air Assault) conducted three brigade-size air assaults in succession to strike deep behind Iraqi forces.[46]

Ends, Ways, Means Analysis of Air Assault Operations

The 1980s and 90s were evolutionary for air assault operations. AirLand Battle, aviation's technological improvements, and the Army of Excellence represent the ways and means of this era. Operations Just Cause and Desert Storm differed in scale, but together they illustrate that air assaults provide depth and simultaneity more so than any other type of Army operation. These operations also validated the procurement of UH-60 Blackhawk helicopters, upgrade of the CH-47, and importance of night vision goggles. Most importantly, Operations Just Cause and Desert Storm exhibit an aviation structure thoughtfully designed to place aviation assets where they best integrate with ground forces for training while maintaining the flexibility to task organize as required. Together, Operations Just Cause and Desert Storm demonstrate an ideal alignment of ends, ways, and means for air assault operations.[47]

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[46] Peay, interview, 13-14; *Conduct of the Persian Gulf War*, 362-63.

[47] 1 Arthur J. Alexander, *The Cost and Benefits of Reliability in Military Equipment* (Santa Monica: RAND Corporation, 1988), 58; The Congress of the United States Congressional Budget Office, *An Analysis of US Army Helicopter Programs, December, 1995,* (Washington, DC, 1996), 13-14; 101st Airborne Division (Air Assault), *Gold Book, Tactics, Techniques, and Procedures for Air Assault Operations* (Fort Campbell: Headquarters, 101st Airborne Division, 1999), Figure 2-1.

The air assaults in Operations Just Cause and Desert Storm exemplify the tenets of AirLand Battle. Specifically, Operation Just Cause illustrates the operational effects achieved by simultaneously assaulting to seize decisive points. Under certain circumstances, the Army can achieve this by using only ground maneuver, but most often, terrain, enemy, and different rates of movement make this impractical. However, air assault operations are ideal for simultaneity because as seen in Operation Just Cause these variables were no factor. The 101st's air assault operations in Operation Desert Storm, illustrate the benefits of depth as a tenet of AirLand Battle. The division's organic ability to provide its own basing at FOB Cobra by air assault and subsequently extend its operational reach to cut Iraq's lines of communication is unprecedented in military history. The results are a testament to AirLand Battle doctrine, but also the era's technological advancements.

Both Operation Just Cause and Desert Storm demonstrate how technology helped evolve air assault operations during this era. Operation Just Cause is the first conventional air assault operation planned and executed to take advantage of night vision goggles. The operation still had a mix of UH-1s and UH-60s, and its Chinooks were not the upgraded CH-47D models. However, these facts did not negatively affect the outcome of the mission. Operation Desert Storm showcased aviation's new technology. The 101st Division primarily used UH-60s and CH-47Ds as their primary lift helicopters and night vision goggles for some, but not all of the flying. More importantly, CH-47Ds gained prominence as a reliable air assault platform for personnel for the first time in history.

Operations Just Cause and Desert Storm further demonstrate the validity of the AOE aviation force structure during the 1980s and 90s. AOE tailored aviation brigades according to the type of unit they supported. This meant a different type of brigade for light divisions, heavy divisions, and to an extent light corps and heavy corps. To support mobility at the operational level of war, corps aviation brigades consisted of 45 UH-60s and 64 CH-47s or 2,032 seats-per-

lift. Light division aviation brigades included 30 UH-60s or 280 seats-per-lift. Heavy division aviation brigades had 15 UH-60s or 140 seats-per-lift. Uniquely, 101st Airborne Division's aviation brigade had a more robust lift capacity of 90 UH-60s, 48 CH-47s, and 30 UH-1s or 2,228 seats-per-lift.[48]

Operations Just Cause and Desert Storm illustrate the flexibility inherent in the aviation force structure under AOE. In early planning, Lieutenant Colonel Douglas Smith, Commander, Task Force 1-228th, requested and was resourced an additional five CH-47 crews, five UH-1 crews, three MEDEVAC crews, and ten UH-60 door gunners from within XVIII Airborne Corps' 18th Aviation Brigade. Two years later, the same brigade reinforced Colonel Garrett's already robust 101st Aviation Brigade to form the largest air force in the world under one brigade's control. [49]

An additional benefit of the Army's aviation structure under AOE is it optimized training and integration while at home station. According to the Army's 2011 air assault operations manual:

> Integration should start at the home station with implementation of effective standard operating procedures, habitual relationships, and training if possible. It continues through planning, preparation, and execution of the air assault.[50]

Operation Just Cause illustrates the importance of training and integration at home station, and in this case, while co-located at forward operating bases. As Lieutenant General Stiner explained,

> The 82nd's rehearsals [at Fort Bragg] went pretty darn well, but Stiner voiced one concern that stemmed from the practice runs taking place in Panama for the air assaults. The 1st Battalion, 228th Aviation was not in the general's estimate, proficient for doing

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[48] McGrath, 86-92; Field Manual (FM) 1-111, *Aviation Brigade* (Washington, DC: Government Printing Office, 1986), A-1, B-1; James W. Williams, *A History of Army Aviation, From its Beginnings to the War on Terror* (New York: iUniverse, 2005), 200; Romjue, 94.

[49] Smith, 23-24; Peay, interview, 22; *Conduct of the Persian Gulf War*, 361.

[50] Army Tactics, Techniques, and Procedures (ATTP) 3-18.12, *Air Assault Operations* (Washington, DC: Government Printing Office, 2011), 3-4.

> night operations' with night-vision goggles. Among other arrangements, this meant sending Black Hawk, Huey, and Chinook crews from Fort Bragg to Panama, together with door gunners from the 82nd to participate in a very comprehensive training program with the battalion.[51]

As expected, Major General Peay, Commander, 101st Airborne Division (Air Assault) attributed his division's success in Operation Desert Storm to home station training:

> The pace of training at Campbell, the National Training Center, and Joint Readiness Training Center plus corps exercises the previous year had been enormous. The six months in the desert just added to it. Our soldiers were battle-hardened, or desert tough before we went in.[52]

AOE's aviation structure directly and positively contributed to home station training and integration. The 82nd Airborne Division, 18th Aviation Brigade, and the XVIII Airborne Corps were collocated together at Fort Bragg. Likewise, 101st Airborne Division was collocated and inherently integrated. Each attained a high level of proficiency resulting in successful air assaults in Operation Just Cause and Desert Storm.

The air assaults in Operations Just Cause and Desert Storm demonstrated an ideal alignment of ends, ways, and means. The Army's operating concept—AirLand Battle—propelled air assaults from the merely tactical into the operational by emphasizing synchronization and depth. Meanwhile, technological advancements improved overall helicopter performance and survivability. Most importantly, the Army designed aviation's organizations thoughtfully under AOE. It placed air assault assets where they best integrate with ground forces at home station, yet maintained organizational flexibility to task organize for war.

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[51] Lawrence A. Yates, *The U.S. Military Intervention in Panama: Operation Just Cause, December 1989-January 1990* (Washington, DC: Center of Military History, 2014), 244.

[52] Peay, interview, 28.

The Global War on Terrorism

Air Assault Operations in the Global War on Terrorism

In 1993, the US Army transitioned into a new era of warfare that created the foundation of its current operating concept. The Army pivoted toward joint, combined, and full-dimension operations because of many factors. The 1986 Goldwater-Nichols Act prompted emphasis on joint operations, the fall of the Soviet Union caused a shift in focus to military operations other than war, and a decreased defense budget necessitated a reliance on synergistic effects of combined arms. These factors and further Army refinements resulted in the Army's current operating concept—Unified Land Operations (ULO). The Army describes ULO as:

> …how the Army seizes, retains, and exploits the initiative to gain and maintain a position of relative advantage in sustained land operations through simultaneous offensive, defensive, and stability operations in order to prevent or deter conflict, prevail in war, and create conditions for favorable conflict resolution.[53]

Key words like "seize," "exploits," and "initiative," and the phrase, "positions of relative advantage" suggest that air assault operations remain as relevant today as in any time in history.[54]

During this era, the US Army underwent an organizational change known as Army Transformation, which entailed a major shift from the Army of Excellence to a new structure referred to as modularity. Neither the Army's operating concept nor doctrine alone drove Army Transformation. Instead, the deployment demands created by GWOT emerged as the key driver of change. In the summer of 2003, seventy-three percent of the Regular Army's brigade combat teams (BCT) and thirty-three percent of the Army National Guard's BCTs resided overseas in the Balkans, the Sinai, Afghanistan, and Iraq. In February 2004, General Peter Schoomaker, US

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[53] Army Doctrinal Publication (ADP) 3-0, *Operations* (Washington, DC: Government Printing Office, 2011), Glossary-1.

[54] Field Manual (FM) 100-5, *Operations* (Washington, DC: Government Printing Office, 1993), ii; Bill Benson, "The Evolution of Army Doctrine for Success in the 21st Century," *Military Review* Special Edition, Mission Command (March-April 2012): 49-54.

Army Chief of Staff, concluded that modularity would increase the number of combat brigades from thirty-three to forty-three, provide better support for rotational deployments, and allow the Army to react more quickly to regional commanders' needs in the future.[55]

The Army defined modularity as "a force design methodology that establishes a means to provide interchangeable, expandable, and tailorable force elements."[56] To achieve this, the Army organized its modular brigades—each with autonomous fires, engineers, and reconnaissance elements—much like Stryker brigade combat teams (SBCT). After Army Transformation, both heavy and light divisions consisted of a mix of heavy brigade combat teams (HBCT) and infantry brigade combat teams (IBCT). Notably, the Army designed the once specialized airborne, air assault, and light brigades identically—each capable of conducting forcible entry operations. Likewise, aviation brigades, once specialized by echelon and purpose, transformed into identical combat aviation brigades (CAB). The Army assigned CABs equally among divisions without regard to each division's number and type of brigade combat teams (HBCT, SBCT, IBCT). The Army's one exception to this was the 101st Airborne Division (Air Assault). From 2004 to 2015, 101st Division retained two CABs, but on May 7, 2015 even the 101st lost its second aviation brigade.[57]

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[55] William M. Donnelly, *Transforming an Army at War, Designing the Modular Force, 1991-2005* (Washington, DC: Center of Military History, 2007), 3; The Congress of the United States Congressional Budget Office, *Options for Restructuring the Army* (Washington, DC, 1995), 8.

[56] TRADOC Pamphlet 525-5, *Force XXI Operations* (Fort Monroe: Government Printing Office, 1994), 5.

[57] William M. Donnelly, *Transforming an Army at War, Designing the Modular Force*, 1991-2005 (Washington, DC: Center of Military History, 2007), 21-25, 46-56; Specialist Joseph Green, "159th Combat Aviation Brigade cases colors during inactivation ceremony," *The Official Homepage of the United States Army*, May 11, 2014, accessed January 30, 2016, http://www.army.mil/article/148298/159th_Combat_Aviation_Brigade_cases_colors_during_inactivation_ceremony/.

The Army's newly formed CABs consist of an identical amount and type of lift aircraft. These lift aircraft reside in two separate subordinate battalions with almost identical purposes. The Assault Helicopter Battalion's (AHB) thirty UH-60 Blackhawks "air assaults maneuver forces; positions personnel, supplies and equipment; evacuates casualties; conducts personnel recovery, airborne, and air assault operations." The General Support Aviation Battalion's (GSAB) twelve CH-47 Chinooks and eight UH-60 Blackhawks "air assault maneuver forces; position personnel, supplies and equipment; evacuate casualties, conduct personnel recovery, and enable mission command in support of the combined arms teams." Although similar in purpose, the GSAB has additional assets like fifteen HH-60 Blackhawks to perform aeromedical evacuation and an air traffic services company to perform air traffic control.[58]

The Army updated its Field Manual 90-4, *Air Assault Operations* (1987) with Army Tactics, Techniques, and Procedures (ATTP) 3-18.12, *Air Assault Operations* (2011). This updated manual considered the Army's new operating concept, new technology, and lessons learned from GWOT. More importantly, it accounted for modularity and implicitly provided the Army's logic for designing identical CABs to support all three types of BCTs. ATTP 3-18.12 explains:

> All three types of BCTs—heavy, Stryker, and Infantry—have the capability to plan, prepare, and execute air assault operations when the situation dictates…HBCTs and SBCTs may not conduct air assaults as frequently as IBCTs, such operations conducted on a limited scale may be the decisive maneuver in an HBCT or SBCT operation. For this reason, all BCTs should be proficient in conducting air assaults. Examples of air assault operations conducted by HBCTs and SBCTs include seizure and retention of river-crossing sites, deliberate breaches, and seizure of key terrain.[59]

For BCT-size support, ATTP 3-18.12 specifies:

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[58] Field Manual (FM) 3-04, *Army Aviation* (Washington, DC: Government Printing Office, 2015), 2-8 thru 2-10.

[59] Army Tactics, Techniques, and Procedures (ATTP) 3-18.12, *Air Assault Operations* (Washington, DC: Government Printing Office, 2011), 1-2.

> The CAB typically task organizes based on mission variables to form an aviation task force. Additional aviation companies, platoons, or sections may be task organized to include attack reconnaissance (manned and unmanned), airborne command and control (C2), communications relay, air medical evacuation, and air traffic services. In BCT-sized air assaults, reinforcement with additional aviation is a common way to mass combat power and accelerate force buildup.[60]

Operation Anaconda, an air assault operation in support of Operation Enduring Freedom (OEF), illustrates the concept of task organizing based on mission variables.

Beginning in October 2001, OEF was largely a war waged by US Special Operations Forces (SOF), which sought to link up and coordinate with the Northern Alliance to bring US Air Force long-range bombers to bear on al Qaeda forces. Additionally, SOF worked to seize key terrain like Kandahar and Bagram Airfield, which allowed US Central Command to establish the theater architecture for a sustained land campaign. By January 2002, US Army conventional forces in Afghanistan remained limited. At Kandahar the Army had two battalions of the 3rd Brigade, 101st Airborne Division (3/101(-))—1st and 2nd Battalions, 187th Infantry (1-187 and 2-187 INF)—and Task Force Talon, an aviation task force, centered on 7th Battalion, 101st Aviation Regiment (7-101 AVN). At Bagram Airfield, the Army had the 1st Battalion, 87th Infantry, 10th Mountain Division (1-87 INF).[61]

With Afghanistan effectively liberated from Taliban rule, US conventional forces, SOF, and a multinational coalition force sought to locate and destroy concealed al Qaeda and Taliban forces. Human intelligence reports indicated a major concentration of enemy forces in the Shahi Kowt Valley. By helicopter, the valley was one hour from Bagram. As such, 3/101 (-) and TF Talon repositioned to Bagram to stage for an impending operation. Upon arrival, Colonel Frank

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[60] Army Tactics, Techniques, and Procedures (ATTP) 3-18.12, *Air Assault Operations* (Washington, DC: Government Printing Office, 2011), 1-3.

[61] Richard W. Stewart, *Operation Enduring Freedom: The United States Army in Afghanistan, October 2001-March 2002* (Washington, DC: Center of Military History, 2004), 8-19.

Wiercinski, Commander, 3/101(-), gained control of 1st Battalion, 87th Infantry to form Task Force Rakassan. Additionally, TF Talon gained control of Bravo Company, 159th Aviation Regiment (B/159 AVN) from Hunter Army Airfield, Fort Stewart Georgia. In total, TF Talon consisted of fourteen CH-47 Chinooks, eight AH-64 Apaches, five UH-60L Blackhawks, and three UH-60A Blackhawks for medical evacuations.[62]

The Shahi Kowt Valley illustrates Afghanistan's challenging terrain has on military operations. Its valley floor varies from 8,200-9,180 feet in elevation, and it lies between ridgelines ranging from 10,000 to 12,000 feet. Colonel Wiercinski limited the initial air assault to daytime because the rugged terrain's high risk to landing. Furthermore, UH-60s could carry no more than five soldiers each due to high altitudes. This limited the UH-60 role to MEDEVAC and command and control, resulting in TF Talon relying solely on CH-47s for the assault. [63]

Conceptually, Operation Anaconda was a classic "hammer and anvil" designed to trap and attack an estimated 200 to 500 enemy soldiers. To form the anvil, TF Talon would air assault TF Rakassan from Bagram Airfield into seven blocking positions (Amy, Betty, Cindy, Diane, Eve, Ginger, and Heather) to seal the valley's passes. With only six CH-47 Chinooks available for the assault, multiple lifts would be required to build TF Anvil's combat power. The hammer, the main effort consisted of 260 Special Forces and Afghanistan Military Forces (AMF). It would attack by ground from the southern entrance of the valley toward the northern entrance of the valley where forty AMF and Special Forces soldiers set the final block.[64]

At midnight, on March 2, 2002, TF Hammer started its thirty-five kilometer ground movement under the concealment of darkness. Afghanistan's unforgiving terrain and poor control

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[62] Grau,151-53, 202; Stewart, 29; Adam Geibel, "Operation Anaconda, Shah-i-Khot Valley, Afghanistan 2-10 March 2002," *Military Review* 3 (June 2002), 72-76.

[63] Stewart, 31; Grau, 199; Major Edgar Fleri et al, *Operation Anaconda Case Study* (Maxwell Air Force Base: College of Aerospace Doctrine, Research, and Education, 2003), 18.

[64] Stewart, 30-35; Grau, 198-199; Major Edgar Fleri et al, 18-19.

measures plagued TF Hammer's ground movement. Along the route, the task force abandoned multiple transport trucks that became stuck, tipped over, or broke down. This caused many Afghan soldiers to move to the objective area by foot. At 0600, TF Hammer unexpectedly received what seemed to be mortar fire; however, was actually friendly fire from a circling US Air Force C-130. This fratricide killed three soldiers, wounded eighteen, and destroyed the lead vehicle. The subsequent coordination for MEDEVAC followed by actual enemy fire halted TF Hammer's movement to the object area.[65]

At 0530, TF Anvil departed Bagram on six CH-47 Chinooks escorted by five AH-64 Apaches. On the first lift, three B/159 AVN CH-47s flew 105 soldiers from 1-87 INF, 10th Mountain Division for LZs Heather, Ginger, and Eve. Additionally, three 7-101 AVN CH-47s flew 105 soldiers from 2-187 INF, 101st Division for LZs Betty, Cindy, and Dianne. The departure time allowed darkness to conceal the one-hour flight, but facilitated a daytime landing. At 0630, the six CH-47s landed and deposited TF Anvil's first 210 soldiers into the valley without incident. They immediately departed back for Bagram to refuel and load TF Anvil's remaining soldiers.[66]

By the time the CH-47s flew an hour back to Bagram, refueled, and loaded their second lift, bad weather appeared that delayed the assault of the second lift. At the objective area, low force ratios prevented TF Anvil from gaining the initiative. However, continuous close air support kept enemy forces from advancing on TF Anvil or Hammer. TF Talon made one attempt to reinforce that afternoon; however, Colonel Wiercinski called it off because of intense enemy fire at the landing zone. At 1730, under the concealment of darkness and cover of an AC-130, three CH-47s from 7-101 AVN managed to insert a company from 2-187 INF to reinforce LZs

[65] Stewart, 37-38

[66] Stewart, 38-40; Grau, 231-33, 241, 248-59.

Betty and Diane. At roughly the same time, four B/159 AVN CH-47s picked up 1-87 INF near LZ Ginger to withdraw, consolidate, and reposition the following morning.

The following afternoon, three CH-47s from 7-101 AVN (serial one) and three CH-47s from B/159 AVN (serial two) departed from Bagram to reinsert 1-87 INF into a more advantageous position and continue building combat power in the objective area. Prior to their arrival at the final release point, Major General Hagenbeck, Commander of 10th Mountain Division, called the Chinooks off because of intense enemy fire. Serial two returned to Bagram without landing; however, serial one did not receive the order and continued to its landing area. Serial one landed its soldiers and returned to Bagram without incident. That evening, serial one successfully inserted 1-87 INF and TF Hammer at the southern entrance of the Shahi Kowt Valley. Finally, forty-five hours after the initial air assault into the valley, Colonel Wiercinski's entire air assault task force had consolidated at the objective area. [67]

Operation Anaconda continued over the next week, finally ending on 19 March. This was the first time al Qaeda engaged in a pitched battle during OEF. Coalition forces anticipated facing between 200 and 500 enemy forces in the valley, and intelligence estimates indicated that these fighters would most likely withdraw from contact. Instead, the enemy numbered from 600 to 1,000, and occupied well-constructed fighting positions that took advantage of high ground. They made use of observation posts that provided early warning communications and placed well-targeted indirect fires. In the end, coalition forces lost 15 killed in action and 82 wounded in action, while estimates of enemy casualties ranged from 500 to 800—some of which were al Qaeda's most experienced fighters. Anti-coalition forces no longer occupied a known safe haven and US-led coalition forces controlled the Shahi Kowt Valley for the remainder of the war.

[67] Stewart, 40-41; Grau. 314, 328-29, 341-42; Geibel, 72-76.

Ends, Ways, Means of Air Assault Operations Analysis

The Army's current ways and means for air assault operations are misaligned. Air assaults remain applicable to the Army's current operating concept—Unified Land Operations. Additionally, the Army possesses enough assault helicopters in its inventory to execute air assault operations. Therefore, the aviation organizational structure under modularity is causing the misalignment. Every division, regardless of type, is assigned one CAB, all of which are organized identically regardless of the type of unit supported. Each CAB has thirty UH-60s in the AHB and twelve CH-47s in the GSAB. In sum, this means that each division has 555 seats-per-lift. This includes the Army's light infantry divisions—10th, 25th, 82nd, and 101st—that are supposed to be capable of forcible entry operations, including air assaults.[68]

Operation Anaconda was only one of many air assaults executed during the GWOT; however, its problem of low seats-per-lift illustrates a significant flaw in today's aviation organizational structure. TF Talon consisted of fourteen CH-47s, but based on competing demands, aircraft maintenance, and high elevations, only six CH-47s were available at any given time. Colonel Wiercinski assumed risk by allowing soldiers to fly "seats out" in the chinook. Seats out means soldiers can sit on the floor of the chinook without crash-worthy seats. In this configuration, Chinooks transported up to 35 soldiers; therefore, Operation Anaconda's seats-per-lift was 210.[69]

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[68] The Congress of the United States Congressional Budget Office, *Modernizing the Army's Rotary-Wing Aviation Fleet* (Washington, DC, 2007), 23-25; 555 seats-per-lift is based on 85% of 30 UH-60s (rounded down) times 11 passengers plus 72% of 12 CH-47s (rounded down) times 35 passengers. These calculations account for historical readiness rates that remain constant between all case studies.

[69] Grau, 151-53, 202; Stewart, 29; Colonel Frank Wiercinski, interview by Austin Bay, "A Full Report on Operation Anaconda—America's First Battle of the 21st Century, A Complete After Action Interview," accessed February 13, 2016, June 27, 2002, http://strategypage.com/on_point/20020627.aspx, 1; 210 seats-per-lift is based on 6 CH-47s times 35 passengers.

As an air assault's seats-per-lift increases, its risk of failure decreases. Colonel Wiercinski understood this important fact, as attested by remarks he made in his Operation Anaconda after-action interview,

> I organized for Anaconda based on mission requirements and what lift I had…we used Chinooks because of the altitude…we could put in a lot of troops quickly with them...we had up to 35 troops with full combat loading. We needed to get on the landing zone fast and with a lot of troops.[70]

With only 210 seats-per-lift, Colonel Wiercinski had to insert TF Hammer by ground. Meanwhile, low seats-per-lift meant that TF Anvil required multiple lifts to build combat power. Introducing forces by ground movement to an air assault can be a sound option. It increases firepower, prevents premature culmination, and presents the enemy with multiple dilemmas. In Operation Anaconda, this was not an option; it was a necessity—one that, in hindsight, did not work very well.[71]

Meanwhile, TF Anvil's initial air assault was a complete success. From Colonel Wiercinski's perspective, "We came in by air assault, with a lot of mass firepower and surprise, got right on top of them. You know to exploit success." [72] Wiercinski's assertion highlights two things. First, Operation Anaconda's initial air assault perfectly illustrated the benefits of air assault operations—it achieved surprise, landed unopposed, and gained a positional advantage. Second, air assaults allow commanders to exploit surprise to seize and maintain the initiative. Historical evidence suggests that Colonel Wiercinski could not seize the initiative because the first lift assault force did not have the force ratio needed. In fact, Dr. Richard Stewart, Histories Division Chief of the Center of Military History asserted,

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[70] Colonel Frank Wiercinski, 1.

[71] Grau, 198-201; Stewart, 40-41; Major Edgar Fleri et al, *Operation Anaconda Case Study* (Maxwell Air Force Base: College of Aerospace Doctrine, Research, and Education, 27.

[72] Colonel Frank Wiercinski, 1.

> The positions were half strength for some time and under nearly constant mortar attacks…the second helicopter lift finally brought in additional troops to reinforce each battle position early the following morning, the situation in the valley began to stabilize.[73]

Granted, Operation Anaconda's original plan was for the air assault force to occupy blocking positions—not exploit success caused by surprise and attack. Nonetheless, Operation Anaconda illustrates the importance of seats-per-lift and force ratios.[74]

Three interrelated factors prevented the assault force from exploiting success, but each stemmed from a low seats-per-lift. The first factor was the distance between Bagram and the Shahi Kowt Valley was 120 miles or approximately the same distance between Washington D.C. and Philadelphia. TF Talon could return with the second lift in two hours and thirty minutes barring any unanticipated delays. Of course, history shows there were unanticipated delays—one by inclement weather and the other by the enemy. An increased seats-per-lift would have prevented the need for a second lift altogether. Instead, Colonel Wiercinski had to accept the inherent risk of limited means.[75]

Inclement weather is always a consideration that affects air assault operations. In fact, a heavy mix of snow and rain delayed Operation Anaconda's originally planned start date of February 28, 2002. Planners can do very little to mitigate the effects of weather on air assault operations. This is especially true over long distance and canalizing terrain like that found between Bagram and the Shahi Kowt Valley. An increased seat-to-solider ratio is often the only

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[73] Stewart, 41.

[74] Stewart, 38-41; Grau, 335-338; Colonel Frank Wiercinski, 1-2.

[75] Adam Geibel, "Operation Anaconda, Shah-i-Khot Valley, Afghanistan 2-10 March 2002," *Military Review* 3 (June 2002), 72-76; Stewart, 38-40; Grau, 231-33, 241, 248-59; Major Edgar Fleri et al, *Operation Anaconda Case Study* (Maxwell Air Force Base: College of Aerospace Doctrine, Research, and Education, 2003, 28

way to mitigate inclement weather effects. It facilitates an all or nothing condition where ground forces have either all of their soldiers on the objective or none at all.[76]

The final factor that prevented exploitation from Operation Anaconda's initial air assault was the enemy's reaction. Often, air assault operations are the equivalent of kicking a hornets' nest. This serves as an apt description of al Qaeda's reaction to Operation Anaconda's initial assault. Close air support by the Air Force and close combat attack by US Army Apaches, while helpful in suppressing enemy forces, did not stabilize the situation on the first day. The second lift's arrival the next day stabilized the situation—this improved the force ratio on the ground. Although not conclusive, evidence indicates that Colonel Wiercinski's task force did not exploit success until his reserve force arrived on subsequent lifts. The events that took place during Operation Anaconda provide a valuable means to estimate the seat-per-lift requirement to defeat an enemy force of 200 to 500 personnel in complex terrain. The events also beg the question, why did an operation that the Army projected to take twenty-four hours to complete actually take ten days.[77]

Evidence shows Operation Anaconda required a minimum of 630 seats-per-lift with a 260-soldier ground element or 890 seats-per-lift without it. Based on this, the Army would have needed twenty-eight CH-47s in Afghanistan to align the ways and means of the Operation Anaconda. While the Army forces in Afghanistan from 2003 to 2006 included twenty-eight CH-47s, Colonel Wiercinski's task force only had fourteen during Operation Anaconda. This limited

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[76] Colonel Frank Wiercinski, 2; Adam Geibel, 72-76; Major Edgar Fleri et al, 26.

[77] Major Edgar Fleri et al, 27; Paul L. Hastert, "Operation Anaconda: Perception Meets Reality in the Hills of Afghanistan," *Studies in Conflict and Terrorism* 28, (Issue 1, 2005), 11, 15; Evidence based on Dr. Richard Stewart statement that the situation only stabilized after the second lift and Colonel Wiercinski's claim that he employed 1,411 soldiers at the objective area.

means extended the time required for his task force to mass the necessary force ratio, gain the initiative, and ultimately defeat the enemy forces in Shahi Kowt Valley.[78]

Air assault operations under ULO will contribute to the Army winning in a complex world. Furthermore, the Army has enough assault helicopters to support forcible entry operations by light infantry divisions. However, the Army must relook how it has structured its aviation organization under modularity. Today's Combat Aviation Brigade possesses a seats-per-lift of 555 to support all divisions equally regardless of mission focus. 555 seats-per-lift would fall short of Operation Anaconda's requirements, and one can expect this number to prove inadequate in future forcible entry operations.[79]

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[78] Major General Virgil L. Packet, "Aviation Update" (presentation, 11th Expeditionary Warfare Conference, Panama City, October 24, 2006), accessed February 12, 2012, http://www.dtic.mil/ndia/2006expwarfare/2006expwarfare.html.

[79] US Department of the Army, *Infantry Battalion, Infantry Division (Light) Executive Summary, DTOE 07015C000, E-Date 20051016*, accessed February 12, 2012, http://www.globalsecurity.org/military/library/policy/army/toe/07015L000.htmv.

Cross Case Analysis

The product life cycle theory is a great way to visualize the fifty-year life of air assault operations; however, its explanatory powers are limited. The 1962 Howze Board marked air assault operations' development stage. Shortly after, air assault operations' introduction phase began with the Battle of LZ X-Ray. After the Vietnam War, air assault operations entered the growth stage when the Army aligned its organizational structure for a changed operating concept and improved its aviation technology. This preceded the maturity stage of air assault operations, as exemplified in Operations Just Cause and Desert Storm. Finally, air assault operations began their decline when the Army misaligned ways and means during the Global War on Terrorism. Critics of the product life cycle claim it is meaningless because there is no proof that products must decline—some products have gone from maturity back to growth because of an improvement or redesign. Interestingly, an organizational redesign emerges as the causal factor for air assault operations entering a decline.[80]

The Army's aviation organizational redesign under Modularity is the casual factor of air assault operations' decline because of three primary reasons. First, the structure limits the intrinsic scale of air assaults to 555 seats-per-lift. This affects the benefits of home-station training, early integration, and combined arms proficiency. Second, the structure equally divides lift assets between all divisions regardless of their BCT composition. This is a clear misalignment of ends, ways, and means that affects seats-per-lift for light divisions. Finally, the structure separates UH-60s and CH-47s into separate aviation battalions. This unnecessarily divides mission focus resulting in decreased collective proficiency.

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[80] Steven Klepper, "Entry, Exit, Growth, and Innovation over the Product Life Cycle," *The American Economic Review* 86 (1996), accessed February 18, 2016, http://www.jstor.org/stable/2118212, 562–583; "Product Life Cycle," Inc., accessed February 21, 2016, http://www.inc.com/encyclopedia/product-life-cycle.html.

The intrinsic scale of air assaults under the Army's current aviation organizational structure is limited to 555 seats-per-lift. History and routines have the most impact on organizational behavior. Recent history (2002 through present day) has required primarily small-scale air assaults requiring sixty seats-per-lift. This has created a potentially false sense of success that reinforces the Army's current aviation organizational structure. A longer view of history reveals that the Army's current structure would not ideally support air assaults like those conducted in Operations Junction City, Desert Storm, or Anaconda. The decrease in seats-per-lift would increase the risk of operational failure.[81]

Operation Junction City was a "hammer and anvil" air assault operation executed in 1967 during the Vietnam War. It combined a 249-helicopter air assault operation as the anvil with a ground maneuver element as the hammer. In sum, Operation Junction City required 2,835 seats-per-lift; the equivalent of five CAB's worth of lift assets. In 1991, Operation Desert Storm's air assault component was an operational-level envelopment that emphasized basing and operational reach. The 101st Airborne Division (Air Assault) executed three successive air assault operations that on average required 52 CH-47s and 102 UH-60s or 2,939 seats-per-lift, which is the equivalent of five CAB's worth of lift assets. In 2001, Operation Anaconda, like Operation Junction City, was a "hammer and anvil" operation, but much smaller. Nonetheless, Operation Anaconda required 18 CH-47s totaling 630 seats-per-lift or one and one-half CAB's worth of CH-47s.

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[81] Barbara Levitt and James G. March, "Organizational Learning," *Annual Review of Sociology,* Volume 14 (1988), 319; Captain Gabriel Lucero and Major Jason Raub, "CH-47F Operations in an Evolving Contemporary Operating Environment," *Aviation Digest* 2, no. 2 (April-June 2014): 33-34; Mary Jo Hatch, *Organizational Theory* (Oxford: Oxford University Press, 2006), 321.

In order for the Army's current aviation organizational structure to support any of these three historical air assault operations it would have to task organize up to five CABs worth of lift assets. In the *US Army Operating Concept*, one finds Sir Michael Howard's sage advice, "No matter how clearly one thinks, it is impossible to anticipate precisely the character of future conflict. The key is to not be so far off the mark that it becomes impossible to adjust once the character is revealed."[82] If history repeats itself—as it often does—the difference in capability between current structure and reinforced task organizations is too far off the mark. Home-station training, early integration, and combined arms proficiency do not support larger-scale air assault operations. Today's structure would support Operation Just Cause; however, this case illustrates the importance of training, integration, and proficiency. These requirements for effective task organization forced Lieutenant General Stiner to reach back to 18th Aviation Brigade for crews to deploy forward for training integration before the commencement of air assault operations during Operation Just Cause.

The Army's current aviation structure equally divides its air assault lift capability between all divisions regardless of the types of assigned Brigade Combat Teams (BCT). History and doctrine reveal that light infantry units rely on air assaults, train for air assaults, and execute air assaults far more often than mechanized and armor units. In the fifty-year lifespan of air assaults, the Army has assaulted mechanized and armor forces, but these operations were generally the exception, not the rule. This should not be surprising based on the way current Army doctrine differentiates the makeup, role, and employment of BCTs.

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[82] TRADOC Pamphlet 525-3-1, *Army Operating Concept* (Fort Eustis: Government Printing Office, 2014), iv.

Under Modularity, "The BCT is the Army's primary combined arms, close combat force…the three types of BCTs are the Infantry, Stryker, and armored brigade combat teams."[83] The 2015 version of FM 3-96, *Brigade Combat Team*, describes the role of each type of BCT. Accordingly, IBCTS, SBCTs, and armored brigade combat teams (ABCTs) "close with the enemy by means of fire and movement to destroy or capture enemy forces, to repel enemy attacks by fire, to engage in close combat, and to counterattack to control land areas."[84] However, only IBCTs "conduct entry operations by ground, air land, air assault, or amphibious assault into austere areas of operations with little or no advanced notice."[85] For mobility, SBCTs rely on Stryker vehicles and ABCTs rely on Abrams tanks. In fact, according to FM 3-96, "A combination of armored or Stryker forces, combined with infantry conducting air assaults, can be extremely effective when cutting off the enemy forcing them to either surrender or be destroyed."[86]

ATP 3-91, *Division Operations*, reinforces the relationship between IBCTs and air assaults, "All IBCTs can conduct air assault operations."[87] In contrast, ATP 3-91 never associates air assault operations with ABCTs, but does briefly with SBCTs. It specifies and provides an example of air assaulting SBCTs' dismounts to overcome restrictive terrain. This reinforces the argument that air assaulting armored or mechanized forces is the exception not the rule. In fact, in

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[83] Field Manual (FM) 3-96, *Brigade Combat Team* (Washington, DC: Government Printing Office, 2015), 1-1.

[84] Field Manual (FM) 3-96, 1-1, 1-6, 1-10.

[85] Field Manual (FM) 3-96, 1-1.

[86] Field Manual (FM) 3-96, 6-44.

[87] Army Techniques Publication (ATP) 3-91, *Division Operations* (Washington, DC: Government Printing Office, 2014), 6-44.

its Movement and Maneuver description, ATP 3-91 provides a detailed account of the norm regarding aviation and BCT interaction:

> The division's attached, [operational], or tactical control BCTs and combat aviation brigade are employed to take advantage of their strengths. Infantry forces are effective in built up areas, mountains, and thickly wooded or jungle environments. Their ability to air assault provides the division commander a rapidly deployable force to seize the initiative in the area of operations. Armored and Stryker forces concentrate their lethality, survivability, ground mobility, speed, and offensive shock effects directly to defeat or destroy enemy forces. Armored and Stryker units conduct mobile combat against enemy forces in open terrain.[88]

Finally, the Army's current aviation organizational structure unnecessarily separates UH-60s and CH-47s into separate battalions. Dating back to the Battle of LZ X-Ray, UH-60s and CH-47s were instrumental in the conduct of air assault operations. In fact, the lifespan of air assault operations demonstrates a continual rise in prominence of the CH-47 Chinook. This is primarily because of two factors—CH-47s are more powerful than UH-60s; therefore, less effected by high altitudes and Chinooks provide three times more seats-per-lift than Blackhawks. Nevertheless, UH-60s reside in AHBs and CH-47s reside in GSABs.

This is an organizational holdover from the Army of Excellence force structure when CH-47s were corps-level assets. The Army placed Chinooks into GSABs when they placed all corps aviation assets into CABs. Other corps-level assets placed in the GSAB include aeromedical evacuation companies (fifteen UH-60s), command aviation companies (eight UH-60s), and air traffic services companies. Operationally, GSABs split their focus between four functions while AHBs have one function. In *Training Units and Developing* leaders, The Army asserts, "Units master tasks by limiting the number of tasks to train to the few key tasks required

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[88] Army Techniques Publication (ATP) 3-91, *Division Operations* (Washington, DC: Government Printing Office, 2014), 6-6.

to accomplish the mission."[89] The current aviation organizational structure unnecessarily conflicts with this fundamental principle of training.

Recommendation

The easiest solution to the flaws in the Army's current aviation structure is to procure more UH-60s and CH-47s to increase the lift capacity of the 10th, 25th, 82nd, and 101st CABs. While easy, this solution lacks feasibility due to associated financial costs in a budget-constrained environment. Furthermore, this solution does not take advantage of the Army's excessive maneuver capacity residing in units like the 1st Cavalry Division. It is more likely that the Army would adopt a zero-sum game solution internal to its current organizational construct.

As zero-sum game suggests, organizations like the 1st Cavalry Division will need to give up air assault capacity in order for organizations like the 101st Division to gain capacity. This leads to the difficult question of how much air assault capacity the Army should align to each division. The most obvious option would be for the Army to divide its air assault helicopters equally among divisions based on numbers of IBCTs. This would require three types of CABs—light, medium, and heavy. Furthermore, this recommendation removes CH-47s from the GSAB and places them into AHBs. This consolidates air assault helicopters under the same parent organization, improves mission command, and integrates home station training. Under this construct, AHBs consist of thirty UH-60s and twelve CH-47s while GSABs maintain their command aviation companies (eight UH-60s), aeromedical evacuation companies (fifteen UH-60s), and air traffic service companies.

Within an Army-wide ten-CAB construct, the air assault helicopter inventory consists of 300 UH-60s and 120 CH-47s. The Army would consolidate four light CABs with its four light

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[89] Army Doctrine Reference Publication (ADRP) 7-0, *Training Units and Developing Leaders* (Washington, DC: Government Printing Office, 2012), 2-2.

divisions. A light CAB would consist of two AHBs instead of one, and each AHB would consist of thirty UH-60s and twelve CH-47s. A light CAB's seats-per-lift would be 1,156. The Army would consolidate two medium CABs with its two divisions that have one IBCT each. These CABs would have one AHB that consists of thirty UH-60s and twelve CH-47s. A medium CAB's seats per lift would be 555. The Army would consolidate four heavy CABs with its four divisions that have no IBCTs. These CABs would not have AHBs; therefore, no CH-47s and eight UH-60s in the command aviation company under the GSAB.[90]

By adopting this aviation organizational construct, the Army would assume risk with its four divisions without IBCTs. Those divisions would not benefit from early air assault or air movement integration or home station training. If required, the Army could mitigate this risk with integration training at combat training center rotations and joint exercises. With this risk mitigated to the degree possible, the Army would benefit by increasing the air assault capacity of its four light divisions by108 percent. At 1,156 seats-per-lift, future missions on the scale of Operation Anaconda will once again be feasible, providing the operational capability of exploiting positional advantage and surprise to gain and maintain the initiative.[91]

Seats-per-lift should be a metric emphasized as Army aviation explores future vertical lift. Currently, the Army identifies speed, range, and power as capability gaps in modernization. Meanwhile, the future vertical lift passenger requirements for medium helicopters range from eleven to twenty-four and for heavy helicopters range from thirty-three to forty-four. The two leading medium helicopter designs are the SB-1 Defiant that carries twelve passengers and V-280 Valor that carries fourteen passengers. Each of these designs doubles the UH-60's speed and

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[90] Seats-per-lift formula is eighty-five percent of total UH-60s rounded down multiplied by eleven personnel plus seventy-two percent of total CH-47s rounded down multiplied by thirty-five personnel.

[91] Current structure's seats-per-lift is 555; recommended structure's seats-per-lift is 1,156.

range, yet their maximum passenger capacities are negligible by comparison. Speed and range are important to the survivability and operational reach of a helicopter. However, passenger capacity affects seats-per-lift, which greatly affects the Army's capability to conduct air assault operations. For example, if the future medium helicopter doubled the UH-60's passenger capacity, then the AHB's seats-per-lift would increase from 275 to 550. From an air assault perspective, this would be the equivalent of buying twice as many helicopters.[92]

[92] Colonel Ramsey Bentley, "SOF Future Vertical Lift (FVL)," accessed March 1, 2016, www.dtic.mil/ndia/2013SOFIC/SOFICFVLBriefFY13.pdf, 9. Deputy Chief of Staff, G-8, "Aviation Portfolio Update for the National Commission on the Future of the Army, 17 August 2015, accessed March 1, 2016, http://www.ncfa.ncr.gov/sites/default/files/G8%20FDV%20aviation%20modernization%20briefing%2017%20Aug%2015.pdf , 4. "Sikorsky Technologies," Sikorsky, accessed March 1, 2016, http://www.sikorsky.com/Pages/Innovation/Technologies.aspx; "Bell V-280 Valor," Bell Helicopter, accessed March 1, 2016, http://www.bellhelicopter.com/military/bell-v-280. The seats-per-lift formula used is 85% of 30 medium helicopters multiplied by 22 seats per helicopter.

Conclusion

The concepts of tempo, positional advantage, and surprise are as old as war itself. Commanders have always sought to maneuver on the battlefield at an advantageous tempo to seize a positional advantage and surprise their enemy. Major General Robert Scales argued,

> The surest way to gain the advantage of time is to arrive within the battle area quickly, armed with overwhelming force…friendly maneuver forces must be inserted quickly across the entire span of his operational area to ensure the immediate disintegration of his force and the ultimate collapse of his will to resist.[93]

Over the past fifty years, the Army has employed helicopters to gain the advantage of time and quickly insert friendly maneuver forces across the entire span of the battle area.[94]

Starting with the 11th Air Assault Division (Test) and its transformation to the 1st Cavalry Division (Airmobile), the Army has committed to the concept of using helicopters to vertically envelop the enemy. Airmobile operations in the Vietnam War illustrated the importance of properly aligning ways and means to achieve desired ends. Ways, or in this case, the airmobile concept, changed from a method to fly to the battlefield in the Vietnam War into the air assault concept under AirLand Battle. This concept emphasizes seizing terrain, enveloping the enemy, and gaining the initiative. The concept of air assault operations has remained the same since AirLand Battle; however, the means have drastically changed.[95]

Means for air assault operations include helicopter type, seats-per-lift, and aviation organizational structure. Mostly, the Army improved its air assault means over the past fifty years. In 1979, the much stronger, faster, and versatile UH-60s replaced UH-1s as the Army's

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[93] Major General Robert H. Scales, "Speed and Power: Primal Forces in the New American Style of War," *Future Warfare Anthology* (Carlisle Barracks: US Army War College, 2000), 6-7.

[94] Clausewitz, 198; Sun Tzu, *The Art of Warfare,* trans. Robert Ames (New York: Ballentine Books, 1993), 115; Antoine Henri Jomini, *The Art of War,* trans. G. H. Mendell and W. P. Graighill (Mineola: Dover Publications, 2007), 89, 186-87, 190-91.

[95] J. A. Stockfisch, 12, 15, 22-24; Lieutenant Colonel Donald Harrison, 24.

primary assault helicopter. UH-60s extended reach, added seats-per-lift, and increased speed and power. The fifty-four-year-old CH-47 predates air assaults; however, the Army continually upgraded this aircraft from the original A-model configuration to the current F-Model. With its improvements and inherent seats-per-lift, CH-47s are often in higher demand than UH-60s for air assault operations. Improved helicopters are beneficial; however, the single most significant technological advancement was the advent of night vision goggles. Night vision goggles allowed the Army to conduct air assault operations under the concealment of darkness, which drastically improved survivability.[96]

Seats-per-lift is a metric to determine how many soldiers can mass on a landing zone over a short amount of time. As seats-per-lift increase risk of operational failure decreases because of improved force ratios. The amount and type of helicopters used during an air assault are the primary factors of seats-per-lift. For example, CH-47s inherently have up to four times more seats-per-lift than UH-60s. However, if only one CH-47 is available compared to five UH-60s, then UH-60s have a higher seats-per-lift. Since inception of the airmobile concept, the Army adapted its aviation organization structure to best align its means with ways.[97]

Beginning with the Vietnam War, the Army adopted and maintained a flexible two-method approach to conducting airmobile operations. One method was the division-level homogenous organization, like the 1st Cavalry Division (Airmobile) in Vietnam and later the 101st Airborne Division (Air Assault) in Desert Storm. Another method was the Army's heterogeneous task organization approach as illustrated in air assault operations like Operations

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[96] Boyne, 277, 323, 326-27, 341; Tate, 26-35.

[97] Training Circular (TC) 1-400, *Brigade Aviation Element Handbook*, (Washington, DC: Government Printing Office, 2006), E-6.

Junction City, Just Cause, and Anaconda. This two-approach method changed as a result of Army Transformation.[98]

In 2004, Army Transformation resulted in a departure from the Army of Excellence force structure into modularity. Modularity divided the Army's air assault helicopters (30 UH-60s and 12 CH-47s per CAB) evenly across all divisions regardless of the type of assigned BCTs. Today, the 101st Division with three IBCTs possesses the same amount of lift assets as the 1st Cavalry Division with three ABCTs. Under the current construct and based on historical readiness rates, a CAB can assault 555 seats-per-lift—this does not include vehicles or artillery. For divisions like the 1st Cavalry Division, with the mobility provided by its three ABCTs, this lack of aviation lift is of little concern. However, the 10th, 25th, 82nd, and 101st light infantry divisions suffer from low seats-per-lift.[99]

The Battle of LZ X-Ray, Operations Junction City, Just Cause, and Desert Storm's air assault operations illustrate the importance of early integration and home station training. Moreover, current air assault doctrine emphasizes early integration and training at home station if possible. Operation Anaconda was only one of many air assaults executed during the GWOT; however, its problem of low seats-per-lift illustrates a significant flaw in today's aviation organizational structure. At 555 seats-per-lift, the Army's current structure does not provide the required scale of early integration and home station training for its four light infantry divisions.

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[98] Tolson, 253-54; John A. Wickham, "Army Aviation Branch" (Washington, DC: Department of the Army, 15 Feb, 1984).

[99] Donnelly, 21-25, 46-56; Specialist Joseph Green, "159th Combat Aviation Brigade cases colors during inactivation ceremony," *The Official Homepage of the United States Army,* May 11, 2014, accessed January 30, 2016, http://www. army.mil/article/148298/159th_Combat_ Aviation_Brigade_cases_colors_during_inactivation_ceremony/.

Furthermore, one can expect this low seats-per-lift to prove inadequate in future forcible entry operations.[100]

The US Army inherently possesses the requirements to realign its ways and means for air assault operations. Its aviation organization structure should divide its air assault helicopters evenly based on amount and location IBCTs. This requires three types of CABs; light, medium, and heavy; however, better supports modularity Army-wide. Additionally, the Army should place CH-47s into AHBs to provide more focused mission command, air assault training within CABs, and organizational flexibility. These recommendations are based on seats-per-lift—a metric that should also inform future vertical lift. As the Army looks at the future of vertical lift and air assault operations speed and range improvements are important. However, it should also recognize a significant increase in passenger capacity has the same effect as buying extra helicopters—except without the procurement cost, residual maintenance costs, or additional soldier requirements.

[100] Tolson, 254; Army Tactics, Techniques, and Procedures (ATTP) 3-18.12, 3-4; Lawrence A. Yates, 244.

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