



What Happened to Battlefield Air Interdiction?

Army and Air Force Battlefield Doctrine
Development from Pre-Desert Storm to 2001

Lt Col Terrance J. McCaffrey III, USAF

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**What Happened to Battlefield
Air Interdiction?**

McCaffrey

***Army and Air Force Battlefield Doctrine
Development from Pre-Desert Storm to 2001***

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Air Interdiction?**

***Army and Air Force Battlefield Doctrine
Development from Pre-Desert Storm to 2001***

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Lieutenant Colonel, USAF

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Foreword

The ground and air forces have strong interlocking connections in the battlefield operations known as close air support (CAS). In the 1970s the Army and Air Force began to develop a shared battlefield doctrine known as battlefield air interdiction (BAI) that was concerned with a class of targets that lay out a fair distance from the front lines. These targets were beyond the capability and immediate tactical concern of the ground commander, beyond the area that required detailed coordination of each individual CAS mission, but were close enough to have a near-term effect upon surface operation and required a general coordination of both air and ground operations. These became known as “intermediate” targets, and often considered “shallow interdiction” targets closer to the front lines than the traditional “interdiction” targets commonly tasked by and under the control of the air forces.

The Air Force and Army worked hand in glove through the seventies to refine and publish battlefield doctrine, best recognized under its Army label, AirLand Battle. Through the eighties Gen Wilbur L. “Bill” Creech, Tactical Air Command commander, Gen Donald Starry, chief of Army Training and Doctrine Command, and other service leaders worked on a series of historical compromises pertaining to all aspects of the Army–Air Force operations.

Not more than 10 years later, on the battlefields of Desert Storm, the Air Force excluded BAI from its tasking orders, although some claimed interdiction missions of this nature were carried out under different names. Indeed, the term *BAI* was removed from doctrinal manuals written after 1990. Was it considered irrelevant or useful doctrine? Did the heightened self-interest of the services explain its removal? Or was the removal a victim of bureaucratic inertia or unique doctrinal presentations?

Lt Col Terrance J. McCaffrey III answers these questions in *What Happened to BAI? Army and Air Force Battlefield Doctrine Development from Pre-Desert Storm to 2001*. He traces air-ground doctrine and operational practices relative to battlefield interdiction from World War I to Operation Desert Storm

and suggests at one point that even the flank support for Patton was, in effect, BAI. The author carries the discussion through the decade after Desert Storm and shows how the issue is too important to be dropped by either service, even as technology provides new weapons for both services.

Colonel McCaffrey concludes that there is still need for a BAI-type mission. Both services are searching for an answer to the doctrinal void. Development is being impeded by a lively trend to speak in the self-interest of one's service. This study illuminates the process that will lead to renew BAI even as the struggle for service missions continue to cause self-interested debate.

What Happened to Battlefield Air Interdiction? was written as a master's thesis in the 2001–2 class for the Air University's School of Advanced Airpower Studies—renamed School of Advanced Air and Space Studies (SAASS) in September 2002—Maxwell AFB, Alabama. Colonel McCaffrey's very thoughtful study was chosen as one of the best of its group. The College of Aerospace Doctrine, Research and Education (CADRE) is pleased to publish this SAASS research as a CADRE Paper and thereby make it available to a wider audience within the US Air Force and beyond.



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About the Author

Lt Col Terrance J. McCaffrey (BS, United States Air Force Academy; MA, Midwestern State University) is chief, Policy and Strategy Branch, North American Aerospace Defense Command, Peterson AFB, Colorado. After completing pilot training at Williams AFB, Arizona, he went to Royal Air Force Upper Heyford to fly the F-111E with the 79th Fighter Squadron (FS). While there, Colonel McCaffrey deployed to Operation Desert Shield and Desert Storm to fly combat missions over Iraq with the 7440th Composite Combat Wing from Incirlik AB, Turkey. Next he instructed in the AT-38B at Holloman AFB, New Mexico, and Sheppard AFB, Texas. In 1996 Colonel McCaffrey moved to the F-15C and the 390th FS at Mountain Home AFB, Idaho, and led combat missions over Iraq during Operation Southern Watch and Air Expeditionary Force deployments V and VII. In 1999 he served as an F-15 joint bilateral air operations officer at Headquarters Fifth Air Force, Yokota AB, Japan. He is a distinguished graduate of Squadron Officer School and the Air Command and Staff College and a graduate of the School of Advanced Airpower Studies (renamed School of Advanced Air and Space Studies in 2002)—all based at Maxwell AFB, Alabama. He is a graduate of the Joint Forces Staff College in Norfolk, Virginia, where he won the MacArthur Foundation Award for excellence in writing. Colonel McCaffrey is married to the former Lisa K. Mul-Holland of Colorado Springs, Colorado. They have three children—Garrett, Trevor, and Mallory.

Acknowledgments

It was Spring 1999 at the Joint Air Command and Control Course (JAC2C) where the inspiration for this study began. During a planning exercise, it occurred to my instructor that I had placed no air interdiction sorties against the enemy ground force's rear echelon inside the land component commander's area of operation. I quipped that if he apportioned me some battlefield air interdiction (BAI) sorties, I would be glad to help. That is when I learned BAI was gone. I have to thank the Air Force for sending me to JAC2C to locate the problem and then to the School for Advanced Airpower Studies to find the time to study it. I appreciate the staffs at the Air University Library and the Air Force Historical Research Agency for help uncovering a mountain of documents invaluable to this study. I also thank Dr. Harold R. Winton and Dr. James S. Corum for their unending patience in reviewing drafts that were much rougher than they needed to be. I am most grateful to my wife, Lisa, and our children, Garrett, Trevor, and Mallory, for the love and support required to complete this task—I could not have done it without you. I thank Jesus Christ, my Lord and Savior, who has continued to bless my family and me beyond our dreams.

Chapter 1

Introduction

The basic doctrine of air-ground operations is to integrate the effort of air and ground forces, each operating under its own command, to achieve maximum effectiveness, as directed by the theater commander, in defeating the enemy.

—Field Manual 31-35
Air-Ground Operations, August 1946

The term *battlefield air interdiction* (BAI) was born in the North Atlantic Treaty Organization (NATO); first published as United States Air Force doctrine in the 1979 version of Air Force Manual (AFMAN) 1-1, *Functions and Basic Doctrine of the United States Air Force*; and eliminated as a doctrinal mission in the 1992 revision of the same manual. The 1979 version of AFMAN 1-1 stated, “That portion of the air interdiction mission which may have a direct or near-term effect upon surface operations—referred to by the term ‘battlefield air interdiction’—requires the air and surface commanders to coordinate their respective operations to insure the most effective support of the combined arms team.”¹

Between 1979 and 1990, BAI developed as an important tool in the United States Army’s (USA) emerging vision of deep battle. BAI was important to the USA because it represented a class of targets that lay at an intermediate distance from the front line whose attack and neutralization were critical to mission accomplishment in offensive and defensive operations. These targets included enemy artillery units, second-echelon maneuver formations, command and control (C²) nodes, and logistics support areas. They were beyond the range at which the detailed coordination of each individual mission was required as it was in close air support (CAS), but they were closer to friendly lines than most classical air interdiction (AI) targets. As Army doctrine in the 1980s, which came to be known as AirLand Battle, began to contemplate the significance of conducting “deep battle,” these targets assumed increased significance in the

Army's war-fighting construct. Moreover, because the Army's organic systems with which to engage these targets were only beginning to enter development, the ground service was very much aware of the need for close coordination with the Air Force to attack them.

BAI was also important to the Air Force because it gave aerial platforms access to targets inside the fire support coordination line (FSCL) without "penny packing" airpower to lower-level ground commanders. Such access was particularly important with the development of new systems, such as the Joint Surveillance Target Attack Radar System (JSTARS), which quickly translated ground targets into viable airpower aim points. The JSTARS made access inside the FSCL for direct attack of enemy ground forces possible without excessive use of armed reconnaissance over the active battlefield. As new Army weapons systems such as the Army Tactical Missile System (ATACMS) and AH-64 Apache attack helicopters created longer-range effects, the FSCL was placed farther away from the forward line of troops (FLOT) than it had been in the past. This created an extended zone on the battlefield where coordination and cooperation were required. Such coordination would be the key to operating joint capabilities effectively and synergistically in the crucial deep area of the battlefield.

As early as 1973, USA's Training and Doctrine Command (TRADOC) and USAF's Tactical Air Command (TAC) began work to develop a shared battlefield doctrine that evolved into AirLand Battle by 1982. Although crafted jointly by TAC and TRADOC, AirLand Battle was US Army doctrine. But as early as 1979, AFMAN 1-1 had delineated BAI as a separate mission inside the broader mission of AI. The BAI mission linked the two services together on the battlefield rather than separating them into service-specific zones. With the next version of AFMAN 1-1 in 1984 and the release of the 1986 version of Army Field Manual (FM) 100-5, *Operations*, both services had the same definition and understanding of BAI. Both documents were in effect when Iraqi armor poured across Kuwait's borders in August 1990. However, when US and coalition forces joined to expel the Iraqi army from Kuwait six months later, BAI missions did not appear on the air tasking order (ATO).

Following the successful war, both services' basic doctrinal documents underwent significant changes. In the 1992 edition of AFMAN 1-1, the Air Force removed BAI from its doctrinal lexicon as a distinct form of AI. The 1993 volume of Army FM 100-5 also underwent major revision, which eliminated not only BAI but also the Army's AirLand Battle construct. The elimination of BAI from both services' doctrinal constructs requires an explanation. This study provides the explanation by answering this question: Why did the concept of shallow interdiction—which, during the 1980s, came to be known as BAI—vanish from USA and USAF doctrine after Operation Desert Storm? The issue is significant because the BAI concept met an important tactical requirement—a replacement for which no equivalent doctrinal construct has yet emerged.

Methodology

The argument consists of two logical steps. The first demonstrates the disappearance of BAI from USAF and USA doctrinal vernaculars. A comparison is made of the presence of BAI in pre-1990 doctrinal manuals and the absence of BAI in the Desert Storm air campaign and in post-Desert Storm doctrinal manuals. The primary source documents are published doctrine as well as information from the USA TRADOC and the USAF Doctrine Center.

As the second and central step in determining why BAI disappeared, this study examines three possible explanations for this occurrence. First, BAI disappeared because it was no longer a useful or relevant doctrinal concept. Underlying this explanation is the notion that objective factors such as changes in technology or new battlefield techniques rendered it irrelevant. Supporting evidence can be found in professional journals, lower-level doctrinal documents, and technical publications. Second, service self-interest killed BAI, which suggested the USAF, USA, or both services abandoned BAI for reasons of service benefit apart from demands of the modern battlefield. Although evidence of this will be harder to find outright, it may surface in personal interviews with key personnel who were close to the issue at the time, in periodical literature, and in USAF Historical Research Agency documents. Third, examination of the doctrine-writing

organizations and processes will determine if BAI was simply a victim of bureaucratic inertia or new doctrinal style. Interviewing doctrine writers and scrutinizing standard operating procedures, to the extent they exist, are necessary to discover this evidence.

Structure

This study examines experiential and doctrinal roots—generically termed *shallow interdiction* or *medium attack*—from early air-ground experience of World War I through its codification into BAI in the era leading up to Operation Desert Storm. It also examines the application or lack of application of the BAI doctrinal concept during Desert Storm. This study evaluates each service’s basic doctrine developed during two periods: subsequent to Desert Storm until 1993 and 1993 until 2001. Doctrinal documents published during the first period include AFMAN 1-1 (1992) and Army FM 100-5 (1993). This study examines the period using four lenses: (1) the period’s political/military climate, (2) doctrinal changes that emerged from the USAF, (3) doctrinal changes that emerged from the USA, and (4) doctrinal changes that might provide evidence related to the three central explanations. This study then evaluates the next iteration of each service’s doctrine published during the second period using the same four lenses: for the USAF, Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, 1997, and AFDD 2-1.3, *Counterland*, 1999; for the USA, FM 3-0 (replaced FM 100-5), *Operations* 2001, and FM 6-20-10, *Tactics, Techniques, and Procedures for the Targeting Process*, 1996.

Definitions

To understand BAI, it is first important to understand the definition of several essential terms (see glossary). In joint warfare, definitions are crucial. Furthermore, all players must understand them. Multiple interpretations can cause huge problems.

In the “Gulf War Air Power Survey,” the authors state, “Definitions are important to commanders involved in that they can determine which commander sets the priority for aviation. The definitions of CAS/BAI/AI can determine who picks the targets

and which weapons systems are employed. Definitions therefore determine which tactics are used.”²

Notes

Most of the notes for this chapter and the following chapters appear in shortened form. For full details, see the appropriate entries in the bibliography.

1. Air Force Manual 1-1, *Functions and Basic Doctrine*, 1979, 2–13.
2. “Gulf War Air Power Survey,” draft documents and material for vol. 4, pt. 1.

Chapter 2

Origins of Battlefield Air Interdiction

Thus the object of an army in a land campaign is to defeat the enemy's army; that of the air force contingent in the field is to assist and co-operate with the army in the defeat of the enemy's army, and of such air forces as may be co-operating with it. It is necessary to emphasize this rather obvious truth in order to clear the air of a certain amount of misunderstanding that too often in the past has obscured the issue of this subject.

—Wing Comdr J. C. Slessor
Air Power and Armies, 1936

Early Years

Since the inception of military aviation, aircraft have supported ground operations. Airpower's utility quickly expanded from its early support missions of observation and artillery spotting. It did not take long for ground commanders to recognize that the airplane could be instrumental in warfare, especially when they found defending themselves from attack by enemy airpower was difficult. As airpower continued to evolve under fire, the three core missions of tactical airpower emerged. They included air superiority—a mission needed to ensure friendly survival and freedom of operation on the battlefield; AI—a mission to destroy enemy strongholds and lines of communication (LOC) behind the front; and CAS—a mission to provide additional firepower to troops in contact.¹ At the onset of the war, however, no real doctrine for airpower's use had been established.² Airplanes were still new, and attention focused on obtaining more of them and training Airmen to fly them. The problem with the new air weapons was not the technology alone, but that their infancy precluded any real testing, doctrine, or organization.³ Airmen were still literally learning on the fly.

This is not to say that the Air Service learned nothing from its experience in World War I. From the first time aircraft crossed the

lines to observe enemy forces, they began developing ways to use their new technology to attack enemy ground forces. Reports of sporadic air attacks made their way back to air commanders. Soon, offensive operations behind enemy lines were more common and became organized. In the 1916 Battle of the Somme, 18 British aircraft crossed enemy lines, then successfully found and attacked enemy trenches.⁴ In the late 1980s, Richard P. Hallion contended that from these early successes the “British recognized two forms of ground attack: *trench strafing*, which corresponded to today’s concept of close air support, and *ground strafing*, which is roughly equivalent to today’s notion of battlefield air interdiction” (emphasis in original).⁵

Early battlefield air support occurred in other battles as well. In March 1918, the German offensive featured combined arms attack including air attacks into British reserves and supplies behind the lines. In September the British executed air-attack missions in support of their ground maneuvers in Palestine against Turkish forces. In September 1918, American lieutenant William “Billy” Mitchell led the largest airpower attack to date in support of ground forces at Saint-Mihiel. In this battle, which lasted several days, ground attack effectively disrupted the movement of German reserves through use of both strafing and bombing tactics.⁶

The application of tactical aviation to the ground war dominated airpower’s use in the war. Strategic air attack was also attempted during World War I, but it was found mostly ineffective and considered a luxury.⁷ In contrast, ground commanders quickly realized that airpower was necessary both on and near the battlefield. World War I experience revealed that aviation was not merely important to ground operations, it was vital.⁸ Despite the fact that Airmen and soldiers did not always agree on methods, their battlefield partnership was born.

Making Air Doctrine

In January 1926, the USA Air Service codified its World War I experience in its first doctrinal manual, War Department Training Regulation (TR) No. 440-15, *Fundamental Principles for the Employment of the Air Service*.⁹ Gen Mason Patrick, chief of the Air Service, approved the document that was originally drafted in

1921.¹⁰ This well-coordinated manual passed through the Army Command and General Staff School, Army War College, and Army General Staff G-3 before finally arriving at the War Department—a journey of almost five years. TR 440-15 indicated that the Air Service was indeed a constituent part of the USA and outlined its role as follows: “to assist the ground forces to gain strategic and tactical successes by destroying enemy aviation, attacking enemy ground forces and other enemy objectives on land or sea, and in conjunction with other agencies to protect ground forces from hostile aerial observation and attack.”¹¹

Although strategic bombing was the major focus of airpower thought from the 1920s to the early 1940s, the role of tactical airpower in support of army maneuver woven into TR 440-15 did not entirely disappear. Even Billy Mitchell argued for attack aviation as well as strategic bombers.¹² His experience at Saint-Mihiel influenced his effort to push for heavily armored attack aircraft especially suited to ground support and air-attack operations.¹³ The ground-attack mission drove the development of several aircraft from 1927 to 1939, including the Curtiss A-3 in 1927 followed by the A-12 in 1934, Northrop’s A-17A in 1937, Martin’s 167F in 1939, and the Douglas A-20 in 1939.¹⁴ As these aircraft were developed, pursuit aircraft were also under development. Pursuit platforms were initially thought to be unsuitable for ground-attack operations, but this misperception would be corrected in World War II.

Application of the New Doctrine to War

In 1940 war was well under way in Europe. The United States, although not yet involved, was learning from the action. The blitzkrieg across Poland, Denmark, Norway, the Low Countries, and France displayed a newly developed synergy between air and land forces. With the lessons emerging from European battlefields in both strategic and tactical airpower, the USA Air Corps reassessed its doctrine.

Air Corps FM 1-5, *Employment of Aviation of the Army*, published in 1940, discussed both the need for strategic “air operations beyond the sphere of action of surface forces” and tactical “air operations in support of ground forces.”¹⁵ The ground support section gave targeting and employment-tasking authority of

supporting forces to the land commander in his sphere of influence or area of operation (AO) in modern parlance. In addition to close operations, FM 1-5 defined the support mission's nature of operations to include battlefield support missions. Specifically, it included support missions as "operations during battle [that] include air attacks against enemy formations, tanks, and mechanized forces concentrated for attack and counterattack."¹⁶ Operations described were too far removed from the front lines to constitute CAS. However, they were near enough to be included in the ground commander's sphere of influence, thus falling within the purview of what would later be called BAI.

These missions, combined with operational experience gained by the British, were tested in a 1941 series of war games in the United States. The Carolina and Louisiana maneuvers closely examined air-ground operations.¹⁷ With the 1941 addition of FM 100-5's acknowledgment that "the hostile rear area [might] frequently be the most favorable zone of action for combat aviation," the games focused there.¹⁸ "During the games, fully 60 percent of AAF sorties went toward interdiction missions, 22 percent to strike at armored and mechanized forces in rear areas, and 18 percent for 'miscellaneous' missions including direct battlefield support."¹⁹ Although tests showed some problems in executing these missions, FM 31-35, *Aviation in Support of Ground Forces*, codified the concepts in 1942. This manual developed the definitions and processes that shaped ground-support aviation. It was primarily concerned with organization of the forces and how they would both coordinate and cooperate.²⁰ The manual was also valuable because it established common definitions and terms to be used by both the air and land forces. The term *air support missions* was defined as "missions assigned air support aviation include both immediate support of ground forces where contact with the enemy is imminent or has already been established, and the destruction or neutralization of timely but more distant targets to prevent or impede hostile movement, intervention, or entry into combat."²¹ The latter category is very similar to what would later be called BAI.

Doctrine Emerges from War Lessons

Lessons learned from the new doctrine and the cooperation experienced through the remainder of World War II, especially the IX TAC/First Army and the XIX TAC/Third Army teams that fought across western Europe, led to a redrafting of FM 31-35 at war's end.²² Definitions and procedures developed in the first version four years earlier were honed into the 1946 edition, now titled *Air-Ground Operations*. Today's tactical air (TACAIR) planners would feel at home reading this document. It lays out terms (many still in use today), missions, and coordination measures required to operate joint forces on the battlefield.

The 1946 version of FM 31-35 was the last field manual for air operations written before the Air Force became a separate service, and it was a good jumping off point for future cooperation. The purpose of the manual was to "define the principles, means, and procedures for the successful coordination and cooperation of the air and ground forces operating within common zones of operation."²³ To accomplish this cooperation, the manual specified three air missions: air superiority, battlefield interdiction, and CAS. When examining the three missions described in FM 31-35, it is important to recall that they were developed to support the Army at the tactical level. When the manual discussed air superiority, it referred to local (rather than theater) air superiority designed to protect and facilitate ground operations and air-support operations on the battlefield. Likewise, the interdiction mission described as the second mission element was not detached from the battlefield. Its aim was to "isolate the battle area by restricting movements of enemy troops and supplies into, within, or from the selected area."²⁴ The area addressed is the Army commander's AO. This manual also described CAS (air operations in the zone of contact) as a distinct third mission of TACAIR forces, separate from interdiction.²⁵

United States Air Force Is Born

With the birth of the USAF in 1947, Gen Carl A. "Tooey" Spaatz, the service's first chief of staff, promised Gen Dwight D. Eisenhower that the new Air Force would continue to support the Army through creation of a TAC.²⁶ With the new service also

came a need to build its own regulations and doctrine. One of the first publications revised was FM 31-35, which began draft revision in 1948. The fledgling USAF rewrote FM 31-35 jointly with the Army. An extensive draft titled "Air Support of Army Operations" was completed in March 1949 by a USA field artilleryman, Lt Col John Hansborough, while he served as an instructor at the Air Command and Staff School (AC&SS) at Maxwell AFB, Alabama. The draft included definitions, organization charts, and even pictures and drawings describing in detail the establishment of operation centers and joint operating field headquarters.²⁷ Colonel Hansborough's foreword stated the document had been prepared in hope "that this study will be of assistance in any future revision of Field Manual 31-35."²⁸

During his tenure at AC&SS, Colonel Hansborough also saw the Air Force produce academic material that shared the spirit (and several illustrations) of his work. In July 1949, the school published AC&SS Pamphlet No. 36, *Tactical Air Operations*, which had a distinctive FM 31-35 flavor. This pamphlet listed the three tactical missions as follows: "(1) air superiority (or counterair), (2) interdiction, and (3) close support."²⁹ The pamphlet described the three missions in detail. Here again, the focus of the interdiction mission was on the battlefield; in fact, it was referred to as "Interdiction of the Battle Area."³⁰ The pamphlet states that "the ultimate objective of an air interdiction program in an area where contact between two opposing surface forces does not exist is to immobilize the enemy and disable his forces in such a way that he cannot effectively close with and engage friendly surface forces. Where friendly forces are in contact with the enemy, the objective of an interdiction program is to starve logistically the enemy forces so that it loses its military potential and/or is forced to withdraw to shorten supply lines."³¹ This pamphlet's definition corresponds to the modern definition of interdiction, but it seems to stress the shallowness of depth inherent in the operation of tactical aviation at the time.

Along with work emerging from Air University (AU), the TAC and Army representatives felt that a review of doctrine, tactics, procedures, and equipment was necessary.³² General Spaatz wanted new tests and further development of TAC's doctrine and

techniques by 1948.³³ Given these developments and the thought coming out of AU as well as the Army's realization that airpower was necessary on the battlefield, the Office, Chief, Army Field Forces (an early predecessor to the TRADOC), and USAF's TAC jointly published a revision to FM 31-35, *Joint Training Directive for Air-Ground Operations*, on 1 September 1950.

The revised and expanded FM 31-35 addressed the changes required to merge the operations of the now-separate services and focused on operations in support of the Joint Chiefs of Staff (JCS) and ensured both services understood terminology, principles, organizations, and processes that would be required to operate in that environment.³⁴ The manual echoed its predecessor on the three missions of tactical airpower (air superiority, interdiction, and CAS); but now it separated the interdiction mission into several subcategories, which specified two armed types and three collective-reconnaissance types. The two armed missions included armed reconnaissance and bombing missions. The term *armed reconnaissance* was defined as a "preplanned fighter mission which searches a designated area and attacks all suitable targets found beyond the bomb line."³⁵ The term *bombing missions* was defined as "missions in the *interdiction of the battle area* [that] are carried out by tactical bombers and fighter-bombers. They are used to cut lines of communication, such as roads, bridges, railroads, or waterways, and to destroy concentrations of troops, supplies, and equipment" (emphasis added).³⁶ The interdiction mission included the conduct of operations that would both indirectly and directly assist in ground operations.

In 1957 FM 31-35 was revised again. The new manual, now titled *Joint Air-Ground Operations*, contained each service's own nomenclature: for the Army it became *Continental Army Command* 110-100-1, and for the Air Force it became *Tactical Air Command Manual (TACM)* 55-3. Although the new manual contained few real changes, it was influenced by Air Force service doctrine developed in 1954. Borrowing concepts from AFMAN 1-7, *Theater Air Forces in Counterair, Interdiction, and Close Air Support Operations*, the interdiction mission began to take on a more strategic flavor.³⁷ AFMAN 1-7 stressed the theater capability of airpower rather than the tactical level of the three traditional TAC missions. In the new TACM 55-3, this flavor was reinforced

by interdiction's replacement with *air* interdiction whose definition was specifically divided into two categories:

(1) In its broadest application, air interdiction is the application of air fire power for the purpose of neutralizing, destroying, or harassing enemy surface forces, resources, and lines of communications. Air forces engage in interdiction activities *throughout the combat zone* and into the enemy-held territory to the limit of their range. Ground targets will be attacked in the combat zone only if specifically requested by the surface forces, or after coordination with the surface forces commander to integrate the Air Force interdiction program with the fire plan of the surface forces, to insure friendly troop safety.

(2) Of more immediate effect on the surface campaign is interdiction designed to destroy, neutralize, harass, or immobilize enemy installations, facilities, and units close to or *within the battle area*. Requirements of tactical commanders in respect to future use of facilities located in enemy-held territory must be considered in interdiction operations (emphasis added).³⁸

This bifurcated definition showed an expanded realization that interdiction could leave the bounds of the ground commander's area but that it would still be important on the battlefield. Definition one was influenced by AFMAN 1-7's theater perspective. However, TAC could not yet let go of its battlefield roots so well contained in the latter half of definition one and fully contained in definition two, especially in a joint document. TACM 55-3 also established the thought of interdiction missions flown specifically at the request of ground forces in the battle area. Additionally, it established coordination with ground forces to integrate air-targeting requests with the ground forces' fire support plans outside of the strict CAS C² requirements.

Turbulence and Doctrine in the 1960s

In the continuing evolution of USAF thought, TAC took charge of its own doctrine. The thought emerging from the Air Staff in the 1960s was focused at the strategic level and on nuclear war in particular. TACM 1-1 became basic doctrine for TACAIR forces and shared a common theme and appearance with the old FM 31-35. The June 1964 version of TACM 1-1 again refined the definition of AI. Along with the evolution of AI as a deep capability, the volume held to interdiction's ability to affect the battle

area. Additionally, it discussed battlefield interdiction operations in relation to the bomb line. It stated, "Although the majority of interdiction targets fall outside the immediate battle area and, therefore, do not require detailed joint coordination, surface forces' requirements for future use of certain facilities (bridges, ports, etc.) must be considered."³⁹ TACM 1-1 further noted that "attacks made *inside the bomb line* will only be made after coordination with the surface force commander to permit maximum integration of the air interdiction campaign with the fire plan and scheme of maneuver of surface forces" (emphasis added).⁴⁰ These expansions of the AI definition now clearly delineated several layers of the complete interdiction operation. First, it recognized Air Force capability to project tactical operations well outside of the purview of ground operations. Second, it also recognized a need to coordinate, at least at an intermediate level, with ground forces in the ground commander's AO. Finally, TACM 1-1 accepted that there would be interdiction targets inside the bomb line that would require integration with ground scheme of maneuver but would remain outside of the strict control requirements of CAS. The latter two depths make up interdiction in the battle area. This doctrine would be employed in Southeast Asia (SEA).

By March 1966, Operation Rolling Thunder, a misnamed interdiction campaign in an already long war, was affecting Air Force doctrine—if not the Vietcong and the People's Army of Vietnam. The type of guerrilla war waged by the Vietcong limited the effectiveness of joint operations by USAF and USA forces. TACM 1-1, updated and revised by March 1966, lacked the joint influence theretofore commonplace in TAC doctrine. For the first time in 40 years, TACM 1-1's revision did not discuss interdiction in relation to the ground commander's needs. The new revision removed the battlefield interdiction ideas that finally were mature in 1964, which left only deep interdiction operations described. The new manual provided more detail in the CAS mission area and dedicated the remainder of the document to the system for CAS mission execution. With the exception of CAS, USAF support of the battlefield suffered in SEA because the battlefield was different. Although responsive to the reality of the Vietnam War, the 1966 TACM 1-1 was a step backward in

air-ground cooperation on a larger conventional battlefield. With the end of the Vietnam War in 1972, both the USAF and the Army realized that they should reevaluate their positions and their joint doctrine.

Rebirth of Cooperation after Vietnam

In 1973, by joint orders of Army chief of staff Gen Creighton W. Abrams and USAF chief of staff Gen George S. Brown, the newly created TRADOC and TAC attempted to set aside competing interests and return to consideration of battlefield cooperation in areas beyond CAS.⁴¹ The individuals who took the task on at the respective service commands were Gen William E. DePuy at TRADOC and Gen Robert J. Dixon at TAC. General Dixon summed up the mission of the union as “devoted to identifying and reducing combat deficiencies by examining jointly those mission areas where common equipment can be utilized or where capabilities can be complemented to enhance force effectiveness.”⁴² General Dixon noted that their union would attempt to understand why the two services were able to put away doctrinal differences and establish workable ad hoc procedures in combat but unable to do the same in peacetime. Generals Abrams and Brown’s goal was to keep peacetime separatism that was already creeping in from eliminating the strong cooperation they enjoyed in combat.⁴³ To avoid the pitfalls that had affected previous attempts at interservice cooperation, the two built a relationship on what Dixon called the “facts of life.” The following were their four main facts: (1) neither air nor land could win a significant conflict alone, (2) the environment of modern war made ad hoc teamwork development after hostilities began improbable, (3) the services were obligated to maximize their potential from each available resource, and (4) the cooperation had to become institutionalized to be effective.⁴⁴

Dixon and DePuy’s union was also influenced by the Soviet Union’s threat to western Europe, which was serious enough to induce interservice cooperation not only in the United States but also within NATO. This incentive was also supported by the strategic imperative to delay a nuclear response to a Soviet attack for as long as possible, which put a premium

on conventional air-ground cooperation. These thoughts, along with analysis of the 1973 Israeli war, were at the forefront of General DePuy's mind when he directed the development and publishing of the 1976 revision of FM 100-5, *Operations*.⁴⁵ The new manual advocated a tactical method called Active Defense.⁴⁶ The doctrine had a simple message: that there very well may be only one chance to win the next war and that is to win the first battle of the next war.⁴⁷ Because the Army expected to be significantly outnumbered on the future battlefield, aviation played an important role. FM 100-5 of 1976 explicitly stated that "the Army cannot win the land battle without the Air Force."⁴⁸ Airpower would be necessary to win in not only the close support role but also in integrating shallow and deep interdiction operations.

Dixon's and DePuy's successors, Gen Donald A. "Donn" Starry, USA, and Gen Wibur L. "Bill" Creech, USAF, continued their predecessors' good start. General Starry took command of the TRADOC in 1977 and did not miss a beat. General Starry, according to General Dixon, "has picked up the banner."⁴⁹ Dixon's successor knew how to pick up the banner, too. General Creech took over in May 1978 and began meeting regularly with General Starry.⁵⁰ By this time, General Starry was well into changing the Army's Active Defense doctrine into what he called the Extended Battlefield, which would later become known as AirLand Battle. The Air Force piece would still need work because the battlefield support construct had faded away in the 1966 version of TACM 1-1. That work was being done concurrently overseas as NATO developed its doctrine.

Was Battlefield Air Interdiction Born in Europe?

As the Air Force and Army continued to build cooperation in the continental United States (CONUS), European Command (EUCOM), and NATO nations were working together as well. As early as 1974, "NATO created a new centralized command echelon known as Allied Air Forces Central Europe (AAFCE) and vested it with *operational command* over the air forces of the Central Region" (emphasis in original).⁵¹ With this new command came a realization that NATO's doctrine also needed revision. NATO's combined air-land mission was called offensive air

support (OAS), and in the mid-1970s, the capability to execute it was found lacking. The extant codification found in Allied Tactical Publication (ATP) 27 (A), *Offensive Air Support Operation*, listed three components of OAS: AI, CAS, and TACAIR reconnaissance.⁵² In 1977, based on its experience in SEA, the USAF argued against the definition of AI being tied directly to the support of land forces. Specifically, it objected to the provision that the AI missions that fell under OAS had to “have a direct bearing or influence on the operation of land forces.”⁵³ Although the British favored the language, the US delegation objected because the USAF (at least beginning in 1966 TACM 1-1) believed that AI “was a mission conducted outside the domain of the ground force commander and not appropriately an offensive air ‘support’ operation.”⁵⁴

Had the USAF delegation known what the British were to propose, it might not have raised the AI issue. The British delegation “proposed a new offensive air support mission that would ensure responsive and direct application of air support: *Battlefield Air Interdiction*” (emphasis in original).⁵⁵ They explained that the new mission would take place beyond CAS (approximately 25 kilometers) and would target Warsaw Pact second-echelon forces. The USAF objected to the new mission for three reasons: “First, it imposed air-ground coordination where none had previously existed under the prevailing AI concept. Second, it required coordination at a level—proposed to be the army corps—that seemed inconsistent with a theaterwide view of airpower management. Third, the USAF viewed BAI as an intrusion on airpower prerogatives in determining the best employment of scarce airpower resources.”⁵⁶ The USAF objections seemed somewhat out of place because the concept represented a return to past US doctrine lost in the jungles of Vietnam. The verbiage already reviewed from the 1964 TACM 1-1 recognized the need for integration of targets inside the bomb line. By 1965 a permissive fire control measure, the FSCL, replaced the bomb line that could make battlefield interdiction a more viable and relevant mission.⁵⁷ The new fire support measure was exactly what its name implied—a coordination measure. In addition, the new BAI construct would finally allow the FSCL to be more than a separation of land and air battle.

The NATO delegation reached a compromise agreement that appeared to meet the needs of the USAF and the spirit of the original British proposal. To answer USAF's three concerns, the new BAI construct would remain under control of the air commanders, would be coordinated at the Army's group level rather than at corps level, and, because it was flown on both sides of the FSCL, could fulfill either ground or air component commanders' requirements.⁵⁸ Thus, the mission would be responsive to both air and ground commanders' needs. For ground commanders, it provided the ability to nominate targets into the enemy's rear area without adding unnecessary levels of C². Additionally, air commanders gained access to targets inside the FSCL that they were uniquely able to discover and attack. They were now also able to attack targets by merely coordinating with surface forces to avoid fratricide and/or unintentional disruption of the ground commanders' scheme of maneuver.

Simultaneously with this debate in Europe, Lt Col Robert S. Dotson, USAFR, wrote a forward-looking article for *Air University Review* that also introduced the term *battlefield air interdiction*. He assessed BAI practically and scientifically. Practically, he saw a shift from classic CAS operations "to ground attack in support of friendly forces beyond the effective range of weapons organic to those ground forces (the so-called 'battlefield' interdiction mission)."⁵⁹ Scientifically, he demonstrated that BAI would be superior to CAS because the new mission would be able to deliver firepower with maximum speed and mass.⁶⁰ Dotson overcame CAS limitations by allowing for greater use of area-denial weapons and lowering coordination requirements with forward air controllers (FAC). This procedure would reduce enemy electronic countermeasures' effectiveness.⁶¹ Dotson acknowledged that aircrews flying BAI were at risk because of extended exposure to enemy threats but argued that the risk could be overcome by using fast aircraft, such as the F-16. This idea may have been only slightly ahead of its time.

BAI came under almost immediate attack. Initial reactions went back to the misconception that the FSCL was merely a new name for the bomb line. This belief held that the FSCL was the traditional dividing line between CAS and AI or even the air and land battles.⁶² In other words, Airmen had come to

think that airpower owned the battlefield beyond tube artillery range (the normal placement of the FSCL at the time) and knew best how to affect the battlefield. Some thought that BAI was giving control of AI forces to the ground commander and, in essence, equated it to CAS.⁶³ The argument shared much with the one voiced by the US contingent at the NATO OAS conference. That argument eventually led to the compromise with the British that became BAI only a year before. Ironically, however, BAI entered USAF basic doctrine before it officially appeared in NATO.

BAI first appeared as doctrine in what by most standards was a poorly written document published in 1979. AFMAN 1-1 of 1979 was a colorful publication filled with caricatures and cartoons that looked more like a primary reader than a war manual. Despite its appearance, it did address this cutting-edge articulation of a traditional Air Force mission. On a page that featured an F-111 streaking from top to bottom, the definition of AI was well written and fairly comprehensive. It began by noting that deep interdiction did not require integration with surface maneuver due to its distance from the front lines. It acknowledged, however, that even though not integrated, it was part of the overall common objective of all forces, “to win the battle.”⁶⁴ The next paragraph discussed interdiction operations that were closer to the ground battle and that would require integration. It stated, “That portion of the air interdiction mission which may have a direct or near-term effect upon surface operations—referred to by the term ‘battlefield air interdiction’—requires the air and surface commanders to coordinate their respective operations to insure the most effective support to the combined arms team.”⁶⁵ The 1979 manual mentioned four basic purposes for interdiction: (1) to disrupt enemy lines of communication, (2) to destroy enemy supplies, (3) to attack fixed, moving, and movable point and area targets, and (4) to destroy unengaged or uncommitted enemy attack formations before they can be brought into the battle.⁶⁶ All of these categories could well apply to the battlefield. The following year, BAI would become official NATO doctrine as well when it appeared in ATP 27 (B), *Offensive Air Support*.⁶⁷

TAC-TRADOC Move Fast in the 1980s

After the release of AFMAN 1-1 in 1979 and ATP-27 (B) in 1980, debate concerning roles and missions, interest in doctrine, and TAC-TRADOC action all heated up. The inclusion of BAI in both the USAF and the NATO air doctrine showed the USA that the Air Force was serious about the threat in Europe and was willing to join the fight. On 23 May 1981, the two services put it in writing. The USAF Air Staff and the USA signed a memorandum on apportionment and allocation of OAS, which promised that the USAF would provide the assets as apportioned to fulfill OAS mission requirements.⁶⁸ The agreement “adequately established for the Army the corps commander’s role in prioritizing targets for BAI. On 22 September 1981, Headquarters US Air Force declared that the agreement was authoritative Air Force doctrine and would be incorporated into relevant Air Force doctrinal manuals.”⁶⁹

By the summer of 1981, there had been enough discussion about interdiction in the preceding years to call for an article by Lt Col Donald J. Alberts to set the story straight. This article refuted some of the existing misapprehensions concerning BAI and contains the most concise understanding of the whole BAI concept yet put on one page. First, he stated that “battlefield interdiction was not a ‘second generic type’ of interdiction; rather, it is a recognized category of air operation encompassed within the generic label of offensive air support.”⁷⁰ Although somewhat lengthy, the following extract from Alberts’s article is worthy of close examination:

As a concept, BAI was needed to correct some fundamental misperceptions held by land force personnel (and some air forces personnel) about the nature of close air support and its purpose on the one hand and interdiction and its purpose on the other. The view that interdiction is something the Air Force does far away from the land battle and with little relevance to it is all too prevalent among US Army personnel. This view stems largely from our experience in Vietnam, where there was some empirical evidence to support it. We in the United States have also fallen into the incorrect habit of terming all air support delivered on the friendly side of the fire support coordination line (FSCL) as *close air support* (CAS), restricting air interdiction to the far side of the FSCL—a position never, in fact, accepted in Air Force doctrine. Somewhere between Korea and today we also lost the concept of that category of direct support which was not

“close.” BAI helps to correct the misperception. CAS requires detailed integration of the air strike with the fire and movement of friendly ground forces: while BAI on the other hand does not. BAI is target-set centered. The focus is on forces. In the European context, the only place so far where BAI has international doctrinal legitimacy, CAS affects the ground commander’s battle now, BAI affects it in the near term (an hour, a day?), and air interdiction affects it at some further time. The level of battle involved also climbs. CAS affects the battalions, brigades, and divisions; BAI affects the divisions [and] corps Army groups; and air interdiction [affects] the Army group and theater. In the historic perspective, BAI equates to the use of air power to protect the left flank of Patton’s Third Army by the Ninth Air Force after St.-Lo breakout in 1944. BAI is neither CAS nor air interdiction as commonly perceived but shares elements of both.⁷¹

Another Airman not afraid of involvement with the Army was General Creech. He and General Starry, still under mandate from their respective service chiefs of staff, began a cooperative work that would change both services. Starry, having arrived at his post about a year before Creech, took the helm at TAC and was expanding the idea created by DePuy. He thought that the Army’s extant doctrine was sound but limited. He realized a need to add the deep battle and began work on what he called the extended battlefield concept, which clearly required airpower to make it work. This realization came when General Starry, commander of the Army’s V Corps, was walking the expected future battlefields in Germany. He understood that airpower was going to be necessary. As USA helicopters handled the first echelon, airpower (either USA attack helicopters or USAF fixed-wing attack aircraft) would be necessary to delay, disrupt, or destroy the second echelon and the flow of the Soviet battle rhythm.⁷² According to Starry, he “solicited the advice and counsel of Gen Bill Creech, the TAC commander at the time.”⁷³

On 21 October 1981, both Generals Starry and Creech spoke on the extended battlefield at the annual Association of the United States Army (AUSA) meeting in Washington, D. C. With the backing of the 1979 AFMAN 1-1 and the 23 May 1981 apportionment agreement, it appeared that General Creech had the support of Headquarters USAF, which allowed him to speak boldly about USAF support for General Starry’s concept. Following Starry’s remarks describing the extended battlefield concept, Creech’s remarks were an uncompromising echo of support. His

statements could not have been more strongly in favor of the extended battlefield concept, Army/Air Force cooperation, and his personal commitment to extend the feeling throughout the Air Force.⁷⁴ This level of support and the relationship between Generals Creech and Starry evident at this as well as other speaking arrangements led the USA to proceed with revision to its doctrine that required USAF support to execute. General Starry, the chief architect of FM 100-5's revision in 1982, which promulgated a doctrine known as AirLand Battle, gives credit for its existence to General Creech. He stated, "The armed services owe Bill Creech a great, great debt of gratitude. We would not have AirLand Battle had it not been for him. I could not have carried that off by myself."⁷⁵

AirLand Battle to Desert Storm

Effective in 1982 with AirLand Battle's first release, BAI became both USA and USAF doctrine for the first time. Although much of FM 100-5 in 1982 was crafted jointly by TAC and TRADOC, it was not joint doctrine. Airmen were often quick to point out that AirLand Battle was not Air Force doctrine either. What this attitude failed to grasp is that BAI (noted by many to be the key to winning the deep battle) was, and had been, USAF doctrine since 1979.⁷⁶ On 21 April 1983, USA chief of staff Gen Edward "Shy" Meyer and USAF chief of staff Gen Charles A. Gabriel signed memorandum of understanding "Joint USA/ USAF Efforts for Enhancement of the AirLand Battle Doctrine," which appeared to be a full Air Force endorsement of AirLand Battle. By this time, both services had a common understanding of BAI codified in their respective basic doctrines, in NATO doctrine, and in an interservice agreement. All of this should have been enough to convince Airmen that BAI was here to stay; however, some Airmen disagreed.

These Airmen attempted to hold on to the Vietnam-era principle of AI as being purely in the purview of the air commander rather than incorporate the BAI concept into fulfilling the air part of AirLand Battle. One of them, a joint air operations staff officer with the Air-Land Forces Application (ALFA) Agency, asserted that the chiefs of staff merely established training and exercises based on the AirLand Battle with the aforemen-

tioned 21 April 1983 agreement.⁷⁷ Although this was true, that training and exercising was exactly the thing that was supposed to “enhance AirLand Battle doctrine,” just as the title suggested. Another argument against air support in AirLand Battle appeared in *Air University Review* in 1985. Maj Jon S. Powell’s well-written and well-researched essay attacked AirLand Battle’s main premises of see deep, strike deep, and battlefield interdiction (calling BAI “the key to AirLand Battle, according to virtually every writer on the subject”).⁷⁸ The main argument centered on four issues: (1) the Soviet attack would not be in multiple echelons, (2) systems needed to see deep were not yet fielded, (3) the Soviet anti-air threat would severely limit BAI’s effectiveness, and (4) tactical airlift requirements would be unmanageable.⁷⁹ Powell’s assessments were not altogether inaccurate. Work was under way; however, through acquisition of JSTARS, ATACMS, joint suppression of enemy air defense (JSEAD) programs, new attack helicopters, and even the new CAS aircraft to meet at least two of the author’s points.

These critiques of AirLand Battle and BAI preceded USAF’s revision of AFMAN 1-1 in 1984. The new manual represented an attempt to develop a practical doctrinal document. It advocated the simultaneous conduct of strategic and tactical operations during a campaign. It also argued the two were synergistic. Along those lines, it called for relentlessly attacking the enemy thoroughly from the line of contact through the rear echelons and in coordination with surface forces.⁸⁰ To accomplish these conceptual ideals, the manual still held to the three most important missions for tactical airpower—counterair, AI, and CAS. The definition of AI included BAI as promised in the 23 May 1981 agreement on OAS allocation and apportionment:

Air interdiction attacks against targets which are in a position to have a near-term effect on friendly land forces are referred to as battlefield air interdiction. The primary difference between battlefield air interdiction and the remainder of the air interdiction effort is in the level of interest and emphasis the land commander places on the process of identifying, selecting, and attacking certain targets. Therefore, battlefield air interdiction requires joint coordination at the component level during planning, but once planned, battlefield air interdiction is controlled and executed by the air commander as an integral part of a total air interdiction campaign.⁸¹

In addition to this inclusion of BAI in USAF doctrine, two additional major contributions solidified the joint BAI commitment in 1984: the USA-USAF Joint Force Development Process, 22 May 1984, unofficially known as the “31 Initiatives” and the Joint USA-USAF agreement on Joint Attack of the Second Echelon (J-SAK).

The 31 Initiatives began a long list of joint agreements and cooperation between the Army and the Air Force from the very top. No longer were AirLand Battle and BAI merely part of a TAC-TRADOC sideshow, but the commitment to joint operations was now driving everything from training and exercises to acquisition decisions. The agreement called for a growing process of cooperation requiring annual review and exchange of “formal priority list of sister-service programs essential to the support of their conduct of successful airland combat operations, the purpose of which is to ensure the development of complementary systems without duplication.”⁸² The attachment to the memorandum listed the 31 initiatives for action. Initiative 21 contended battlefield air interdiction, which included three subtasks. First, both services were committed to developing procedures to synchronize BAI with maneuver applicable to any theater of war. Second, the services agreed to test the procedures. Third, the Army was tasked to automate its battlefield coordination element (BCE) and connect it to the corps and land component commanders via a near-real-time datalink.⁸³ Richard Davis felt that “this arrangement helped to solve the asymmetry between the Air Force’s theaterwide view and the Army corps’s single-sector responsibility.”⁸⁴

With initiative 21, work that was begun by Generals Starry and Creech on J-SAK was quickly agreed upon to fulfill the procedural requirement. Lt Gen Fred Mahaffey of TRADOC sent the following message to Headquarters TAC on 25 June 1984: “The ongoing efforts of TAC and TRADOC that are reflected in the current J-SAK document reflect the strides that have been made recognize the coordination of our services in the joint operation.”⁸⁵ The definition used for BAI in the J-SAK terms of reference was the same as the one written in the 1984 AFMAN 1-1.⁸⁶ In reality, J-SAK was a procedural how-to for execution of BAI in the AirLand Battle doctrinal

concept. It discussed responsibilities for apportionment of AI and BAI, targeting procedures, planning details, and organization. Having built the J-SAK procedures, they were tested, "(particularly as they applied to synchronization of battlefield air interdiction and ground maneuver) in exercise Blue Flag 85-3 at Hurlburt Field, Florida."⁸⁷ After evaluating the results, TAC and TRADOC determined that the "procedures supplied adequate interdiction and maneuver synchronization."⁸⁸

At this same time, Lt Gen Merrill A. "Tony" McPeak, while deputy chief of staff for plans, Headquarters TAC, wrote a compelling argument in support of BAI. McPeak's argument focused on the definition of the FSCL and the requirement for coordination. Given that the FSCL is not the division between CAS and AI but only the division between unrestricted and coordinated fires, coordination becomes the key. This coordination by no means rose to the level of becoming control that concerned many Airmen regarding BAI. McPeak's description of coordination ultimately arrived at the simple truth that the commander who requests the attack has, by default, coordinated and fulfilled the requirement.⁸⁹ If a ground commander nominated a target inside the FSCL, no further coordination is needed to strike it in accordance with the overall interdiction plan. If AI was not conducted inside the FSCL, McPeak argued, it would be possible to create a doctrinal "no-mission zone."⁹⁰ He suggested that BAI was the mission that filled this zone. He also described its practical execution through the coordinating element that would make it work: the BCE. For the ground commander, "all BAI targets, on either side of the FSCL, will be 'coordinated' in the sense that the ground commander nominates and prioritizes BAI targets and timing."⁹¹ Likewise, "It is the BCE that will 'coordinate' AI attacks inside the FSCL that are initiatives of the air side."⁹² In the end, he argued that the elements were in place to execute BAI successfully.

TRADOC was also hard at work finishing revisions to FM 100-5. Although General Starry had left TRADOC in 1981, Gen Glen K. Otis saw his vision published. Subsequently, Gen William R. Richardson took the baton and saw the 1986 version of FM 100-5 completed.⁹³ This manual was well organized, easy to understand, and contained the Air Force definition of

BAI.⁹⁴ It listed combined arms and sister services to complement and reinforce as one of the 10 imperatives of AirLand Battle. The synergy was gained as each force complemented the other. As the enemy “evades the effects of one weapon, arm, or service, he exposes himself to attack by another.”⁹⁵ Such synergism and complementary effects were not possible until BAI missions were flown inside the FSCL. Although the basics are presented in FM 100-5, the specifics were codified in the FM 6-20 series on field artillery operations. These manuals, written in the late 1980s, incorporated the procedures developed through countless hours over 15 years of TAC-TRADOC cooperation. They were the cutting edge of understanding and procedural knowledge on how to operate BAI within AirLand Battle on the eve of Operation Desert Storm.

Conclusion

Although the term *BAI* was not codified until the late 1970s, the mission it represented had existed almost from the beginning of airpower’s use in war. The utility of airpower on the battlefield grew in necessity from the ground-strafting missions flown over the trenches in World War I to the present. “BAI is air action directed against enemy forces and resources that are in a position to directly influence and affect current land operations. The enemy forces are not yet directly engaged but are an eminent concern to the land force commander.”⁹⁶ With the exception of a brief period during the Vietnam War, both Army and Air Force doctrine have recognized this important role for airpower on the battlefield. Throughout the 1980s, the relationship between the USAF and the USA grew and expanded to include the highest level of each service.

The close teamwork that General Creech was looking for in 1981, however, never fully emerged.⁹⁷ For the Army, Air Force codification of BAI was significant; to the Army, doctrine was sacred. After its approval of BAI in Air Force doctrine in 1979 and again in 1984, the USA trusted the USAF to honor the concept. However, to the USAF, basic doctrine did not mean the same thing. In the USAF, feelings about BAI ranged from support to resistance to neglect. Many in the Air Force still believed that BAI was a step backward, reminiscent of the misuse of airpower at

Kasserine Pass. Still, doctrine and cooperation present on 2 August 1990 appeared on the surface to be better than at almost anytime in history. The BAI concept was mature, and the Air Force should have understood it. Both services had the training, the doctrine, and the organization. The question was, Could the services implement it under fire?

Notes

1. Hallion, *Strike from the Sky*, 9.
2. Holley, *Ideas and Weapons*, 39.
3. *Ibid.*, 19. Holley contends that all three areas are necessary to get a new weapon to become effective.
4. *Ibid.*, 19–20.
5. *Ibid.*, 20.
6. For more in-depth review of these operations, see Hallion, *Strike from the Sky*, 19–41; Slessor, *Air Power and Armies*, 11–30; and Mason, *Air Power*, 17–37.
7. Holley, *Ideas and Weapons*, 172.
8. *Ibid.*, 157.
9. Mowbray, “Air Force Doctrine Problems 1926–Present,” n.p.
10. Futrell, *Ideas, Concepts, Doctrine*, vol. 1, 50. The document had been in coordination for five years.
11. *Ibid.*
12. *Ibid.*, 83.
13. *Ibid.*
14. Hallion, *Strike from the Sky*, 47–48.
15. Air Corps Field Manual 1-5, 9.
16. *Ibid.*, 23.
17. Hallion, *Strike from the Sky*, 150.
18. Quote from Army Field Manual (FM) 100-5, *Operations*, is taken from Greenfield, “Army Ground Forces and Air-Ground Battle Team,” 3.
19. Hallion, *Strike from the Sky*, 150.
20. Army FM 31-35, *Aviation in Support of Ground Forces*, 1. The purpose of this manual is to prescribe organization for combat, general functions, and employment of aviation used in tactical support of ground forces. It refers to FM 1-5 and FM 100-5 for basic employment doctrine.
21. *Ibid.*, 2.
22. Carter, “Air Power in the Battle of the Bulge,” 10–33. This is a good article on air-land cooperation in battle across western Europe.
23. Army FM 31-35, *Air-Ground Operations*, 1.
24. *Ibid.*, 14.
25. *Ibid.*
26. Russ, “Open Letter to the Field,” 1.
27. Hansborough, *Air Support of Army Operations*.

28. *Ibid.*, viii.
29. Air Command and Staff School Pamphlet No. 36, *Tactical Air Operations* (Maxwell AFB, Ala.: 1949), chap. 2, 1. Also, see the version used at Command and General Staff College, *Air Force Manual* (Fort Leavenworth, Kans., 1949).
30. *Ibid.*, chap. 2, 2.
31. *Ibid.*, chap. 2, 5.
32. Futrell, *Ideas, Concepts, Doctrine*, vol. 1, 375. For an in-depth discussion of the new Air Force and joint doctrine development, see 373–79.
33. *Ibid.*, 376.
34. Joint Publication (JP) 31-35A, *Joint Training Directive for Air-Ground Operations*, 1.
35. *Ibid.*, 10. This mission would resurface in 1991 in Desert Storm. Gen Charles A. “Chuck” Horner referred to the FSCL as the bomb line in an oral history interview after the war. See Horner, oral history interview.
36. JP 31-35A, *Joint Training Directive for Air-Ground Operations*, 11.
37. Air Force Manual (AFMAN) 1-7, *Theater Air Forces in Counter Air, Interdiction, and Close Air Support*, 11–15. Chap. 3, “Interdiction Operations,” stresses the effects of long-range interdiction.
38. Tactical Air Command Manual (TACM) 55-3, *Joint Air-Ground Operation*, 15.
39. TACM 1-1, *Tactical Air Forces in Joint Operation*, 6.
40. *Ibid.*
41. Dixon, “TAC-TRADOC Dialogue,” 46.
42. *Ibid.*, 45.
43. *Ibid.*, 45–46.
44. *Ibid.*, 46.
45. “Historical Overview of the Army Training and Doctrine Command,” n.p.
46. Romjue, *From Active Defense to AirLand Battle*, 6.
47. *Ibid.*
48. FM 100-5, *Operations*, 1976, 8-1.
49. Dixon, “TAC-TRADOC Dialogue,” 52.
50. Winton, “An Ambivalent Partnership,” 419.
51. Stein, *The Development of NATO Tactical Air Doctrine*, 23.
52. *Ibid.*, 27.
53. *Ibid.*
54. *Ibid.*
55. *Ibid.*, 28.
56. McCrabb, “The Evolution of NATO Air Doctrine,” 457.
57. The bomb line was established for safety reasons to prevent fratricide. Although the FSCL enjoys this benefit, the reason for the change was not cosmetic. It was to *coordinate* fires on the battlefield that would affect the ground scheme of maneuver. FM 6-20-1, *Field Artillery Tactics*, 23–24, defines the FSCL as a measure to “coordinate supporting fire by forces *not under control* of the appropriate land force commander which may affect tac-

tical operations.” For a good discussion on the FSCL and its application, see Zook, “The Fire Support Coordination Line.”

58. McCrabb, “The Evolution of NATO Air Doctrine,” 457; and Stein, *The Development of NATO Tactical Air Doctrine*, 33.

59. Dotson, “Tactical Air Power and Environmental Imperatives,” 29. Robert F. Futrell gives Dotson credit for coining the term. See Futrell, *Ideas, Concepts, Doctrine*, vol. 1, 551.

60. Dotson, “Tactical Air Power and Environmental Imperatives,” 30.

61. *Ibid.*, 30–31.

62. Airmen have believed since early airpower days, when excursions flown beyond the front were short, that since Army weapons could not reach deep, the deep battle was theirs. This may be true in the strategic sense but makes little sense when applied to the ground ideal of the deep battle today or since the FSCL was developed. See Rasmussen, “The Central European Battlefield,” 11–13; McCrabb, “The Evolution of NATO Air Doctrine,” 457; Futrell, *Ideas, Concepts, Doctrine*, vol. 2, 552; and New, “Where to Draw the Line between Air and Land Battle,” 34–49.

63. Rasmussen, “The Central Europe Battlefield,” 12.

64. AFMAN 1-1, *Functions and Basic Doctrine of the United States Air Force*, 2–13.

65. *Ibid.*

66. *Ibid.*

67. Futrell, *Ideas, Concepts, Doctrine*, vol. 2, 552.

68. Lt Gen Glenn K. Otis (USA), deputy chief of staff for operations and plans and Lt Gen Jerome F. O’Malley (USAF), deputy chief of staff for plans and operations, memorandum of understanding, subject: USA and USAF Agreement on Apportionment and Allocation of Offensive Air Support (OAS), 23 May 1981, reprinted as document six in Romjue, *Active Defense to AirLand Battle*, 100–108.

69. Romjue, *Active Defense to AirLand Battle*, 63.

70. Alberts, “An Alternative View of Air Interdiction,” 31–44.

71. *Ibid.*

72. Starry, oral history interview.

73. *Ibid.*, 1.

74. Gen Wilbur Creech’s address to the Association of the US Army meeting, 21 October 1981, 6–11. General Creech gave similar remarks at the ASD/Air Force Association (AFA) Engineering awards dinner at Wright-Patterson AFB, Ohio, 22 October 1981 and at the AFA Symposium in Los Angeles, Calif., on 13 November 1981.

75. Starry, oral history interview, 42.

76. Deal, “BAL,” 52.

77. Machos, “TACAIR Support for AirLand Battle,” 16–24.

78. Powell, “AirLand Battle,” 16.

79. *Ibid.*, 16–19.

80. AFMAN 1-1, *Basic Aerospace Doctrine of the United States Air Force*, 2-13 and 2-14.

81. Ibid., 3-4.
82. Wickham and Gabriel, memorandum of agreement.
83. Ibid., atch. 1, 4.
84. Davis, *The 31 Initiatives*, 59.
85. Message, DTG 251619Z June 1984, Joint Forces Development Group to Headquarters TAC and commander, TRADOC, 25 June 1984.
86. Wickham, Joint Service Agreement.
87. Davis, *The 31 Initiatives*, 76.
88. Ibid.
89. McPeak, "TACAIR Missions and the Fire Support Coordination Line," 65-72.
90. Ibid.
91. Ibid.
92. Ibid.
93. "Historical Overview of the Army Training and Doctrine Command."
94. Army FM 100-5, *Operations*, 49.
95. Ibid., 25.
96. Deal, "BAI," 52.
97. For a good summary of the service cooperation and tensions from Vietnam to Desert Storm, see Winton, "An Ambivalent Partnership," 399-441.

Chapter 3

Where Was Battlefield Air Interdiction in Desert Storm?

At that time the Air Force was distancing itself from BAI because of the control function . . . the concern over who's controlling and why. There's a better way to handle airpower than to hand it over to a corps commander for targeting; we learned that in World War II.

—Maj Gen David A. Deptula
31 January 2002

Since no significant ground combat occurred prior to the battle for Khafji and no further ground combat occurred until G day, the air war in southern Kuwait consisted almost entirely of BAI.

—Maj William R. Cronin, US Marine Corps
March 1992

The Coming Storm

By mid-1990, the USAF and the USA were closer doctrinally than they had been since 1947. They had the shared vision of BAI codified in both services' doctrine, coauthored more than 14 different memoranda of understanding or agreement signed by their chiefs of staff, completed several joint exercises, and had developed a common perspective on the next CAS-BAI aircraft.¹ The two services had come a long way since 1973 when Generals Abrams and Brown had directed them to work together. "It takes a long time to move a bureaucracy."² In October 1985, Gen John A. Wickham, chief of staff of the USA, uttered those words as his service was working uncharacteristically closely with the USAF. He meant them in a positive way. In the summer of 1988, Gen Robert D. Russ, commander of TAC from May 1985 through March of 1991, pledged, "supporting the Army is a vitally important part of the Air Force mission—whether it

involves interdiction, close air support, or counterair. Outside of strategic air defense, everything that tactical air does supports AirLand Battle.”³

This relationship and doctrinal common ground did not uniformly translate into all the war-fighting commands. For example, Central Command’s (CENTCOM) exercise Internal Look 90 did not include BAI.⁴ Because Internal Look was a defensive exercise that envisioned a hostile land invasion of Kuwait, the exercise plan considered airpower in support of ground forces. But the plan used a new mission to accomplish this support, which was Gen Charles A. “Chuck” Horner’s concept of Push CAS. General Horner, Central Command Air Forces (CENTAF) commander, briefed Gen H. Norman Schwarzkopf, CENTCOM commander, on his concept before the exercise. On a briefing slide for the exercise, Horner wrote that airpower would “build a hose and point it where the ground commander sees that it’s needed.”⁵ Instead of that hose being filled with BAI sorties, Horner filled it with what he called Push CAS. General Schwarzkopf approved the concept for use in the joint exercise that included the XVIII (Airborne) Corps as the ground component. Push CAS was designed to maintain constant tactical airpower over the battlefield so that CAS was immediately available when the Army needed it. When CAS was not required, the sorties were made available to execute AI missions against enemy surface forces on the battlefield. The Push CAS concept used in Exercise Internal Look became CENTAF’s accepted way of operations when the Persian Gulf War came only six months later.⁶ Conversely, the BAI concept, confirmed at Blue Flag Exercise 1985-3, was routinely included at Air Warrior and Red Flag exercises by the late 1980s.⁷ Moreover, in EUCOM exercises throughout the 1980s such as Reforger and Central Enterprise, BAI operations were well established.⁸ In accordance with NATO doctrine and training as well as their own AirLand Battle doctrine, European-based ground forces expected BAI missions to be a part of any potential conflict.

The Gulf War began on 2 August 1990 when Iraqi tanks ripped across the Kuwaiti border. It was clear initially that the United States would support Kuwait.⁹ Saddam Hussein’s timing for his operation could not have been worse. Although

Saddam had no way of knowing it, General Schwarzkopf had recently directed development of Operational Plan (OPLAN) 1002-90, "USCENTCOM Operations to Counter an Intra-Regional Threat to the Arabian Peninsula, for contingency operations in the area. In November 1989, the CENTCOM staff shifted the plan's focus to Iraq as the region's most likely potential aggressor.¹⁰ CENTCOM completed Internal Look, the exercise based on OPLAN 1002-90, only five days before Iraq's invasion of Kuwait. The proximity of the exercise and the invasion led many CENTCOM planners to routinely remark, "We did this in Internal Look."¹¹ The similarities between the exercise scenario and Saddam's invasion made comparison inevitable. The exercise had anticipated Saddam's move but also expected the Iraqi army to continue south and take Saudi oilfields with a large loss to defending forces.¹²

Even with the heightened US interest in the region, Saddam's action surprised both Kuwait and the United States. Iraqi forces had little trouble taking Kuwait and establishing defensive positions on the Saudi Arabian border. As early as 4 August, General Schwarzkopf and his air component commander, General Horner, briefed initial military options to Pres. George H. W. Bush and the National Security Council (NSC).¹³ All the early options would be airpower ones.¹⁴ Desert Shield began on 6 August as President Bush ordered the first deployment into the area.¹⁵

Developing the Plans for War

Along with the rapid deployment came rushed plans. CENTCOM went into immediate action, as did Col John A. Warden III at his Checkmate office in the Pentagon's basement.¹⁶ The story of Warden's plan, known as Instant Thunder, has been well documented.¹⁷ At a meeting on 20 August 1990 in Riyadh, Saudi Arabia, the work Warden and the Checkmate staff produced was briefed to General Horner who was appointed as joint force air and space component commander (JFACC). According to Col Richard T. Reynolds, General Horner was not impressed with the colonel from Washington and only partially listened to the plan.¹⁸ Nevertheless, Horner retained several of Warden's staff to help develop his plans, including Lt Col David A. "Dave" Deptula. This

continuity with Warden's ideas ensured some of them would be included in the total air campaign concept once it solidified.

General Horner responded less than enthusiastically to Colonel Warden's plan for two reasons. First, Horner felt that Warden was uninvited and sensed the visit was Washington's meddling reminiscent of Vietnam.¹⁹ Second, he was already busy developing two planning options. The first was being run by the CENTAF staff and focused on defending Saudi Arabia from another Iraqi armored thrust. This plan included the missions of "Battlefield Air Interdiction (BAI), Close Air Support (CAS), Air Interdiction (AI), Offensive Counter Air (OCA), and Defensive Counter Air (DCA). Doctrine on air-land battle provided the context for plans devoted to offensive operations against Iraq."²⁰ This planning effort also reflected the recent experience from Internal Look. Neither Generals Horner nor Schwarzkopf—the joint force commanders (JFC)—felt that Iraqi forces could be expelled from Kuwait without hitting them directly.²¹ Brig Gen Buster C. Glosson led the second in-theater planning effort. His group developed an offensive air campaign aimed at gaining the combatant commander's military objectives through airpower by late August. The effort from the group, which worked in an area known as the Black Hole, was not developed around a ground scheme of maneuver because ground forces were not yet in-theater in force, and no ground scheme of maneuver had yet been devised.

By 24 August, the plan that would become Desert Storm was taking shape.²² General Schwarzkopf decided on four phases. The first phase focused on strategic attack; it was basically Warden's Instant Thunder after being modified by the Black Hole. The second phase was to gain air superiority over the Kuwaiti theater of operation (KTO). The third phase was to prepare the battlefield for ground operations. The fourth phase was a combined air-ground operation. The initial concept displayed the four stages as being sequential; however, the first three were implemented simultaneously.²³ Since the first three phases were air-centric, Glosson's planning team combined the president's objectives, Schwarzkopf's phasing, Warden's Instant Thunder plan, and the offensive portions of the CENTAF plan into what became the Desert Storm air campaign.

The first offensive ground plan presented to the JFC was a single-corps plan. It envisioned the XVIII (Airborne) Corps attacking directly into the Iraqi defensive belt.²⁴ This plan was briefed to General Schwarzkopf in October 1990, but he was not happy with it. Troubled by the risk and casualty estimates, Schwarzkopf opted for a two-week air campaign to soften the forces in front of XVIII (Airborne) Corps if this option were to be executed.²⁵ Still concerned over the single-corps attack, Schwarzkopf asked for a two-corps plan by 15 October.²⁶ This course of action required many more forces and would take longer to prepare, but Schwarzkopf knew if they were “going to conduct an offensive operation it would be . . . it would require more forces.”²⁷ He was happy with the new idea that had XVIII (Airborne) Corps on the far west flank, where its speed and mobility could be used and the heavy VII Corps in position on its right. The plan called for the two corps to attack north, then wheel east to cut off escape routes to Iraqi forces in the KTO. This aspect of the plan is perhaps what led Gen Colin L. Powell to state in a press conference regarding the Iraqi army, “First we are going to cut it off; then we’re going to kill it.”

Battlefield Air Interdiction Absent from the Concept of Operations

The concept of operations (CONOPS) developed to shape the battlefield was not what the USAF had trained for, nor what the USA expected.²⁸ All the work done during the last 15 years between the USAF and the USA seemed to be cast off as General Horner published the CONOPS for C² of TACAIR in support of land forces. The procedures, which paralleled CENTCOM’s recent command post exercise, did not have an obvious doctrinal basis. The CONOPS was first developed during Desert Shield on 4 December 1990, updated in mid-January 1991 and again on 22 February 1991 to its final version just prior to the ground war’s start. There were few changes made over the period. The document, which could have echoed the current doctrinal framework of CAS, BAI, and AI, instead was all new. As the draft “Gulf War Air Power Survey” noted, the CENTAF “called missions inside the fire support coordination

line CAS missions and all others outside the line, AI missions, which deleted BAI as a type of mission.”²⁹

The system included several concepts that were either new or executed in the past, but few that were current USAF missions. These missions included the Push CAS concept General Horner used in Internal Look and the Vietnam-era mission of Killer Scouts and kill boxes. The CONOPS explained the new systems in relation to the FSCL. Although the CONOPS alone remains classified, the declassified procedures appeared in a report titled *Desert Storm: Fixed Wing BAI/CAS Operations and Lessons Learned* completed in January 1992 by the Institute for Defense Analyses. Of note are the concepts of AI in the KTO, kill-box operations, and Push CAS. AI sorties in the KTO were designated differently than AI sorties in the rest of the theater. Because of their proximity to friendly ground forces, aircrews flying these missions had the added requirement to contact the airborne battlefield command and control center (ABCCC) or the Airborne Early Warning and Control System (AWACS) for target and FSCL updates.³⁰ Kill boxes were used on either side of the FSCL but had different procedures depending on which side they fell. Beyond the FSCL, kill-box missions were called AI missions; and the boxes remained open unless the ground commander specifically closed them. On the friendly side of the FSCL, the kill box was closed unless opened by the ground commander. Like CAS, “no weapon was to be delivered inside the FSCL unless cleared for release by ground or airborne FAC [Forward Air Controller].”³¹ Additionally, a Fast FAC or Killer Scout was required to control AI missions 30 nautical miles past the FSCL to “act as a buffer between CAS and normal AI.”³² Added together the procedures for AI in the KTO substituted new C² procedures for ones that were already established via the BAI construct, but that were not associated with normal AI.³³ Push CAS, as described earlier in the chapter, flowed continuously to support in their assigned corps area. If not needed for CAS, these missions flowed to a preplanned AI target across the FSCL or an open AI kill box (fig. 1).³⁴

These procedures and concepts were designed for the open terrain of the KTO, a limited threat, and ground forces in a

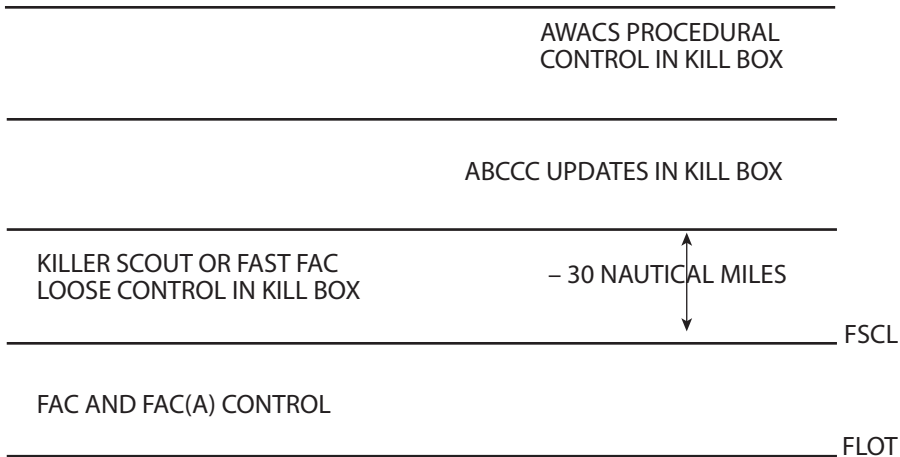


Figure 1. Concepts of operations depiction. (From Thomas P. Christie et al., *Desert Storm: Fixed Wing BAI/CAS Operations Lessons Learned* [U], Institute for Defense Analyses, Alexandria, Va., 1992, Historical Research Agency document no. NA-194. [Secret] Information extracted is unclassified.)

fixed defensive position on both sides of the front, which allowed the FSCL to be stationary and close to friendly ground forces. General Horner summed it up well. “This particular theater, this particular enemy, this particular situation, really emphasizes the attributes that air brings to the battle.”³⁵ In addition to these three attributes, which gave airpower distinct advantages, there were several other rationales for the CONOPS design. First, no one expected Saddam to allow six months for US and coalition forces to deploy and assemble. That meant the air plan had to be executable without friendly surface forces to support it. Second, the commanders had recently completed an exercise using similar airpower options that were fresh in their minds. XVIII (Airborne) Corps participated in the exercise and was familiar with the concepts General Horner wanted to use. Third, many Airmen in key Desert Storm planning positions were unaware that BAI was Air Force doctrine.³⁶ Although they were aware of BAI as a mission, key personnel believed it was only NATO doctrine and not applicable outside Europe. And at least one Desert Storm key planner actively resisted BAI as a doctrinal construct

because he felt it gave operational-level control to tactical-level ground commanders.³⁷

But the absence of BAI from the air CONOPS and hence from the ATO caused problems that grew in intensity as initiation of the ground war approached. The friction caused by the lack of joint planning for the air campaign was multiplied when VII Corps arrived in-theater from Europe. Three problems emerged because of CENTAF's air only approach to the campaign. First, the CONOPS designed to increase flexibility only partially met its goal. The mixture of new procedures and missions created confusion for aircrews and soldiers alike. Second, the CONOPS and command structure made it difficult for the ground commanders to get their target priorities onto the ATO. Third, CENTAF used the FSCL as a dividing line between air and land operational control instead of a coordination measure to create synergy. The subsequent battle for control became increasingly strident as the ground campaign approached.

New Missions Replace BAI in the Storm

On 17 January 1991, Apache helicopters from the 101st Airborne Division opened the air war by destroying two early warning radar sites, which created a lane for coalition air forces to penetrate Iraqi airspace undetected.³⁸ This would be one of the few times Army deep systems would cross the FSCL until the ground war began 38 days later. The initial success of airpower exceeded expectations in the opening hours of the war. There were no aircraft losses on the first night; by the end of the day, the coalition had gained air superiority over the KTO.³⁹ Although land operations were several weeks away, battlefield preparation began on day one and continued during the entire war. During the first two weeks of the war, the CONOPS for support of ground operations was not a great source of tension because the ground forces were not ready to attack. Although it had been more than five months after Iraqi forces had invaded Kuwait, the US and coalition ground forces were not yet in position; nor did they have all of their logistics in place. Tension grew, however, as air attacks continued with little degradation to Iraqi forces just across the border from friendly forces.

AI was defined in the CONOPS as a mission that did not require coordination with ground forces because it was flown on the far side of the FSCL, thus outside the purview of ground operations. The FSCL placement on the Saudi Arabian border (known as the berm) before the ground war started made this definition troublesome. In the KTO, AI was treated differently through designation in the remarks section of the ATO directing pilots flying interdiction missions to contact the ABCCC or AWACS for FSCL and target updates.⁴⁰ Most AI sorties in the KTO were flown in kill boxes. This arrangement worked initially because there was little chance of the FSCL moving before the start of ground operations. Ground forces agreed to keep the FSCL close to them because they knew they would not begin operations for some time and that they had to rely on the Air Force to shape the battlefield. General Abrams, the VII Corps artillery commander, noted that they kept the FSCL on the berm because the Air Force refused to fly short of it before G-day (the beginning of the ground war).⁴¹ The Air Force had no reason to fly short of the FSCL before G-day because doing so would keep them in Saudi airspace. This essentially led to no CAS requirement. As seen above in the CONOPS, unused CAS sorties could be pushed past the FSCL (only across the Saudi border) and used in AI missions. According to Lt Col Robert E. Duncan, one of the officers who built the CONOPS, these “backup targets were taken from the land component interdiction target nomination list *when possible*” (emphasis added).⁴² This made unused CAS sorties essentially BAI missions, although labeled AI. This arrangement allowed the JFACC to increase the number of AI sorties without having to reduce the apparent number of CAS sorties.

As soon as the ground war began, problems arose for some A-10 pilots who were trained in CAS and BAI but not in AI. AI sorties normally require a high level of detailed planning because of their depth, integrated force packaging, and the need to acquire targets without the aid of a FAC. One A-10 unit felt that because of the need for detailed planning for AI missions, they should not have been hastily retasked by the ABCCC.⁴³ Retasking caused many missed targets, and numerous aircraft returned to base without dropping their ord-

nance.⁴⁴ Similarly, an F-16 unit observed, “Location of friendly troops was often unexpected and too close to briefed targets, thus posing the potential threat of fratricide.”⁴⁵ They also had a problem with the kill-box system after G-day. The kill-box system that was so successful with a static ground situation up to G-day was incompatible with fast ground-troop movements. “Once the Army began to move, the kill boxes were overrun rapidly, often between takeoff and TOT [time over target].”⁴⁶ Additionally, it was noted that “more CAS sorties were flown north of the FSCL than inside it.”⁴⁷ This was because of the Special Operations Forces’ conducting deep operations. One Air Force air liaison officer (ALO) agreed. He was with the 101st Airborne Division when it was operating 80 miles north of the FSCL and requesting CAS. He was told his CAS request would be turned down because he was north of the FSCL, but he could get AI if he passed the target info!⁴⁸ If the FSCL was moved farther out, in relation to the ongoing operations, this instance may not have occurred. Obviously, definitions and mission confusion reigned.

Consequences without Battlefield Air Interdiction on Targeting

CONOPS’s deviation from extant doctrine led to loss of the Army’s mechanism to influence the deep battle. Some Airmen assumed that because phase four had not begun, the Army was not in the fight. The Army was not under this impression. The elimination of BAI took away the doctrinal system for the Army to influence its deep battle in accordance with AirLand Battle doctrine. The problem was based on the fact that both VII Corps and XVIII (Airborne) Corps expected BAI missions to be on the ATO. They also anticipated being able to nominate targets for those missions. To the corps, “the process of deep attack involves much more than just indiscriminate strikes by tactical aircraft at any lucrative object located in front of friendly forces.”⁴⁹ In the Army’s mentality, targets should be carefully chosen based on the ground commander’s plan of maneuver and the disposition of enemy forces. Although the USAF is fully capable of selecting targets and hitting them,

they may not be the ones the ground commander needs to shape the battlefield. According to one postwar USA analysis, "Placing BAI under an overall category of interdiction reduced the corps commander's influence on the process."⁵⁰ The problem became more vivid as G-day approached.

Lt Gen Frederick M. Franks, VII Corps commander, was one of the chief complainants. He arrived in the desert from Germany where he was very familiar with the NATO OAS mission, which included BAI as one of the primary air missions used to help prosecute the land war.⁵¹ OAS was exercised extensively in the European theater by allied and US forces. General Franks noted, "We never got an allotment. The term *BAI* was not recognized by CENTCOM as a valid term in the theater."⁵² The problem was not that the term was gone, but that to Franks the concept it represented seemed to be gone, too. Franks noted that he "was free to nominate targets, but the correlation between those that we nominated and those that were struck was quite poor."⁵³ This became more important to General Franks as initiation of ground operations approached. On 29 January, an event occurred that further increased his concerns. The Iraqi 3d and 5th Mechanized Divisions attempted an attack into the Saudi Arabian town of Khafji. In the end, air and ground forces crushed the attack. However, it revealed to General Franks that even after 12 days of air attack, the Iraqi forces were still able to mount a sizable assault, which led him to examine his situation again. Still concerned about the effects of enemy artillery on his breaching operation, General Franks pounded his map and told his corps targeteer, "I want you to make that unit go away!"⁵⁴ The unit he referred to could threaten his right flank during the breaching movement and highlighted his concern about loss of the BAI mission. It also led General Franks to call Gen Calvin Waller, the CENTCOM deputy commander, to inform Waller that he was not getting adequate air preparation in front of his position. General Franks stated, "I wanted priority of air to go after artillery in range of the breach, second to go after the command and control of the Iraqi VII Corps . . . and then third I wanted the air to go after the tactical reserve positioned close to the exit of the breach."⁵⁵

The Air Force understood it differently. According to General Glosson, chief of CENTCOM offensive air campaign, the problem was not that the Air Force did not understand the need for battlefield preparation, nor that they were not going to do it, but merely timing. Glosson stated, "We believed, and I still do, that the attacking of targets in Baghdad had as much to do with the success or failure of that field army than attacking it directly. . . . It's not a matter of destroying tanks. . . . It's a matter of doing it at the correct time so that everything is sequenced together."⁵⁶ For the Air Force, Glosson planned to hit targets directly in front of VII Corps beginning about five days before G-day.⁵⁷ Added to that, the Air Force planners believed they had already been doing more than preparing the battlefield. Colonel Deptula reportedly said, "We are not preparing the battlefield; we are destroying it."⁵⁸

Nevertheless, General Schwarzkopf was beginning to feel pressure from the ground commanders for increased influence in targeting their priorities. After a meeting on 9 February between Secretary of Defense Richard "Dick" Cheney, General Powell, and General Schwarzkopf about the beginning of the ground war, Schwarzkopf instructed General Waller to review the ground commander's target nominations.⁵⁹ This arrangement led to meetings between Waller and Horner to discuss the problem. General Waller was confident that General Horner understood the importance of the targets in front of the corps. General Franks later noted, "when Cal [Waller] got into it then the correlation between the priorities of targets that I had requested in VII Corps and what actually [happened] got much better."⁶⁰

Fire Support Coordination Line Fiasco

The last major problem was the interpretation of the FSCL in relation to airpower on the battlefield. The FSCL is a fire support control measure inside the ground commander's AO. The ground commander uses the line to delineate unrestricted fires from those that require coordination. Coordination is required short of the line because weapons' effects in that area can influence the ground scheme of maneuver. Fires in the AO beyond the line are unrestricted, but responsibility for control

of the area and the mission inside it is not transferred. Many Airmen attest that the FSCL was merely a separation line between Army and Air Force control.⁶¹ The FSCL was not intended to be a boundary; however, during Desert Storm, it was treated as one. Even so, the interpretation of the FSCL as a boundary instead of a coordination measure was not too much of a problem before G-day. The problem emerged when—for 38 days—a flawed doctrinal application became so common that flexibility was not restored as ground operations began. First, the CONOPS procedures were slow to adjust to mobile land warfare. Second, the ground forces' extension of the FSCL during a lightning-fast advance was not an error but was necessary to create maneuver room. Because of the speed of the VII Corps advance and the conservative estimates of the pre-planned FSCL movements, the corps offensive had to stop frequently to advance the FSCL.⁶² Lt Gen Gary Luck, XVIII (Airborne) Corps commander, believed FSCL problems “hindered his use of ATACMS, MLRS [multiple launch rocket system], and long-range recce.”⁶³ Finally, Air Force refusal to fly AI short of the FSCL and Army reluctance to attack beyond it, even within the corps AO, was imposed by the JFACC through the CENTAF CONOPS, not doctrine.

Existing doctrinal procedures—BAI—allowed for attack on either side of the FSCL without additional need for FACs, merely coordination through the BCE. The requirement for forward air control, with the exception of dedicated CAS sorties, was imposed by the JFACC. According to the CONOPS, Killer Scout or Fast-FAC control was required in the zone about 30 nautical miles past the FSCL, as well as FAC control for all missions inside the FSCL.⁶⁴ Although these procedures worked well until the ground war began, the same procedures on a mobile battlefield were insufficient. The BAI construct would have eliminated this problem because it is not an FSCL-sensitive mission. BAI is equally useful on either side of the line. The misapplication of the FSCL and the absence of established BAI procedures, rather than the position of the FSCL alone, limited airpower's use.

The FSCL interpretation played a large part in the Republican Guard forces escaping the KTO. According to General

Horner, the movement of the FSCL hurt the land commanders' ability to get airpower on the battlefield. He stated that "they set the line out there and they [corps commanders] thought if they put it way out there they'd get more air. Actually they'd get less air because then the air has to go someplace else because there's not enough forward air controllers to manage the strikes."⁶⁵ This statement makes little sense. Because the only missions that flew short of the FSCL were CAS, the truth is that they would get the same because AI could not fly short of the line.⁶⁶ The *Gulf War Air Power Survey (GWAPS)* summary report states that moving the FSCL out "was to hamper airpower's ability to destroy escaping Iraqi ground forces until the FSCL was finally pulled back."⁶⁷ *GWAPS*, volume 2, "Operations," expands the story:

By moving the line forward, the airborne corps staff avoided having to put its helicopters under Air Force control. That decision, however, had *unforeseen consequences*; XVIII (Airborne) Corps had created a situation that severely limited the potential of Coalition's available air power. *Despite the fact that no U.S. ground troops were north of the Euphrates—nor were there plans for such a movement—*navy and air force aircraft now could only attack the causeway and highways north of the Euphrates under direct control of forward air controllers (FAC). But virtually all the FACs were concentrated in supporting troops in combat farther south in Kuwait. Moreover, conditions were not favorable to the employment of FACs even if they had been available. In the end, the TACC [Tactical Air Control Center] appealed to Schwarzkopf to move the FSCL back to the Euphrates so that air strikes could hit both the causeway and the roads north of the river (emphasis added).⁶⁸

Two questions leap out from this account. First, why did the corps not use their huge allocation of CAS sorties (fig. 2) to destroy the fleeing Iraqis inside the FSCL? One reason is the two opposing ground forces were not in contact, so CAS was not required. This left hundreds of CAS sorties available, but without a construct to attack inside the FSCL without FAC control, they were not relevant to the situation. Destroying the Republican Guard was a top priority for airpower. It had been one of the stated reasons for not using airpower earlier to hit units in front of VII Corps and XVIII (Airborne) Corps as requested by the corps commanders.⁶⁹ Troops rarely came into contact, which left the whole CAS allotment available. "Overall CAS

requirements were much less than expected . . . [the] A-10s were not fully tasked.”⁷⁰ Second, adherence to Desert Storm CONOPS, not the FSCL’s position, created the crease for the escaping Iraqi Republican Guard. The “unforeseen consequence” mentioned in the citation above should have been that airpower *would not* attack the enemy inside the FSCL. This situation led one Air Force officer who worked in the Tactical Air Control Center (TACC) to report to the GWAPS board. “The safest place for an Iraqi to be was just behind the FSCL.”⁷¹ The GWAPS report went on to say regarding this comment, “It is clear that there was such an unintended zone in which Iraqi forces benefited from the shortcomings of Army/Air Force coordination.”⁷² We successfully created the “no mission zone” General McPeak had warned about five years earlier.⁷³

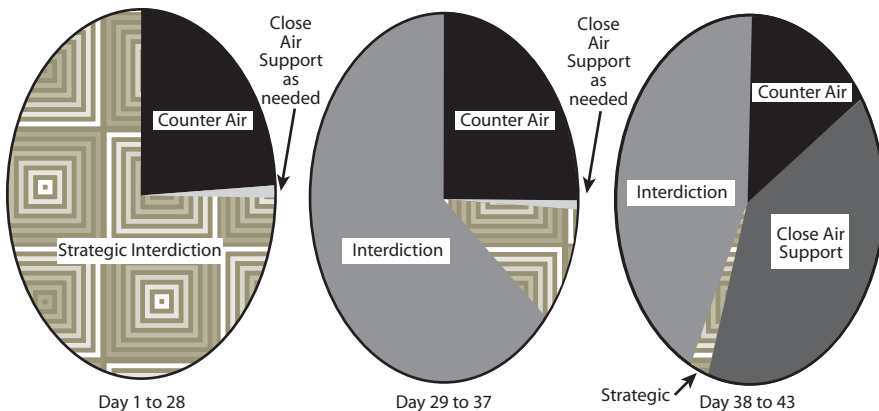


Figure 2. Operation Desert Storm apportionment. (From Thomas P. Christie et al., *Desert Storm: Fixed-Wing BAI/CAS Operations Lessons Learned* [U], Institute for Defense Analyses, Alexandria, Va., 1992, 17. Historical Research Agency document no. NA-194. [Secret] Information extracted is unclassified.)

Conclusion

Multiple sources indicated that BAI missions were not flown in Operation Desert Storm. General Franks felt that CENTAF did not execute BAI. Lt Col Edward C. Mann III said whatever

the Persian Gulf War was, “what it wasn’t, was AirLand Battle.” He stated that rather than BAI operations that target what the ground commanders need to shape the battlefield, the air campaign “prepared the battlefield for any ground scheme we chose.”⁷⁴ A RAND study concluded that “the Army fought its AirLand Battle with little need for close air support from the other services . . . while the Air Force conducted its preferred air interdiction campaign somewhat removed from the ground front.”⁷⁵ This is another indicator of the lack of BAI. General Starry thought that “Horner solved the problem in the Gulf War by shoving the fire support coordination line up against the FLOT and insisting that everything that flew over the FLOT be part of the air tasking order. That’s not reasonable. He had a field fix on a tough problem.”⁷⁶

On the other hand, many studies and after-action reports completed subsequent to the war state that BAI was flown despite the ATO’s omission of it as a mission category. Although BAI as a mission definitely did not show up on the ATO, many missions that looked like it did. According to the Institute for Defense Analyses, all missions in the KTO that were not controlled by any type of FAC were BAI.⁷⁷ Another author noted, “The difference between CAS and BAI was and is the doctrinal and commonsense requirement for a forward air controller (FAC) to clear pilots to release ordnance or fire guns in close proximity to friendly troops or vehicles.”⁷⁸ GWAPS discusses BAI’s effectiveness.⁷⁹ The Royal Australian Air Force states that it flew BAI missions.⁸⁰ The United States Marine Corps (USMC) believes it did, too.⁸¹ Even USAF B-52 crews felt tactical when they flew BAI.⁸² Most importantly, TAC aircrews (BAI’s only true advocate outside NATO) thought they did. A memorandum entitled “CAS/BAI Lessons Learned from Desert Shield/Storm” states, “Most of the lessons learned come from the day/night AI/BAI missions that were flown. The overwhelming success of these missions, as well as the few night CAS that were flown, lends to the validation of the operational need for a CAS/BAI capability.”⁸³ It did caution, however, “While airpower was obviously the dominant force in this conflict, it is important to remember that the next war may be very different. The capabilities of current fighters must be expanded as listed above in order to succeed in the next,

probably more difficult war (i.e., one with an enemy that fights).”⁸⁴

Although there were missions flown that resembled BAI, the lack of its being included a formal category in either the air concept of operations or the ATO generated a great deal of Army–Air Force friction. This absence also indicates that doctrinal terminology can have significant tactical and operational consequences. BAI’s inclusion in the CONOPS and thus as a mission would have eliminated many of the problems outlined in this chapter. It would have lessened the need to create new missions such as Push CAS and kill-box operations to fill in the gaps missing in its absence. It would have lessened Army’s concerns over targeting in the KTO. If the combatant commander had apportioned even a small portion of AI as BAI, the corps commanders would have understood his priorities. BAI would also have made the FSCL fiasco a much more manageable issue. Michael R. Gordon and Gen Bernard E. Trainor sum it up this way in their book *The General’s War*,

A doctrinal technicality and inertia took precedence over common sense. The Army and the Air Force had trumpeted their ability to coordinate the “air-land” battle [sic]. In the final fourteen chaotic hours of the war, however, the FSCL had been pushed back and forth as the two services sought maximum flexibility for their own forces.⁸⁵

With BAI, theoretically, this internal battle would not have taken place, or its consequences would have been mitigated; and the two divisions of Iraqi Republican Guards, perhaps, would not have escaped.

Notes

1. Davis, *The 31 Initiatives*, 9. As of 1985, at least 14 assorted agreements had emerged from the 31 initiatives.
2. Gen John A. Wickham, quoted in Davis, *The 31 Initiatives*, 1.
3. Russ, “Battlefield of the 1990s,” 12.
4. Gen Charles Horner, interview by the author, 8 February 2002. General Horner was aware of the battlefield air interdiction (BAI) construct having done some work on it when he was Tactical Air Command/XP and the doctrine office was part of his staff. He believed then that BAI was only doctrine in the North Atlantic Treaty Organization and did not apply outside Europe.
5. Mann, *Thunder and Lightning*, 28. General Horner recalled that BAI may have been used in pre-Internal Look Central Command exercises, but

that General Schwarzkopf had approved Push close air support (CAS) for use with XVIII (Airborne) Corps during Internal Look-90. General Horner developed this concept in an attempt to ensure high levels of CAS support without losing sorties on ground alert as a reserve force. Also see, Briefing, subject: Operational Plan 1002 Air Operations (U), April 1990, Air Force Historical Research Agency (AFHRA) document no. NA-256, Maxwell AFB, Ala. (Secret). Information extracted is unclassified.

6. Mann, *Thunder and Lightning*, 28.

7. Davis, *The 31 Initiatives*, 76.

8. Author flew in several Reforger/Central Enterprise exercises in the early 1990s that included BAI missions. Also, see Keaney and Cohen, *Gulf War Air Power Survey (GWAPS)*, vol. 5, 157. Several Reforger/Central Enterprise after-action reports are available in the AFHRA.

9. Mann, *Thunder and Lightning*, 89. Pres. George H. W. Bush lost no time in condemning the attack. On page 37, Mann indicated that six days after the invasion of Kuwait, military planners developed four objectives from Bush's speeches: immediate, unconditional, and complete withdrawal of all Iraqi forces from Kuwait; Kuwait's legitimate government must be restored; security and stability of the Persian Gulf must be established; and to protect the lives of American citizens abroad.

10. Scales, *Certain Victory*, 43.

11. *Ibid.*

12. *Ibid.*, 44.

13. Keaney and Cohen, *GWAPS*, vol. 5, 33.

14. Early airpower doctrine realized that airpower's speed would enable it to arrive first. As early as 1940, Air Corps Field Manual 1-5, *Employment of Aviation of the Army*, recognized that airpower options would likely be the first available. Page nine of this manual states, "Air operations will probably precede the contact of the surface forces. The orderly mobilization and strategic concentration of the field forces and their ability to advance from their concentration areas may depend in large measure on the success of these early air operations."

15. Winnefeld, Niblack, and Johnson, *A League of Airmen*, 25-29. The US Navy carrier *Independence* and its associated task force were near the Gulf and ordered to reposition there. The deployment of additional forces began the next day as sustaining forces and prepositioned war materiel began to move forward.

16. Reynolds, *Heart of the Storm*, 15.

17. *Ibid.*, chaps. 1-4; Winnefeld, Niblack, and Johnson, *A League of Airmen*, 68-70; Mann, *Thunder and Lightning*, 27-50; and Keaney and Cohen, *GWAPS*, vol. 1, pt. 1 for full accounts of the planning of Instant Thunder and its application to Desert Storm.

18. Reynolds, *Heart of the Storm*, 120-30.

19. Horner, oral history interview.

20. Keaney and Cohen, *GWAPS*, vol. 1, pt. 1, 170.

21. *Ibid.*, vol. 5, 37.

22. Keaney and Cohen, *Revolution in Warfare?* 229.
23. Keaney and Cohen, *GWAPS*, vol. 5, 35–53. The plan originally called for between nine and 19 days before the ground offensive would start.
24. Scales, *Certain Victory*, 125.
25. *Ibid.*, 126.
26. *Ibid.*, 128.
27. Schwarzkopf, oral history interview.
28. Keaney and Cohen, “GWAPS,” draft, vol. 4, pt. 1, chap. 3.4. AFHRA Document TFM-72, 1. Sentence left out in published version states, “It is obvious that the employment of aircraft and systems frequently varied from the norm.”
29. Keaney and Cohen, “GWAPS,” draft, vol. 4, pt. 1, 217.
30. Christie et al., *Desert Storm*, 14–16. This procedure was common for BAI missions but not for normal AI missions. The airborne battlefield command and control center (ABCCC) is a modified C-130 used to coordinate with ground forces through their respective air support operations center (USAF) or direct air support center (US Marine Corps). An Airborne Early Warning and Control System is a large radar and communications aircraft.
31. *Ibid.*, 15.
32. *Ibid.*
33. For the purposes of this paper, “normal” air interdiction was conducted outside of the Kuwaiti theater of operations (KTO).
34. Christie et al., *Desert Storm*.
35. Horner, oral history interview.
36. Charles A. “Chuck” Horner, interview by the author, 8 February 2002; and David A. Deptula, interview by the author, 31 January 2002. Generals Horner and Deptula revealed that both believed BAI was not USAF doctrine but was a product of NATO.
37. Deptula interview. General Deptula believed that BAI gave too much control to the corps commander, reverting to “penny packaging” airpower to corps commander priorities at the expense of the operational level necessity or the combatant commander’s guidance. He also stated that prior to Desert Storm, the Air Force was trying to distance itself from BAI because of the control function, “the concern over who’s controlling [airpower] and why.” Maj Gen Larry Henry, one of the planners stated, “The term *BAI* is offensive to us because we oppose subdividing the interdiction campaign into small packets, which would only weaken its overall impact and make it more difficult to plan and execute from a theater perspective. That is why we always talk ‘interdiction’—to encompass the total theater picture.” Quoted from Robinson, “AirLand Battle Tactics,” 17.
38. *Air Assault in the Gulf*, 11.
39. Keaney and Cohen, *GWAPS*, vol. 5, 57.
40. Christie et al., *Desert Storm*, 15. Normal AI flown outside the KTO was not so designated and had no similar procedure.
41. Zook, “The Fire Support Coordination Line,” 114.
42. Duncan, “Responsive Air Support.”

43. Secretary of Defense (SECDEF) CAS/BAI brief inputs, "A-10 Tasking Procedures," n.d.; and Andrews, *Airpower against an Army*, 43. Andrews agrees that aircrews were not trained for the new missions designated in the Desert Storm concepts of operations.

44. Andrews, *Airpower against an Army*, 43.

45. SECDEF CAS/BAI brief inputs, "F-16 Battlefield Air Interdiction (BAI) Operations," n.d.

46. *Ibid.*

47. *Ibid.*

48. Fawcett, "Which Way to the FEBA?" 17–18.

49. Scales, *Certain Victory*, 175. "Aviation had to be responsive to the priorities of the ground commanders . . . simply killing people and destroying things is not enough" (Keaney and Cohen, *GWAPS*, vol. 4, pt. 1, 215).

50. Scales, *Certain Victory*, 175.

51. Frederick M. Franks, interview by the author, 19 April 2002.

52. *Ibid.*, 41–47; and Robinson, "AirLand Battle Tactics," appendix A.

53. Franks interview, 41.

54. Scales, *Certain Victory*, 191.

55. Franks, oral history interview.

56. Buster C. Glosson, oral history interview.

57. *Ibid.*

58. Hallion, *Storm over Iraq*, 209.

59. Lewis, "Desert Storm," 6.

60. Franks, oral history interview.

61. Zook, "The Fire Support Coordination Line."

62. Douglas Mastriano, interview by the author, 8 November 2001. Major Mastriano was assigned to VII Corps during its offensive.

63. Byrd, memorandum for record.

64. Christie et al., *Desert Storm*, 16.

65. Horner oral history interview. In this interview, Horner refers to the FSCL as the bomb line.

66. According to Christie et al., *Desert Storm*, the USAF flew 1,300 CAS and 13,100 AI sorties in the KTO while the Marines flew 2,891 CAS and 4,000 AI sorties, p. 22. These numbers equated to an apportionment at nearly 40 percent of the total air effort for the last four days of the war (see fig. 3). Also, see Keaney and Cohen, *GWAPS*, vol. 2, pt. 2, 245–64. Although data for USAF CAS is not listed, Marine air flew more than 80 percent of their "CAS" past the FSCL during the ground offensive. Many Marines considered it BAI.

67. Keaney and Cohen, *GWAPS*, vol. 5, 157.

68. *Ibid.*, vol. 2, pt. 1, 315.

69. See Glosson's and Horner's oral history interviews. They stated that Schwarzkopf directed targeting the Republican Guard as his highest priority and to avoid targets in front of VII Corps to not highlight their position before ground operations began.

70. Richard B. H. Lewis, Memorandum on Close Air Support at Desert Storm. AFHRA document no. TF6-46-488, 3 July 1991, 3; Keaney and Cohen, *GWAPS*, vol. 2, pt. 2, 245; and Deptula, interview. General Deptula stated, "We never flew CAS in Desert Storm." Others report that almost no troops-in-contact CAS was flown (Christie et al., *Desert Storm*, 61).

71. Keaney and Cohen, *GWAPS*, vol. 2, pt. 2, 259. The Tactical Air Control Center was the predecessor to the air operations center.

72. *Ibid.*

73. McPeak, "TACAIR Missions and the Fire Support Coordination Line," chap. 2.

74. Mann, "Operation Desert Storm? It Wasn't AirLand Battle," *Air Force Times*, 30 September 1991, 2.

75. Winnefeld and Johnson, *Joint Air Operations*, 265. This is an odd statement since AI flown in the KTO was just across the border from friendly troops before G-day.

76. Starry, oral history interview, 34.

77. Christie et al., *Desert Storm*, 16. For this study, they did not include Killer Scouts or Fast FACs as a FAC. Kill-box missions—even though they checked in with an ABCCC and a Killer Scout—were BAI. To be included as CAS, the FAC had to be linked to a "FAC node" to the corps, such as the air support operations center.

78. C. E. Myers Jr., "Air Support for Army Maneuver Forces," 46.

79. Keaney and Cohen, *GWAPS*, vol. 4, pt. 1, 215–39. Also, see draft for this section at AFHRA document no. TFM-72. This section placed emphasis on "close air support/battlefield air interdiction (CAS/BAI) missions; that is, missions requested by the ground commander against enemy ground forces that can directly affect his scheme of maneuver," 1.

80. Waters, *Gulf Lesson One*, 205. "From the very first, General Schwarzkopf insisted on combat air support missions being flown; they were essentially BAI missions as opposing forces were not in contact on 17 January, and there was no time from day one on that the Iraqi ground forces were not under heavy air attack" (from a transcript of a Pentagon press conference by Gen. Merrill A. McPeak, 15 March 1991).

81. "BAI was a mission seldom practiced by Marine tactical aviation and prior to Desert Storm was most often associated with Air Force tactical doctrine" (Cronin, "C³I during the Air War in Southern Kuwait," 35).

82. "The B-52s' battlefield air interdiction (BAI) targets were usually armor or artillery units, but we often bombed supply facilities and troop concentration" (Fries, "The BUFF at War," 8).

83. Kevin Roll, memorandum, subject: CAS/BAI Lessons Learned from Desert Shield/Storm, 11 April 1991, 2. AFHRA document no. K417.054-217.

84. *Ibid.*, 3.

85. Gordon and Trainor, *The Generals' War*, 412–13.

Chapter 4

Was Battlefield Air Interdiction a Victim of Success?

No attitude could be more vain or irritating in its effects than to claim that the next great war—if and when one comes—will be decided in the air, and the air alone.

—Wing Comdr J. C. Slessor
Air Power and Armies, 1936

Even though the threat and Army war-fighting doctrine have evolved over the years, our commitment to the 1946 agreement to support the Army remains chipped in granite. Balancing the three prime missions of interdiction, close air support, and counterair under the umbrella of electronic warfare, reconnaissance, and command and control forces will ensure that the Air Force is ready to fly, fight, and win alongside the Army on any battlefield.

—Gen Robert D. Russ
Open Letter to the Field, 1988

Post-Desert Storm Environment

The mood in the services at the end of Operation Desert Storm was one of jubilation. All four services performed credibly on the battlefield and won a convincing victory in short order with low casualties. Desert Storm was not the only war won by the beginning of the new decade. The Cold War victory was just as sweet. Immediately preceding the Gulf War, President Bush declared that the world was entering a new era—an era of peace and prosperity. The armed forces that would face this new era had grown up during the Cold War. The victories won by Spring 1991 demonstrated how effective they had become but did not save them from the vulnerability they now faced. The end of the Cold War did not usher in the expected era of peace. The new era began with US forces deployed more than ever before in many

small contingency operations. Even so, unpredictable small-scale contingencies were not enough to stop the downsizing of the Cold War defense structure. According to a report for Congress by the Congressional Research Service, "Congress will face difficult choices about which military capabilities to retain and which to eliminate."¹ With all these factors, it was not long before the honeymoon of victory was over, and facing the new uncertain environment was a reality.

With the end of the Cold War came a change in the strategic environment, reductions in force structure, decreasing defense budgets, and an increased potential for regional instability.² When the Soviet Union collapsed, the US defense establishment lost its focal point for force structure and most of its operational plans. The loss of a specific threat and declaration of victory led to a consistent US reaction following war: drawdown. The drawdown was felt throughout the Department of Defense (DOD) as force reductions and budget reductions. Because of its personnel structure, the hardest hit by these policies and changes was the Army. It was forced to restructure from a primarily European forward-based force to an expeditionary force.

To help defray some of the potential losses due to reduction, the first order of business for the USAF and the USA following the Gulf War was to make the case as to why it was the decisive force. According to a RAND study, "The services' after-action reports read more like public relations documents than like serious and thoughtful analysis of what happened . . . There is a tone of advocacy and a not so subtle emphasis of the perceived shortcomings of other services in these articles and documents."³ Air Force advocates were able to stand back and let video clips of smart bombs tell most of their story. The Air Force case was also facilitated by the fact that there was much more of the air war to see. The air war lasted for 38 days, but ground forces were relegated during the same period to prepare and watch before they engaged. Press coverage of airpower in the Gulf War was extensive and almost universally positive.⁴ The USAF's new chief of staff, General McPeak, never missed an opportunity to boost airpower's image as one of the service's largest and most vocal advocates. He often commented on airpower's victory at influential times and

places. His statement that “this is the first time in history that a field army has been defeated by air power [*sic*]” did not fail to catch the USA’s attention.⁵

The Army’s case for decisive victory was harder to sell. First, the ground war was only 100 hours long. Second, many believed this was so because the ground forces faced a beaten foe due to airpower’s preparation of the battlefield. The Army quickly made the argument that AirLand Battle was effective and that airpower had supported ground forces in winning the war, if only for the last four days. Maj Gen Barry McCaffrey, 24th Infantry Division commander, stated that “this war didn’t take 100 hours to win, it took 15 years.”⁶ He was referring to the changes after Vietnam that became AirLand Battle. It was true that Iraqi forces, no matter how demoralized by 38 days of air attack, did not retreat from Kuwait until the ground forces displaced them. It is also true that ground forces did not walk across the KTO unopposed. Brig Gen Robert H. Scales Jr. noted, “Despite 41 days of almost continuous aerial bombardment, the Republican Guard remained a cohesive and viable military force able to fight a vicious battle and survive to fight insurgents in northern and southern Iraq.”⁷

In the 1993 graduation speech to the Air War College, General McPeak relayed a common sentiment, “Defeat is a much better teacher than victory.” He also said that when you are victorious, “Change that does not suit narrow, institutional interests will always be resisted.”⁸ These two statements add up, along with the impending budget battles, into realities that would translate into the next iteration of USAF and USA doctrine. Maj Kevin Fowler stated it this way, “While each service focused on its inherent strengths, neither the Army nor the Air Force places sufficient emphasis on the combined employment of forces in the deep battle.”⁹ “Each service insists on trumpeting its solution in a spasm of parochialism that undermines the critical need for teamwork” to effect the deep battle area.¹⁰ The deep battle area Major Fowler is talking about was from beyond the line of contact to short of the ground commander’s area boundary, the mission area of BAI. The Air Force’s position solidified during the Gulf War was that “control of joint assets employed beyond the fire support coordination line,

regardless of boundaries, is the responsibility of the joint force air [and space] component commander.”¹¹ The Army’s view states, “Control of assets (fires) within the boundaries of the ground maneuver commander is the responsibility of that ground maneuver commander.”¹²

A New Air Force

The victory in Desert Storm gave the Air Force increased confidence and spurred a new vision, Global Reach–Global Power. In a speech at Maxwell AFB, Alabama, General McPeak revealed the vision statement, “Air Force people building the world’s most respected air and space force—global reach and global power for America.”¹³ The new vision created a different paradigm for the Air Force. It redirected the Air Force’s focus from the Soviet Union to the world. It also encompassed the entire Air Force, from the shooters to the lifters. General McPeak felt the vision was not a mission statement but was a direction for the service. Its purpose was to “unify and inspire.”¹⁴ It was to set a tone that our friends admire us, that our enemies should fear us, and that no one should be eager to fight us.¹⁵

At the same time, the service also restructured itself as part of the new vision. Also led by General McPeak, the restructuring of the USAF eliminated the TAC and Strategic Air Command (SAC) structures inherited from the Army and created Air Combat Command (ACC). On the airlift side, Military Airlift Command (MAC) changed to Air Mobility Command (AMC). The changes streamlined the Air Force command structure and helped to congeal the new vision. AMC was the reach, and ACC was the power. At a speech to activate ACC, General McPeak said that TAC and SAC divided the Air Force into two different and mostly redundant services for too long. ACC corrected the problem.¹⁶ To the Air Force, the reasons made sense. To the Army, it was another step of independence. Elimination of TAC was a neon sign that the close relationship and agreements developed between TAC and TRADOC since 1973 were no longer in place. The elimination of the promise for support that General Russ (the previous commander of TAC) claimed was “chipped in granite” only four years earlier seemed to be all but crumbled.

Developing New United States Air Force Doctrine

With a new vision and a new structure following a huge air-power victory, the Air Force needed new doctrine. The key premise that led the new doctrine was a vindication of the air-power dream since the beginning of military aviation that air-power could be decisive. Before the Gulf War, “the US Air Force chief of staff Gen Michael Dugan who, while commenting on the planning for an air campaign against Iraq in the summer of 1990, told the press that the Air Force alone could defeat Saddam Hussein and that ground forces were unnecessary to win a war.”¹⁷ As soon after the war as possible, Airmen began to publish articles stating this new realization of the facts as they understood them. Lt Col Price T. Bingham wrote, “Campaign success now depends on superiority in the air more than it does on surface superiority.”¹⁸ Gen Charles D. Link wrote, “Air power is *the* valuable commodity in combat” (emphasis in the original).¹⁹ Col Dennis M. Drew, who would be one of the new doctrine’s primary writers, said, “The Gulf War was clear evidence to all doubters of airpower in warfare . . . airpower now dominates land warfare.”²⁰ These ideals, that were becoming prevalent even before the Gulf War, translated directly into the revision of AFMAN 1-1.²¹

Revision of AFMAN 1-1 was under way well before the Gulf War commenced. Although the 1984 version of AFMAN 1-1 was a “major effort to get back out in front of events,” the overall Air Force doctrine process was still ad hoc.²² The 1992 volume began revision in different locations with different staffs. Air Staff and the Center for Aerospace Doctrine, Research, and Education (CADRE)—now College of Aerospace Doctrine, Research and Education—were both working on separate changes. The latter was selected to continue development of the document. Although the draft was well along by the time Desert Storm began, the desire to include relevant lessons from the conflict delayed its publication. The Gulf War confirmed the doctrinal idea that air-frame types no longer separated roles and missions. The four air-power roles became aerospace control, force application, force enhancement, and force support.²³ Missions under the role of force application included strategic attack, AI, and CAS. The Gulf

War also demonstrated to the Air Force that a separate BAI construct was not needed. Even though the airpower rhetoric seemed strongly in favor of independent operations throughout the theater, the reality of the doctrinal definitions was less bold. AI was still defined as influential at the tactical, operational, and strategic levels.²⁴ Also included in the AI definition was a direct tie to support and cooperation with surface forces. In discussion of the three zones of interdiction operations, the manual stated:

Depending on a variety of factors, such as nature of enemy forces and communications infrastructure, interdiction deep in the enemy's rear will have a broad operational or strategic-level effect but a delayed effect on surface combat. Such operational and strategic-level effects normally will be of greatest concern from the theater perspective. In contrast, targets closer to the battle are likely to be of more *immediate concern to surface maneuver units*. Interdiction *close to the battle area* will produce more quickly discernible results, but only on forces in the vicinity of the attacks (emphasis added).²⁵

This definition, although not completely in line with the former BAI construct from the 1984 version of AFMAN 1-1, retains the thought of AI in the battle area and a need to coordinate and cooperate with ground forces.

The term *BAI* was not completely stricken from the 1992 version of AFMAN 1-1. It appeared as a parenthetical reference in the second volume of the two-volume AFMAN 1-1 set to describe AI near friendly forces. Volume 2 of 1992 AFMAN 1-1 was a collection of essays that amplified the basic principles presented in the first volume. The essay intended to amplify AI added little to the description in volume 1. Although BAI does not appear in the basic doctrine, volume 2 refers to AI near the battle area as BAI. It states that "such attacks (battlefield air interdiction) usually require more detailed coordination with surface forces during planning than do interdiction operations conducted deeper and over a wider area, and they may require similar coordination in execution."²⁶ The apparent similarities to previous doctrine are easy to choose, but the differences are vivid as well. There are no references to support, and there is no process to execute the suggested coordination that was previously spelled out in the 1984 version of AFMAN 1-1. There is no reference to joint doctrinal agreements such as joint attack of the second echelon, Joint Publication (JP) 3-03,

Doctrine for Joint Interdiction Operations; or JP 3-03.1, *Joint Doctrine for Interdiction of Follow-on Forces Attack (FOFA)*, which all described BAI procedures. The main limitation with the new doctrine is that the words were hollow. All the processes created to carry out the concepts disappeared on the battlefields of southern Iraq and with loss of the TAC. One critic of the doctrine stated,

The Air Force needs to take a very close, introspective, and objective look at itself. If the authors who had written AFMAN 1-1 read it from a sister service perspective as part of their review process, they might have realized how inflammatory the document actually was. No amount of supporting volumes can justify the condescending tone of *Basic Aerospace Doctrine*. Their effort to differentiate aerospace power from surface-bound power only served to alienate the two. AFMAN 1-1 should be rewritten with all haste and new authors who carry around lighter cultural baggage.²⁷

Air Force writers who participated in drafting AFMAN 1-1 1992 were not happy with the document, but for different reasons. Colonel Bingham, who wrote about the doctrine's limitations only months after it was published, thought the document did not go far enough toward changing roles and perceptions of air and land power. He suggested that both services change their doctrine to include language that assures "aerospace forces, rather than ground forces, [are] the primary means the US military employs to defeat an enemy army whenever conditions permit."²⁸ The Army's ideas were different.

New Direction at the Training and Doctrine Command

At the end of the Cold War in 1989, TRADOC began assessing FM 100-5 for revision. The assessment was required because the loss of the Soviet threat had ramifications to the Army's force structure that could possibly change the way the Army fought. By the summer of 1991, the Army had "been part of victories on three separate fronts in three distinctively different campaigns. The freedoms now enjoyed by the people of Eastern Europe, Panama, and Kuwait are the result, in part, of a vision."²⁹ That vision was AirLand Battle. At the end of Desert Storm, it was readily apparent to almost anyone in a

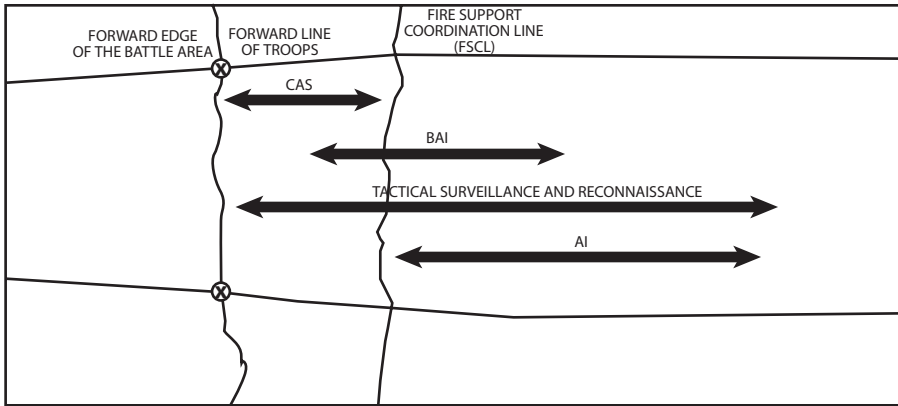
green suit that AirLand Battle worked.³⁰ It was also clear that the world was changing and that USA doctrine would change with it. Part of that change began in August 1991 when TRADOC, in collaboration with TAC, published TRADOC Pamphlet 525-5, *AirLand Operations: A Concept for the Evolution of AirLand Battle for the Strategic Army of the 1990s and Beyond*.

TRADOC Pamphlet 525-5 began development in March 1991 to guide TRADOC toward the next revision for FM 100-5.³¹ The purpose of 525-5 was to apply the Army's recent experience to adjust AirLand Battle. The focus of *AirLand Operations* was to increase the strategic thought within the Army and to focus on global power projection and joint operations.³² The pamphlet did two important things. First, it described and depicted an area where combined USA and USAF operations would take place within a broader joint operations area (JOA). It acknowledged that airpower would be influential outside of the land commander's AO and that it continued to be important inside of it as well. The pamphlet also argued for a part of the battlefield to be called the joint battle area.³³ The joint battle area was an attempt to codify the area on the battlefield where both services were able to apply combat power—the deep battle area. The pamphlet argued that Army deep strike assets such as Apache and ATACMS should be employed to their maximum range in the joint battle area closely integrated with airpower.³⁴ Airpower missions deemed appropriate in the area included AI, BAI, and CAS. In this area, it was a given that Army and Air Force systems overlapped. The authors stressed that it was the joint battle area where “we must emphasize the development of joint tactics, techniques, and procedures” to ensure effective AirLand operations.³⁵ Just as hollow words were published in USAF doctrine, Dr. Harold R. Winton pointed out that even though both services agreed on the need for joint action in the joint battle area, this “does not mean that they agree on who should control which area.”³⁶ When the TAC was eliminated in 1992, the 525-5 lost its supporter in the USAF, and the TRADOC adjusted its doctrine further.

The task of revising FM 100-5, interrupted by Operation Desert Storm and the aforementioned pamphlet 525-5, reemerged under TRADOC's new commander, General Franks.

He led VII Corps in Desert Storm and chose the Army's brightest at the School of Advanced Military Studies (SAMS) to help write the new volume of FM 100-5. One of the major writers from SAMS was its director, Col James R. McDonough. In a *Military Review* article, he outlined the new volume before it was released. What he and General Franks intended to accomplish was to help the Army become more strategically focused, more deployable, and more joint-combined in nature.³⁷ Added to these issues, the new doctrine also focused on the battlefield depth and the proposition that no service would fight a war alone. "Especially important to the new doctrine was the FSCL [Fire Support Coordination Line] question."³⁸ The debate continued with the Air Force about FSCL placement and the definition in relation to control of the Army's long-range firepower.³⁹ To the USA, the USAF's control over the area caused them to "react to the Air Force target-strikes, rather than to employ those strikes in an integrated ground and air campaign," as the previous BAI construct had.⁴⁰ Although BAI disappeared in name from the new manual, its spirit seemed alive in the concepts of depth and simultaneous attack across the battlefield, fire support, and in lower-level doctrinal manuals dealing with fire support and targeting. However, depth across the battlefield was no longer viewed only as shaping the close battle.⁴¹ Similar to the ideals of J-SAK and FOFA, the new FM 100-5 discussed destruction of the enemy simultaneously throughout the depth of the battlefield. Specifically, the manual expressed that "AI can greatly benefit ongoing Army deep operations when synchronized with Army interdiction efforts."⁴² Lower-level doctrinal documents such as the 1989 version of FM 6-20-30, *Fire Support for Corps and Division Operations*, continued to reference BAI.⁴³ This manual remains current USA doctrine and defines BAI the same as it had been in AFMAN 1-1 of 1984 and FM 100-5 of 1986. It also described the tactical air missions pictorially (fig. 3). The manual described how to coordinate BAI with the air operation center (AOC) and the main command post through the BCE. Although the term was gone from FM 100-5 just as on the USAF side, the words remain viable to support cooperation between the services.

AIR INTERDICTION (AI), BATTLEFIELD AIR INTERDICTION (BAI), CLOSE AIR SUPPORT (CAS) ON THE BATTLEFIELD



CHARACTERISTICS OF AI, BAI, AND CAS

| | AI | BAI | CAS |
|--------------|---------------------------------|-------------------------------|----------------------|
| TARGET | INDIRECT | DIRECTLY AFFECTING FRIENDLIES | |
| AREA | BEYOND FSCL | BOTH SIDES FSCL | CLOSE PROXIMITY |
| COORDINATION | JOINT PLANNING AND COORDINATION | | DETAILED INTEGRATION |
| CONTROL | NONE REQUIRED | | DIRECT OR INDIRECT |

Figure 3. Tactical air support missions. (Adapted from Army Field Manual 6-20-30, *Fire Support for Corps and Division Operations*, 1989.)

Influence of Joint-North Atlantic Treaty Organization Doctrine

Although joint doctrine was beginning to emerge following the Goldwater-Nichols Act of 1986, joint doctrine was not new for the USA and the USAF. It had, however, lost its place in the services. USAF and USA cooperation on joint doctrine began before the birth of USAF but waned during the Vietnam War. Although TRADOC and TAC rekindled a doctrinal relationship throughout the 1980s, the services in general did not. Early joint doctrine attempted to add usefulness but instead did more to continue the problems by not specifying responsibili-

ties and acquiescing to each service's desires. JP 3-09, *Doctrine for Joint Fire Support*, and JP 3-03 were drafted in the early 1990s and discussed BAI. JP 3-09 discussed BAI in relation to CAS and also in relation to fires on the battlefield. In this role the publication defined BAI as a type of fire support.⁴⁴ This interpretation was good for the USA's view of the battlefield but did not match the USAF's view. JP 3-03 looked at the issue differently. Joint doctrine for interdiction operations did not refer to BAI specifically but discussed interdiction's effect at the strategic, operational, and tactical levels similar to USAF doctrine. It discussed joint interdiction of follow-on forces separately. The document argued that FOFA was a "subset of joint interdiction operations specifically directed against enemy land forces" and targeted "uncommitted enemy echelons that can be brought to bear on friendly forces."⁴⁵ This reference to FOFA, in essence meant BAI because NATO's FOFA concept included BAI and AI as "integral parts."⁴⁶

Few of these problems influenced overseas commands such as United States Air Forces in Europe and Pacific Air Forces. BAI was still a major mission in Korea and in NATO OAS doctrine.⁴⁷ NATO doctrine discussed BAI in three main doctrinal documents: ATP 27 (B), *Offensive Air Support Operations*, 1991; ATP 33 (B), *NATO Tactical Air Doctrine*, 1997; and ATP 35 (B), *Land Force Tactical Doctrine*, 1997. All three documents continue to describe explicitly the BAI mission and its execution. It seems the doctrinal problems were confined somewhat to the service staffs, doctrinal organizations, and forces stationed in the continental United States.

Did BAI Disappear Because It Was No Longer Useful?

Before and during Desert Storm, CENTAF abandoned standing doctrinal concepts for air support of ground operations in favor of several new battlefield techniques that it created. These included Push CAS, kill-box AI, and killer scouts. Following the war, none of these new missions ended up being codified in the 1992 revision of AFMAN 1-1. A BAI idea remained in concept (as well BAI itself in AFMAN 1-1, vol. 2), minus any process for its execution. The USAF had four major

technological innovations that carried forward into the Gulf War: stealth, precision weapons, global positioning system (GPS) navigation, and JSTARS. All these technologies enhance survivability and increase effects over the lethal battlefield area. These capabilities and communications systems led Colonel Bingham to note that US commanders had the ability to “look deep into the enemy’s rear area to see in ‘real-time’ the precise location of his army’s maneuver forces, despite darkness or limited visibility.”⁴⁸ These capabilities add, rather than detract, from the ability to perform the BAI mission effectively.

During the same period, the Army made strides in long-range weapons such as ATACMS, MLRS, and attack helicopters to influence the deep battle. Each of these assets gave the corps more ability to influence its own deep battle and, combined with the fast-maneuver operations anticipated with AirLand Battle, made a strong case for moving the FSCL out farther from the FLOT. These technologies were specifically designed for AirLand Battle and cooperative operations with air forces. Most of the 1980s was dedicated to determining a way to integrate and cooperate on the battlefield. The period ended with “significant synergistic effects of modern US intelligence, communications, and weapons systems concertedly employed by a well-trained force to produce a higher tempo, deep and simultaneous attack capabilities, and the habit of command and control on the move.”⁴⁹ These realities and the codification of the continued requirement to use airpower to increase the effectiveness of Army deep operations make a BAI-type mission more, rather than less, relevant.

When BAI was first articulated in the late 1970s, the capability to execute it was just emerging. Throughout the 1980s and into the beginning of the 1990s, the technology and systems developed to influence the deep battle were finally reaching the field. Many of these technologies experienced battle in Desert Storm but were not used to execute the BAI mission as they were envisioned. JSTARS and space assets opened up the real-time targeting window, air-delivered precision-guided weapons, ATACMS, and MLRS; and attack helicopters added the firepower; and the battlefield coordination detachment (BCD) was there for coordination. By the time this round of

doctrine was printed, the BAI construct was necessary, fully mission ready, and viable.

Did Service Self-Interest Kill Battlefield Air Interdiction?

For the USAF, loss of centralized control of airpower was the most agreed-on complaint against the BAI. The Air Force position was that airpower is a theater asset that should be centrally controlled at the operational level. Without BAI and with the FSCL at close range to friendly forces, the JFACC is able to control a portion of the Army's AO without coordination. These thoughts led many Airmen to conclude that airpower alone could win wars following Desert Storm. If this conclusion is correct, using sorties to target a ground commander's priorities becomes an exercise in futility. Rather than coordinate with ground commanders about how best to use airpower throughout their AOs, Airmen often fight to gain control over it. Following the Gulf War, TAC agreed to work with TRADOC to develop joint doctrine based on the Army's *AirLand Operations* pamphlet. Although this cooperation between the services might have solved the many problems encountered during the war, the USAF removed itself from the process shortly after the agreement. The reason for this removal was listed in a memorandum written by Colonel Deptula in August 1991. He stated, "If we allow *AirLand Operations* to be the sole or even primary driver . . . we will lose, rather than reinforce the significant capabilities of TACAIR forces applied strategically, independent of land forces."⁵⁰ He also stated that the informal efforts to create joint doctrine for the services based on mutual agreement should be stopped "to preclude any preemption by the Army of Air Force doctrine."⁵¹ This fear of loss of control of all airpower if joint agreement were reached about use of air to support ground forces on the battlefield placed a significant restraint on Army-Air Force cooperation.

In ground warfare, deep battle had become the key to influencing the close battle. The key to the deep battle had become BAI.⁵² The close fight was where decisive ground combat took place. New technology gave the Army control over some effects in the deep battle area (ATACMS, MLRS, attack helicopters)

that were only accessible by airpower in the past. The Army did not want to lose control of its AO as it had in Desert Storm. The USAF had already formally abandoned AirLand Battle doctrine, BAI, and the new TRADOC AirLand Operations constructs.⁵³ It seemed to the Army that they were always the “last priority on the Air Force priority list in terms of missions for the Air Force.”⁵⁴ With this thought process, USA systems focused on shaping the deep battle themselves rather than relying on Air Force forces to coordinate with them.

After the Gulf War, both the USAF and the USA attempted to exert as much influence as possible for the declining budgets through expressing their independent superiority as much as possible. The Air Force chose the route comfortable for it, touted its ability to be independent, and distanced itself from influence toward a supporting role. The Army recognized this and knew it would be necessary to work toward self-reliance inside its AO. If the two services were each attempting to gain control and influence over the same terrain on the battlefield, a process that required coordination and cooperation such as BAI was definitively incompatible with their goals.

Was Battlefield Air Interdiction a Victim of the Doctrinal Process?

The USAF had no real doctrinal process.⁵⁵ The continuity built with TAC and Army doctrine from 1947 through 1964 was built on trust, understanding, and joint processes between the two services. When the USAF began to splinter doctrine writing between the TAC and the air staff, it became factional. The group that wrote 1992’s AFMAN 1-1 was at CADRE. One of the chief authors did not believe they removed BAI from Air Force doctrine because he believed BAI was only NATO doctrine.⁵⁶ This common misperception is problematic because it is a symptom of a larger doctrinal process problem. That problem is that Airmen—including Airmen who write doctrine—do not read doctrine. Notwithstanding the academic effort to write a comprehensive doctrinal document that occurred for several years at CADRE, the lack of an established doctrine process led to a completely new manual that shared little continuity with its

predecessor and may have eliminated BAI at least partially through oversight.

Subsequent to TRADOC's creation in 1973, the USA doctrine process remained consistent. The SAMS, under TRADOC's employ, directed the process that contributed to the 1993 FM 100-5. Many thought the 1993 FM 100-5 was a departure from traditional Army doctrine in that it became overly forward looking instead of functional.⁵⁷ Rather than a document that explained how to fight, the new FM 100-5 told the Army who they were in a new environment, how to survive there, and how to obtain "victory through planning."⁵⁸ Because AirLand Battle was proven in battle, many thought it should have been revised and not eliminated. Had the Army continued to pursue joint operations on the battlefield rather than acquiescing to the Air Force abandonment, the outcome for BAI might have been different.

In the aftermath of the Gulf War, both the USAF and the USA executed major doctrinal revisions to their basic manuals. The USAF's lack of a coherent doctrinal process made this project daunting. Apart from any other fault the USAF doctrine process may suffer from, the primary failure is that the doctrine process has yet to include a way to get Airmen to read the products. Without reading the manuals, any understanding of Air Force doctrine or the process that creates it is in serious question. Interestingly, the USA's seasoned doctrinal process worked well and still ended up producing what was not a universally accepted document. The process could not quickly overturn the popularity of AirLand Battle. On one side BAI may have slipped through the cracks in the process, but on the other it was too close to AirLand Battle.

Conclusion

Evidence in this chapter clearly demonstrates that service self-interest claims the lion's share of the accountability for BAI's disappearance. USAF wanted to win a future war alone. The only way to do that was to own the entire battlefield, even the area inside the USA's AO. The USAF is not, however, the only one to blame. The USA had acknowledged that it needed airpower's support to survive and win on a modern battlefield. During the Gulf War, however, the Army allowed the Air Force

to incorrectly interpret doctrine inside its AO. With the acknowledgement of a need for support and the apparent reluctance from the Air Force to ensure the support would be forthcoming, the Army decided to emphasize reliance on its systems and processes. The Army also wanted to retain control over battlefield effects delivered by airpower in its AO, at least inside the FSCL. The two views clashed in the area of the battlefield that previously included BAI and its coordination mechanism. The inability to develop an effective coordination or synchronization process has done more to alienate the two services than anything else.

Some of the explanation for BAI's demise can be linked to the doctrine processes themselves. Neither service executed its doctrine fully to its satisfaction during the Gulf War. Following the war, both services went to their academic centers for guidance and radically changed their doctrine. Although the USAF doctrine process was broken, it reflected the mood of the service at the time and accurately portrayed it. The USA's change was less popular and arguably less effective at maintaining the environment of joint cooperation needed to be viable for future operations. Joint doctrine did little to resolve the issue. It was often confusing, contradictory, or subject to compromised interpretations. It seems that Goldwater-Nichols did not go far enough with respect to joint doctrine. The JCS chairman failed to make decisions for joint planning and exercises that would end the services' differences. But the explanation that argues BAI was no longer a relevant mission carries no weight during this period. Technology was changing, but the changes should have increased, not decreased, BAI's relevance. Communications, surveillance, GPS, and weapons range and accuracy all spell bad news for the enemy and good news for coordination if the services' will to cooperate had been present to go along with it. By 1993 BAI was dead in name and in each service's basic doctrine. Shallow interdiction thought, however, continued in both services. Both services understood that it was important, had the weapons systems to conduct it, had the combat support systems to control it, and had liaisons to effectively synchronize it. They did not, however, possess a joint doctrinal construct, such as BAI, to execute the concepts nor the cooperation together on the

battlefield. Without such a construct, each service's recognition that coordinated ground maneuver and AI created a dilemma for the enemy would be in jeopardy.⁵⁹ Without the coordination process, ad hoc cooperation would be required during battle to succeed. This type of ad hoc arrangement was part of the charter Generals DePuy and Dixon had set out to eliminate in 1973.⁶⁰ Twenty years later, the services appeared to have almost completely returned to square one.

Notes

1. O'Rourke, *Persian Gulf War*, 15.
2. Kresge and De Sosa, "AirLand Operations," 3.
3. Winnefeld and Johnson, *Joint Air Operations*, 169.
4. There were exceptions to the positive reporting, such as the Al Firdos bunker incident where civilians were killed in an apparent bomb shelter and the media coverage of the bombing of a "baby milk" factory, but most coverage was positive.
5. Lambeth, *The Transformation of American Air Power*, 4.
6. Scales, *Certain Victory*, 35.
7. *Ibid.*, 358.
8. McPeak, *Selected Works*, 223.
9. Fowler, "Avoiding the Seam," 4.
10. *Ibid.*
11. *Army-Air Force Operational Issues*, 25 April 1996, 7, quoted in Hall, "Integrating Joint Operations Beyond the FSCL," 1.
12. *Ibid.*
13. McPeak, *Selected Works*, 154.
14. *Ibid.*
15. *Ibid.*
16. *Ibid.*, 145.
17. Corum, *The Luftwaffe*, 6-7.
18. Bingham, "Air Power in Desert Storm and the Need for Doctrinal Change," 33. In personal contact with the author on 20 February 2002, Lt Col Price T. Bingham, USAF, retired, stated that "since the writing of these papers my thinking has evolved significantly because of the immense transformational potential of Joint STARS . . . I admit to being frustrated by the lack of interest many airmen have in fighting fielded forces as compared to strategic and counterair operations. Contributing to the problem is a widespread lack of knowledge of land forces and an appreciation of how new capabilities (especially wide-area, persistent ground moving target indicator surveillance, and targeting) make it possible to fight land forces differently." Notes are in possession of author.
19. Link, "The Role of the US Air Force in the Employment of Air Power," in *The Future of Air Power in the Aftermath of the Gulf War*, 86.

20. Dennis Drew quoted in "Catching up with Doctrine," *Jane's Defence Weekly*, 29 June 1991, 1174.

21. See Dennis Drew, "Joint Operations," 13. He states the difference between soldiers' and Airmen's views are on airpower priorities. Drew states, "these sorts of irreconcilable differences were at the heart of the argument for an independent Air Force" and remains today. Barry D. Watts states that by 1984, TAC "recommend that BAI be subsumed into air interdiction. TAC's view was that BAI and AI are so functionally similar that they would be best directed and controlled as a single 'mission area.'" Added to this, he noted "working definitions of BAI adequate for practical purposes are less troublesome." In other words, TAC liked the concept, but did not want it to lose control. See Watts and Hale, "Doctrine," 4-15.

22. Mowbray, "Air Force Doctrine Problems," 21-41; and Drew, "Inventing a Doctrine Process," 42. On this page of his article, Drew states that "the truth of the matter is that the US Air Force does not have any sort of systematic process for developing its doctrine."

23. Air Force Manual (AFMAN) 1-1, *Basic Aerospace Doctrine of the United States Air Force*, vol. 1, 7; Bingham, "Air Force Manual 1-1," 12-20; and Winton, "Reflections on the Air Force's New Manual," 20-31. These are good reviews of the manual.

24. AFMAN 1-1, *Basic Aerospace Doctrine of the United States Air Force*, vol. 1, 12.

25. *Ibid.*

26. *Ibid.*, vol. 2, 165.

27. Barr, "US Military Doctrine," 24.

28. Bingham, "Air Interdictions and the Need for Doctrinal Change," 29.

29. Franks, "Continuity and Change," 1.

30. *Ibid.*; Scales, *Certain Victory*, 15; Creech, oral history interview, 220-22; and Romjue, *American Army Doctrine for the Post-Cold War*, 33-38 and 65.

31. McDonough, "Building the New FM 100-5," 5.

32. Romjue, *American Army Doctrine for the Post-Cold War*, 26-27.

33. Kresge and De Sosa, "AirLand Operations," 5.

34. *Ibid.*

35. *Ibid.*

36. Winton, "Reflections on the Air Force's New Manual," 30.

37. McDonough, "Building the New FM 100-5," 6-9.

38. Romjue, *American Army Doctrine for the Post-Cold War*, 54.

39. *Ibid.*, 54-55.

40. *Ibid.*, 82.

41. *Ibid.*, 89.

42. Army Field Manual (FM) 100-5, *Operations*, 1993, 2-19.

43. Army FM 6-20-30, *Fire Support for Corps and Division Operations*, 3-3.

44. Robinson, "AirLand Battle Tactics," 15; and Joint Publication (JP) 3-09, *Doctrine for Joint Fire Support*, 1991, 3.

45. JP 3-03, *Doctrine for Joint Interdiction Operations*, IV-1.

46. Feege, "NATO," 41-70; Andrews, *Airpower against an Army*, 16-17; and Leurs, "Joint Doctrine," 111-13.
47. Robinson, "AirLand Battle Tactics," 17.
48. Bingham, "Air Interdiction," 28.
49. Romjue, *American Army Doctrine for the Post-Cold War*, 67.
50. Deptula, memorandum for record, 2.
51. Ibid.
52. Deal, "BAI," 51.
53. Romjue, *American Army Doctrine for the Post-Cold War*, 94.
54. Starry, oral history interview, 23.
55. Drew, "Inventing a Doctrine Process," 42.
56. Dennis Drew, interview by the author, 23 October 2001.
57. Kagan, "Army Doctrine and Modern War," 134.
58. Ibid.
59. See AFMAN 1-1, *Basic Aerospace Doctrine of the United States Air Force*, 1992, vol. 1, 12; and Army FM 100-5, *Operations*, 1993, 2-18 and 2-19. Both sources agree that air interdiction and ground maneuver combined create dilemma for the enemy, but neither describes how the professed synchronization will occur.
60. Dixon, "TAC-TRADOC Dialogue," 46. Recall the "facts of life" from chap. 2. First, neither air or land could win a significant conflict alone; second, the environment of modern war made ad hoc teamwork development after hostilities began improbable; third, the services were obligated to maximize their potential from each available resource; and last, the cooperation had to become institutionalized to be effective.

Chapter 5

Is Battlefield Air Interdiction Back?

Utility of BAI as a doctrinal concept in the former definition is not a step ahead but a step backwards, and that's why you don't see anybody paying any attention to it.

—Maj Gen David A. Deptula
31 January 2002

The 1999 Air Force counterland doctrine revived the concept of battlefield air interdiction, by differentiating interdiction in support of a ground commander from the JFC theaterwide interdiction effort. Air Force counterland doctrine credits air interdiction with flexibility to operate either in support of surface forces or as the main effort against enemy ground forces.

—United States Army CGSC Course Book, C300-3
August 2000

Stuck in the Post-Cold War Paradigm?

Uncertainty seemed to be the dominant feeling in the mid-1990s. After several years of trying to discover a new paradigm, most still referred to the mid-1990s as a post-Cold War era. Such reference was caused by the gradual shifting of power in the wake of the former Soviet Union's collapse. The world was still changing. The United States was adjusting to a new reality. As a result, many small-scale contingencies emerged in the 1990s including operations in Somalia, Bosnia, and Kosovo. Even though the United States was fairly well prepared for these contingencies, it did not expect any of them. Each had differing levels of effort and force composition. US forces were still deployed in southwest Asia, which increased operations tempo to high levels. Grant Hammond, chair of National Security Strategy at the Air War College quipped, "If the cold war is over and the military, business, and Congress are all involved in downsizing, reengineering,

reorganizing, and reinventing themselves—to varying degrees—why are we so confident (versus ‘comfortable’) with a national security apparatus inherited from the cold war?”¹

To become free of the Cold War paradigm, Congress ordered creation of a commission on roles and missions and continued the funding and force reductions designed to shrink overhead and redundancy within the DOD. A 1993 report released by the Henry L. Stimson Center in preparation for the commission on service roles and missions made several controversial recommendations to that effect. First, the study suggested that the Army shift to light divisions, provide its own rotary-wing CAS, and deploy heavy armor forward or on ships prepositioned closely to potential contingency areas.² The study’s far-reaching suggestions for the Air Force included an increase in BAI missions and expansion of the service’s lift capability, while at the same time reducing CAS to a secondary mission and limiting strategic attack and nuclear roles.³ General McPeak had some different ideas on the subject. He suggested that the Army abandon any long-range attack systems such as the ATACMS, the Marines abandon F-18s, and the Air Force abandon the CAS mission.⁴ General McPeak felt these overlapping capabilities were unnecessary. By 1994 the general had changed his tone concerning interservice cooperation professed in his 1985 article “TACAIR Missions and the Fire Support Coordination Line” in preference for jointness through division of the battlefield and responsibility.⁵ The two services struggled with these issues as they pursued new visions.

In this same era, the USAF was changing its vision from Global Reach–Global Power to Global Engagement. Global Engagement’s major difference was that it used a new force structure to implement it, the Expeditionary Air Force (EAF). Maj Gen Donald G. Cook, the director of EAF implementation, noted “together, Global Engagement Operations and the Expeditionary Air Force support the national military strategy across the full spectrum of military operations.”⁶ The EAF concept evolved under the Global Engagement vision in an attempt to break the Cold War mold. The USAF would return most of its forces to the CONUS and divide them into 10 rapidly deployable composite fighting wings. According to ACC, under this concept “the Air

Force is capable of providing rapidly responsive, tailored-to-need aerospace force capability, prepared and ready to conduct military operations across the full spectrum of conflict.”⁷ The spectrum included the range of air missions and strike capability from battlefield air operations through strategic attack.

The Army was also changing, and under the leadership of Dennis J. Reimer, then its chief of staff, the Army released a new vision statement, “Army Vision 2000.” According to General Reimer, the new vision “captures the essence of the need for balance between dominant maneuver and precision strike.”⁸ These two aspects of the joint vision needed special emphasis in the Army’s new vision because they were the two areas the Army felt most lacking. The vision was also intended to ensure the Army had solid footing in future joint operations. According to an Army press release, the new vision “represented a conceptual template of how the Army will channel the vitality and innovation of its soldiers and leverage the technological opportunities to achieve new levels of effectiveness as the land component member of the joint war fighting team.”⁹ The concept of jointness, combined with ground dominant maneuver and precision strike, would bring the Army and Air Force back into debate over the deep battlefield operations unresolved in previous doctrinal publications.

Developing New USAF Doctrine

Shortly after completion of the 1992 AFMAN 1-1, the Air Force established its doctrine center at Langley AFB, Virginia, in the summer of 1993. The change was part of the entire USAF restructuring effort and represented an attempt to attain service-wide focus on doctrinal thought. The first order of business for the Air Force Doctrine Center (AFDC) was to evaluate all current USAF and joint doctrine for possible revision; it began with the basics in AFMAN 1-1. Based on a belief that the Air Force had found the two-volume version of basic doctrine overly academic, the AFDC abandoned the CADRE-based effort to tell readers the why behind the what of its core war-fighting philosophy. Published in 1997, the Air Force’s new doctrine, AFDD 1, was now titled *Air Force Basic Doctrine*. The first two chapters presented Airmen’s perspectives and

beliefs about doctrine, strategy, and war. Chapter 3 described the ever-increasing number of roles and mission airpower could accomplish. It listed and discussed 17 different “air and space power functions.”¹⁰

The new functions were, in some cases, broad categories that replaced the roles established in the 1992 AFMAN 1-1, while in other cases these categories included specific missions or even support operations such as weather, navigation, and intelligence. Several other new functions took a “counter-medium” flavor borrowed from the classic counterair mission such as counterland, counterspace, countersea, and counter-information. They also borrowed definitions written to echo air superiority applied to each individual medium. Accordingly, the definition of counterland operations read, “Operations conducted to attain and maintain a desired degree of superiority over surface operations by destruction or neutralization of enemy surface forces.”¹¹ The counterland function included AI and CAS from the force-application role established in the 1992 version of AFMAN 1-1 but excluded strategic attack as a separate airpower function. Although much of the AI definition remained unchanged, the publication added to it. It also discussed the role of the JFACC as the “supported commander for air interdiction,” and argued that Airmen were best suited to control the overall interdiction effort for the JFC.¹² This action led to the realization that “surface-force operations can support interdiction operations.”¹³ In terms of joint operations, the doctrine observed that “commanders need to cooperate to identify the crucial targets; decide when, where, and how to attack them; and determine how surface operations and interdiction can best complement each other to achieve the JFC’s objective.”¹⁴

If this were the only word on AI from the Air Force, it would have been woefully inadequate, and the new doctrine center would all have been for naught. This, of course, was not the case. After completion of AFDD 1, the new doctrine center began revision of the first operational-level doctrine documents since the publication of AFMAN 2-1 in 1969. This effort included AFDD 2-1.3, *Counterland*, which focused specifically on AI and CAS in one 98-page manual published in 1999. Added to the classic view of AI affecting all three levels of war,

USAF expanded the definition of AI to include operations where no ground forces were present. As a departure from the classic definition in which AI's focus on effects in relation to surface forces, the Air Force maintained, "AI has the flexibility to operate either in support of surface operations or as the main effort against the enemy ground force. In some cases AI can provide the sole effort against the enemy ground forces, for example, when a joint operation has no friendly land component involved in combat operations."¹⁵ The document spent a considerable amount of time establishing the position that the JFACC should be the single commander in control of theater interdiction operations. This point of view also seemed to assume that the JFACC would almost always be an Air Force officer. "The JFACC, who is normally also the COMAFFOR [commander, Air Force Forces], is the supported commander for the JFC's overall AI effort and a supporting commander when providing CAS or supporting AI to the ground component."¹⁶ The last part of this statement is the most interesting to this CADRE Paper and most often not quoted by Airmen. This statement separated AI in support of the ground component in his or her AO from AI flown throughout the entire JOA.

Chapter 2 of AFDD 2-1.3, which is devoted solely to AI, expanded the idea of AI as both a supporting and supported air operation. It divided AI into subcategories including pre-planned and several flexible types such as armed reconnaissance, kill-box AI or on-call AI. The doctrine argued that pre-planned AI is the "normal method of operation" for AI.¹⁷ These missions generally include AI operations outside the battlefield flown against known targets where detailed intelligence, preparation, and force packaging can be accomplished before execution. Flexible AI reflected the concept of armed reconnaissance from previous doctrine and finally codified kill-box operations utilized in Vietnam and Desert Storm. These flexible missions are intended to support ground forces, in either a linear or nonlinear battlefield (fig. 4). Backing the statement made in the opening chapter of AFDD 2-1.3, chapter 2 also helps bring back the coordination aspect for AI in support of ground operations lost since BAI's demise. "When flexible AI is flown in direct support of the ground component, the target

priorities should reflect those established by the ground component and communicated via the battlefield coordination detachment (BCD) or the theater air-ground system (TAGS).”¹⁸

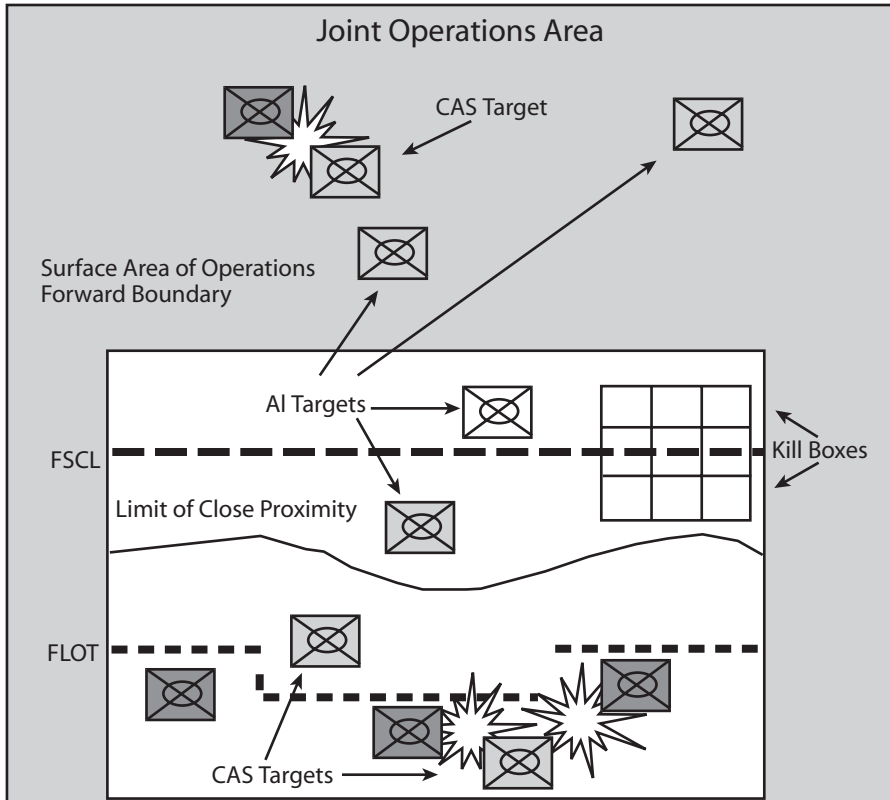


Figure 4. Linear and nonlinear battlefield operations. (From AFDD 2-1.3, *Counterland Air Force Doctrine*, 27 August 1999, 60.)

Three additional BAI-type processes reemerge in AFDD 2-1.3. First, AI flown inside the FSCl is readdressed. When using flexible AI operations incorporated with JSTARS, airpower can arrive over the battlefield in a matter of minutes. The effects gained by this new technology and communication capability allow for real-time targeting. According to AFDD 2-1.3, “Real-time targeting of AI missions, especially those flown inside the

FSCL, provides a more responsive use of counterland attack when supporting the ground component and allows airborne assets to quickly exploit enemy vulnerability that may be of limited duration.”¹⁹ Second, AFDD 2-1.3 indicated that AI will be much more effective if it is synchronized with surface maneuver. It reinforced the notion that surface maneuver will cause the enemy to move and thus make him more vulnerable to AI by direct attack or through higher use of supplies. It also acknowledged that AI will leave the enemy “more susceptible to defeat by friendly surface forces.”²⁰ AFDD 2-1.3 noted that “AI on the battlefield works best through the use of mission-type orders.”²¹ As was the case with the original BAI construct, the Air Force preferred to operate under the assumption that supported commanders tell the JFACC what outcome they desire, not how to achieve the result. Similar to BAI, flexible AI does not involve penny packeting airpower to the ground component but retaining it under the control of the JFACC while achieving the needed effect for the ground component.

New Direction at the Training and Doctrine Command

On the heels of the new post-Cold War doctrine in 1993, TRADOC began its standard practice of peering ahead to the Army’s next doctrine through work on a new TRADOC Pamphlet 525-5, now titled *Force XXI*. The pamphlet was designed to begin where FM 100-5 of 1993 left off by glancing into the future to position the Army for the year 2010. According to the TRADOC’s official history, “*Force XXI* operations called for an Army of globally deployable forces unmatched in modern equipment, training, and doctrine that could succeed in the widest variety of major and minor security challenges.”²² To accomplish this goal, the study expanded two interlinked concepts: the extended battlefield and the concept of depth and simultaneous attack.

Neither concept was truly new. General Starry had addressed the extended battlefield concept in the early 1980s.²³ Each, however, needed to be reevaluated in light of the 1993 doctrine. The extended battlefield concept envisioned a battlefield that was expanded in depth, width, and height based on the capabilities

of modern weapons. The envisioned battle would be fought by fewer soldiers using more deep-strike means to engage the enemy before decisive close operations were necessary.²⁴ The depth and simultaneous nature of attacks were necessary to control the extended battlefield by enabling the corps or division commander “to directly influence the enemy throughout the battlespace to stun, then rapidly defeat the enemy.”²⁵ The deep-attack assets were to be a mix of ground-maneuver assets, air-maneuver assets, field artillery, and electronic warfare units combined and coordinated to synchronize fires.²⁶ In 1994 the use of Air Force assets was assumed to be limited to Push-CAS sorties apportioned to the corps commanders because no BAI sorties were forthcoming, and flexible AI was not yet codified.²⁷

To help facilitate the extended battlefield concept, the Army decided to work alone rather than rely on the Air Force for deep operations support. New concepts were conceived including the joint fires support coordinator (JFSC) and the deep operations control cell (DOCC) in an attempt to control the deep battle area inside the Army’s AO. The JFSC position was envisioned to synchronize all fires in the land AO short of the FSCL. This single position, usually the corps artillery officer, was not a satisfactory solution to the deep battle problem. Another attempt that showed more merit was the DOCC. The concept was based on the fact that “commanders must consider, plan, and execute deep operations through leveraging all organic, joint, and coalition assets while simultaneously fighting close.”²⁸ The DOCC was not the fire support element in that it was not tied to fires but to operations. This cell could be and has been described as a small AOC focused exclusively on the land component’s deep battle area.²⁹ The key functions of the cell were to coordinate the use of corps assets to include long-range strike units, special operations forces (SOF), USAF, US Navy, and other attached available assets; to coordinate and publish the deep operations annex of the division operations order; to monitor deep operations in progress; and to maintain communications with all elements involved in the operation.³⁰ This new system created another way to integrate the services in the land component’s AO.

With the ideals contained in TRADOC Pamphlet 525-5 and the operational concepts expanded in the mid-1990s under consideration, work began on a revision of FM 100-5 targeted for release in the summer of 1998.³¹ However, several factors emerged that would ultimately delay its release. The Army After Next program, which developed a 15- to 30-year future focus, was one of them. The other factor was the vision for the future of the Army of Gen Eric Shinseki, then new Army chief of staff. His vision was based on a lethargic deployment of heavy forces to Albania during the NATO war with Serbia. After eight years and several delays, the Army produced FM 3-0, *Operations* (2001)—a revision to FM 100-5—to align the numbering system with the joint system. Several key doctrinal positions were established. The Army declared, “Air Force air platform support is invaluable in creating the conditions for success before and during land operations. Support of the land force commander’s concept for ground operations is an essential and integral part of each phase of the operation.”³² It also conceded that the “Army forces may be the supporting force during certain phases of the campaign and become the supported force in other phases.”³³ Together, these two statements acknowledged that the Army understood and accepted the role of airpower as an equal in the campaign. The Army members also understood that they were still in control within their AO evident by the statement in the manual. “Inside JFC-assigned AOs, the land and naval force commanders are the supported commanders and synchronize maneuver, fires, and interdiction.”³⁴

Finally, the Army appeared to be under the impression that a modified form of BAI is back in the Air Force lexicon. The Army’s Command and General Staff College (CGSC) was teaching that BAI is not dead, merely renamed flexible AI. In the course book for a lesson on Air Force doctrine, the writer discussed the history of AI and BAI through Desert Storm and specifically in relation to counterland doctrine in 1999. The Army’s understanding of USAF doctrine in AFDD 2-1.3 had a definite subset of AI in support of ground forces and believed the Air Force intended to give air support sorties as a dedicated apportionment category.³⁵ The paper described the flexibility of AI in USAF doctrine but with an Army doctrinal slant. The next several generations

of Army officers who complete CGSC will believe, as did the generation who grew up in the 1980s, that the Air Force's subset of AI is different and is intended to support their tactical and operational requirements.

Influence of Joint-North Atlantic Treaty Organization Doctrine

Joint doctrine written in 1995 perpetuated interservice rivalry. The 1995 version of JP 3-0, *Doctrine for Joint Operations*, established supported and supporting roles over the same real estate. The doctrine confirmed, "The JFACC is the supported commander for the Joint Force Commander's (JFC) overall air interdiction effort."³⁶ This passage seemingly made the JFACC the supported commander for AI everywhere in the JOA. However, several pages later the manual noted that "land and naval operational force commanders are designated the supported commanders and are responsible for the synchronization of maneuver, fires, and interdiction" within their AOs, which makes both the JFACC and the land-naval component commanders the supported commanders for interdiction if their AO lies within the JOA.³⁷ This apparent confusion in joint doctrine became the problem for JFCs to sort out. Confusion of this type was introduced into the joint doctrine through the inadequacy of the joint doctrine development process. According to a *Joint Force Quarterly* article, Goldwater-Nichols gave the chairman of the joint chiefs the responsibility of joint doctrine, but it gave him no process, personnel, or funding to do the job.³⁸ Subsequently, one officer at the Joint Warfighting Center (JWFC)—the organization that supervised the writing of joint doctrine—stated, "Services write most of it [joint doctrine] and sometimes I think they are the greatest impediment to a genuine joint doctrine development process."³⁹ Part of the reason is that "service parochialism is often too powerful, and the service agencies charged with preparing joint doctrine may lack joint experience."⁴⁰ These parochial feelings are not difficult to discover because individual services are the lead agent for individual JPs and try to influence the joint doctrine to their own way of business through the process.

As the joint doctrine process continues to mature, some of these inconsistencies will be resolved through subsequent

service doctrine or through revisions such as JP 3-0's revision in 2001. An example that attempted to clarify support-supporting relationships throughout the JOA was the statement that "the JFACC is the supported commander for the JFC's overall air interdiction effort, while land and naval component commanders are supporting commanders for interdiction in their AOs."⁴¹ The difference between this passage and the one presented from the 1995 version of JP 3-0 may seem minor, but it resolved some confusion by clearly dividing command relationships inside the JOA on the same page. Although this clarification may be useful, it does not automatically create the synergy needed on the battlefield. With language that appeared very similar to definitions of BAI, the 2001 version of JP 3-0 also stated, "Interdiction target priorities within the land or naval force boundaries are considered along with the theater and/or JOA-wide interdiction priorities by JFCs and reflected in the apportionment decision. The JFACC will use these priorities to plan and execute the theater and/or JOA-wide air interdiction effort."⁴² The joint doctrine was clear in describing command relationships and provided apportionment guidance, but it fell short of addressing a method for coordination that BAI had articulated.

Though coordination struggles continued between USAF and USA, BAI remained active in Europe for several more years. But in September 1996 after returning from a NATO doctrine meeting, the commander of the USAF Doctrine Center, Col Robert D. Coffman, incorrectly declared BAI dead in Europe as well. Colonel Coffman stated in a 26 September 1996 memorandum that "OAS is dead and so is BAI. They [German and British air forces] are going to use the US approach with only AI and CAS. Plus, they are going to use mostly US terms concerning supported commanders, AOs, and the like."⁴³ The subject of his memorandum was a revision of ATP 27 (B). But German and British air forces never received the death certificate. Although Colonel Coffman was correct about OAS, revision of another NATO publication—ATP 33 (B) *NATO Tactical Air Doctrine*—in 1997 failed to dispense with BAI. It included a detailed discussion of BAI, contained a chapter titled "Air Operations against

Enemy Surface Assets,” which included discussions of AI, air reconnaissance, BAI, and CAS.⁴⁴ Within the chapter, BAI is both defined and justified.⁴⁵ In addition to this guidance specifically targeted for air operations, NATO land doctrine included a corresponding treatment of BAI in ATP 35 (B).⁴⁶ Together, these two manuals remain current NATO written doctrine and practice of many air forces in NATO, including USAFE.⁴⁷

Is There a Doctrinal Need for a BAI-Type Mission?

Many nations’ air services continue to use the BAI construct and claim to have flown BAI missions in Bosnia, Kosovo, and Afghanistan. As late as November 2001, a US naval aviator engaged against Taliban forces in Afghanistan stated, “Our airplanes that are out there provided air support and battlefield air interdiction against those forces.”⁴⁸ Why did this naval Airman think it was necessary to use a defunct term? One answer is that it makes sense. Many still feel today that there is a doctrinal gap on the battlefield between CAS and AI. As has been noted in the AFDD 2-1.3 doctrinal references above, AI in the land component AO or in direct support to the land operation is different. In an interview General Deptula stated, “I believe that there is a doctrinal void that needs to be filled and my proposition for filling it is battlefield air operations.”⁴⁹ However, attempting to fill the void left by BAI without a similar construct has resulted in broadening the use of the term *AI* and in misapplying the definition of CAS. This problem was observed in after-action reports from Operation Desert Storm in 1991 as Headquarters TAC noted that there was “considerable discussion and debate on the usage of CAS to describe sorties not doctrinally used as CAS” during the war.⁵⁰ The same issue was presented in Afghanistan 11 years later when General Deptula returned from Operation Enduring Freedom and said, “I think we’re doing battlefield air operations, we’re just calling it something else . . . right now we’re calling it CAS, and it’s not CAS.”⁵¹

Although the Army’s new doctrine included unqualified statements about the need for airpower to support ground operations, it was not in conflict with a BAI-type construct. A BAI construct would be useful to support the concepts of depth and simulta-

neous attack the Army now envisions. By 1996 the service had established the DOCC that worked with the corps command post and the BCD to synchronize deep operations and included air and land operations out to the corps's far boundary. The Army Field Artillery Tactical Data System (AFATDS) was developed to have capabilities "including automation of processes related to requesting and executing close air support (CAS) and battlefield air interdiction (BAI) missions."⁵² The system eased coordination requirements because it was designed to be compatible with USAF systems directly in the AOC.⁵³ The bottom line was that the need for the mission was expressed in doctrine, and the technology to control it continued to improve. The Army also began to believe that air missions in direct support to the land component had returned after the 1999 release of AFDD 2-1.3. The one missing element was joint training and agreement to test the processes or allow them to operate.⁵⁴ The reason for this is that the services have still not resolved the underlying issues over who was ultimately in charge.

There is ample support for a continued need for a BAI-type construct to reemerge in joint doctrine. The USAF recognizes that AI inside the land AO is different and requires a different level of oversight. Top USAF officials recognize that the void is causing a misuse of the terms *AI* and *CAS* during operations, especially current operations in Afghanistan. The US Army has revised thought on the deep battle and has developed both doctrinal and organizational changes that would support and benefit a shallow interdiction or medium-attack coordination construct. A BAI-type construct would solve nagging problems for both services.

Has Service Self-Interest Kept a BAI-Type Mission from Resurfacing?

To ensure that it could maintain control over battlefield interdiction assets, the Air Force made BAI a dirty word in the mid-1990s. According to General Deptula, BAI "became a dirty word because there's a better way to use airpower than relegate it to a tactical arm of a tactical surface unit, and we wanted to elevate that to the operational level."⁵⁵ General Horner acknowledged that the term was fine if it made the

ground commander feel good, but that the term itself did not really mean anything.⁵⁶ The USAF felt so strongly about distancing itself from the term *BAI* that it was stricken from all of its doctrinal publications after 1992 and removed from joint doctrine published after that. The USAF Doctrine Center even pushed somewhat unsuccessfully to remove *BAI* from NATO doctrine and unilaterally declared the term dead in 1996. Regardless of the term used, the concept of shallow interdiction or interdiction missions flown in the land AO on either side of the FSCL remain useful.

The Army has generally accepted the fact that *BAI* proper is gone. With the recognition that the Air Force may not directly support it, the Army has worked hard to ensure it can shape the battlefield on its own. It has gone about this by influencing joint doctrine, readdressing its own, and working on organizations and weapons technology that can function throughout its AO. Although FM 3-0 advocated jointness on the future battlefield, it also abandoned doctrinal language that counted on the Air Force to deliver on every Army request. The new Army is transforming into a lighter force for mobility and relevance. This lighter force will be more agile but will most likely require more support from airpower throughout the battlefield in depth and simultaneity. Organizations such as the DOCC will help the Army maintain control over shaping its deep battle and over operations within its AO, without such total reliance on the Air Force on the far side of the FSCL.

The motivation that led to the vilification of *BAI* and attempted to keep it out of circulation has failed to keep good doctrinal thought from reemerging. AFDD 2-1.3, without using the term or creating the coordination mechanism, described a concept of AI on the battlefield that shares many aspects with the *BAI* process. The result of making *BAI* a dirty word, however, led the USA onto a path to support itself. Added to the process of Army transformation that will likely see a future need for larger amounts of air support, it seems that each service's attempt at self-interest might inadvertently bring them to the edge of cooperation through necessity.

Has the Doctrinal Process Had an Effect?

The USAF doctrine process improved significantly after the early 1990s. Subsequent to 1993, there was a focal point for the production of doctrine at the doctrine center, even if USAF culture has yet to influence Airmen to read it.⁵⁷ Even though the creation of the center was long overdue, some were less than impressed with the way it developed. Col Dennis M. Drew, USAF, retired, a primary author of the 1992 USAF basic doctrine, criticized the new center's bureaucratic nature and lack of intellectual process. He noted that the bureaucracy was interested in production and not in the product. In an *Airpower Journal* article, he argued that USAF basic doctrine suffered from three major problems: first, it ignored insurgency warfare even though the concept was historically common; second, it lacked serious research and analysis; and third, it was merely a collection of assertions with no justification.⁵⁸ Drew argued the primary offense was the service's lack of proclivity toward analyzing history or theory.⁵⁹ He was also critical of the USAF's tendency to write doctrine "with an eye toward interservice battles within the Pentagon."⁶⁰ Another doctrine writer, Mr. Gene Myers at AFDC, agreed that there were still problems with the USAF doctrine process. What he did not agree with, however, was that the problems could be fixed through the simple process suggested by Colonel Drew nor the move to Maxwell AFB that took place in 1997.⁶¹ Following the move to Maxwell, the center was very productive, although the process that is in place now has little to do with the location and more to do with the leadership and attention it has received. Regardless of the added attention, it may be noted that the USAF has yet to solve the doctrinal illiteracy of its officers outside of the academic circle at Maxwell AFB and that, with rare exceptions, USAF doctrine continues to be written with an eye toward winning the interservice battles rather than on how to be the best at joint warfighting.

TRADOC remained in the driver's seat while creating doctrine and training programs for the Army during this period. The organization was also well respected for its capability and professionalism. Deptula (then lieutenant colonel) praised TRADOC, "The Army is to be admired for its entire doctrine development process."⁶² At the same time, he warned his service of the

dangers of getting too close to them. Mr. Myers, USAF doctrine writer, also admired TRADOC as an organization that “has functioned superbly,” and warned his service about the entity he called the “Great Green Doctrine Machine.”⁶³ These warnings were focused on the fact that these Airmen feared Army doctrine attaining unwarranted influence over the joint-doctrine process. The joint doctrine published in the mid-1990s, however, was often confusing because service self-interest did not allow a truly joint solution. TRADOC was acting with caution. It was prepared to publish a revision to the 1993 FM 100-5 by 1998 but held off because of the transformation the service was contemplating and the lessons coming out of the Balkans. If anything, it seems TRADOC was very careful to make its statements clear and unambiguous. A perfect example of this is the new discussion of the FSCL in FM 3-0:

The FSCL is not a boundary. The establishing commander synchronizes operations on either side of the FSCL out to the limits of the land AO. The establishment of an FSCL does not create a “free-fire area” beyond the FSCL. When targets are attacked beyond an FSCL, the attacks must not produce adverse effects forward, on, or to the rear of the line. Attacks beyond the FSCL must be consistent with the establishing commander’s priorities, timing, and desired effects. They are deconflicted with the supported headquarters whenever possible.⁶⁴

Anyone who reads this discussion of the FSCL or the remainder of FM 3-0 will find it difficult to be confused. The writers of this doctrine had clarity in mind, and they hit the nail on the head.

During this period, both services’ doctrine-development process matured and continued to work hard. The fledgling USAF Doctrine Center still must grow before its processes will make up for its lack of doctrine-writing history. Too much of the process is still concerned with the Air Force tradition of using doctrine as a platform instead of what Dr. I. B. Holley calls “points of departure for thoughtful decision makers.”⁶⁵ It is likely that these problems will persist until doctrinal education becomes part of the process for the service. TRADOC’s process has developed useful constructs and organizations with clarity and thought. However, the reluctance to engage in doctrinal areas that may require USAF support has kept a BAI-type construct out of reach for either service, whether it would fill the acknowledged doctrinal gap for both services. As

a result USAF and USA doctrine are now more self-promoting than ever before. At the same time, they have the potential to be more mutually supportive now than anytime since 1986.

Conclusion

As was the case in the first period of development after the Gulf War, two explanations are credible, while one has almost no explanatory power for the continued exclusion of a BAI-type construct. Once again, service self-interest leads by a wide margin. A quick literature review of the period illuminates the point. A quick search can find at least 13 separate articles written on interservice rivalry and parochialism from 1993 to present.⁶⁶ Almost every edition of *Joint Force Quarterly* since the journal's inception addressed the issue in its "Out of Joint" section. The evidence for the conclusions over this period is, however, a bit more complex and wrapped in frustration and rhetoric. Ironically, the parochialism and self-interest are less telling in each service's doctrine now than they were only five to seven years before.

Even though each service's doctrine expanded considerably, the doctrine processes are again worthy of second place. This time, however, the reason is less what each process produces but more of what they do not produce. Although the services have not agreed on every controversial issue, they have each written service and joint doctrines that are not antagonistic. But their efforts fail to expound that there is a process that must be described to turn all the complementary language into executable synergy on the battlefield. Although the linkage of single-service doctrine to another service doctrine is not required, if the linkage is never fully developed, the concept it represents falls short. In other words, both the Army and the Air Force not only realize that each is important, but that they need each other. As General Fogleman noted, "We must build trust and training based on doctrine."⁶⁷ For this to happen, the doctrine needs to take the last step, whether at the service or joint level and connect the two complementary ideas via a process that creates synergy.

Both services have come to realize that AI on the battlefield is required. Both discuss joint operations and synergy on the

battlefield. Both understand the support and supporting command relationships. The Air Force learned in Kosovo that its idea of AI detached from support to any ground force was difficult to achieve. The absence of ground forces translates into no one to help contain or locate the suspected enemy. The absence of ground forces eliminates the “dilemma for the enemy commander as he reacts to the resulting combined and complementary effects.”⁶⁸ According to the commander of Allied Air Forces Southern Europe, “We lacked a ground element to fix the enemy, to make him predictable, and to give us information on where the enemy might be.”⁶⁹ This same issue is taking place in Afghanistan. Surface forces were required to coordinate and support the air, while the air simultaneously supported the coalition ground scheme of maneuver. The problem remains because neither has an agreed-on construct describing how to bring the complementary doctrines together. This is not a failure of the doctrine itself but of the lack of interservice agreement and training on how to best create the synergy both service doctrines profess.

Finally, since 1993, many of the necessary elements of a BAI-type process have fallen into place. The Air Force once again understands that AI in the land commander’s AO is different and that it can be effective on either side of the FSCL. The current nomenclature for this type of AI operation is flexible AI. The USAF does not fully understand how it is going to integrate this into the overall theater AI plan. In contrast the Army understands that airpower is required for it to execute its desired land operations and that to stop the enemy during the deep battle is preferable to waiting for close decisive operations. It built a C² center, the DOCC, to synchronize the deep battle area in its AO in a similar manner to the Air Force’s control throughout the theater from its AOC. Both services recognize that interdiction and maneuver cause the other to be more effective, which creates a dilemma for the enemy. Joint doctrine changed to clarify, rather than muddy, the picture as well. It now specifies command relationships more clearly and is finally in line with each of the service’s doctrines. It took a stand on the proper definition of the FSCL, which should eliminate confusion (see glossary). Finally, the two services must come together and agree on the

details of integration and coordination that must be established and to test the concept through joint exercising as suggested by Gen Ronald A. Fogleman, former chief of staff. Operations may then become truly joint.

Notes

1. Hammond, quoted in Szafranski, "Interservice Rivalry in Action," 51.
2. Blechman et al., *Key West Revisited*, iv.
3. *Ibid.*, v and 26-27.
4. McPeak, *Selected Works*, 327-33.
5. *Ibid.*, 321.
6. Cook, "Global Engagement with an Expeditionary Aerospace Force."
7. Holt, "The Expeditionary Story."
8. Army releases, "Army Vision 2000."
9. *Ibid.*
10. Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine*, 45. The functions included counterair, counterspace, counterland, countersea, strategic attack, counterinformation, command and control, airlift, air refueling, space lift, special operations employment, intelligence, surveillance, reconnaissance, combat search and rescue, navigation and positioning, and weather service.
11. *Ibid.*, 48. On p. 46 the term *counterair* is defined as "operations conducted to attain and maintain a desired degree of air superiority by destruction or neutralization of enemy air forces."
12. *Ibid.*, 49.
13. *Ibid.*
14. *Ibid.*
15. AFDD 2-1.3, *Counterland Air Force Doctrine*, 3. The term *AI* is defined on p. 91 as "air operations conducted to delay, divert, disrupt, or destroy the enemy's military potential before it can *be brought to bear effectively against friendly forces* at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required."
16. *Ibid.*, 2.
17. *Ibid.*, 26.
18. *Ibid.*, 27.
19. *Ibid.*
20. *Ibid.*, 28.
21. *Ibid.*, 29.
22. "Historical Overview of the Army Training and Doctrine Command."
23. See Starry, oral history interview, 5.
24. TRADOC Pamphlet 525-5, "Force XXI Operations."
25. *Ibid.*
26. Emerson and Edwards, "Deep Operations."
27. *Ibid.*

28. Pena et al., "New Doctrine on Deep Battle Coordination." The deep operations control cell (DOCC) is not addressed in Army Field Manual (FM) 3-0, *Operations*. See FM 100-5, *Operations*, 1993, appendix B, Aviation Command and Control, for a discussion on the DOCC in US Army doctrine.

29. David A. Deptula, interview by the author, 31 January 2002. General Deptula mentioned that these cells duplicated the air operations center on a small scale.

30. Pena et al., "New Doctrine on Deep Battle Coordination."

31. "Historical Overview of the Army Training and Doctrine Command."

32. Army FM 3-0, *Operations*, 2-7.

33. *Ibid.*

34. *Ibid.*

35. Evans, "Flexible Air Interdiction," 4-50.

36. Joint Publication (JP) 3-0, *Doctrine for Joint Operations*, 1 February 1995, IV-11.

37. *Ibid.*, IV-15.

38. Adolph, Stilles, and Hitt, "Why Goldwater-Nichols Didn't Go Far Enough," 48.

39. *Ibid.*, 49.

40. *Ibid.*

41. JP 3-0, *Doctrine for Joint Operations*, 10 September 2001, IV-113; JP 3-03, *Doctrine for Joint Interdiction Operations*, April 1997, vii-ix; and JP 3-09, *Doctrine for Joint Fire Support*, vi. These sections corroborate JP 3-0, *Doctrine for Joint Operations*, 10 September 2001, on commander relationships throughout the joint operations area.

42. JP 3-0, *Doctrine for Joint Operations*, 10 September 2001, IV-16.

43. Coffman memorandum.

44. NATO Allied Tactical Publication (ATP) 33 (B), *NATO Tactical Air Doctrine*, chap. 5.

45. *Ibid.*, 5-4.

46. NATO ATP 35 (B), *Land Force Tactical Doctrine*, n. p.

47. See Fourth Air Support Operations Group (4ASOG, USAFE) Instruction 13-103, 7 March 2000, 8. It states, "Normally expect non-dedicated offensive air support units to be tasked with at least one BAI [battlefield air interdiction] target prior to FAC training." For discussions of BAI operations over Bosnia and Kosovo, see Stijger, "Peace in the Atlantic"; for Dutch BAI operations in Bosnia, see "Proposal for a Peace Force," a draft concept for Bosnian peace proposed by the Institute for Public Policy, George Mason University, 15 July 1997, which suggested a BAI mission for peace support; and for Canadian BAI operations in Kosovo, see Houle, "Media Daily Brief"; and Bahow et al., "Mission Ready," 55-56.

48. O'Hanlon, "Opposition Takes Key Taliban City," 2A.

49. Deptula, interview. Deptula's concept of battlefield air operations is not synonymous with the former BAI. The main difference is that it is not intended to be exclusively a ground support mission, rather, it is merely air operations on the battlefield.

50. Butch Byrd, memorandum for record.

51. Deptula, interview. Deptula explained that his concept of battlefield air operations was not air interdiction (AI). He explained that in Afghanistan troops are not in contact, so the mission is not close air support. The enemy is also not going anywhere, so the mission is not AI. "What we're doing is using offensive forces to destroy a fielded military force that's not engaged or about to be engaged."

52. Boutelle and Filak, "AFATDS," 21.

53. Ibid.

54. See Hollis, "Making the Most of Air Power," 5. General Fogleman states that "if we understand what we each do and we've built a general trust among our people at all levels, then we can overcome almost any obstacle. That's why it is so important we train together as often as possible. It's also important we train in accordance with doctrine so we'll all be on the same sheet of music when it really counts—what we do is too important not to be. We must not tolerate units conducting joint training with separate agendas; we have joint laboratories and agencies to test new ideas and concepts" (Hollis, "Making the Most of Air Power, 5).

55. Deptula, interview.

56. Horner, oral history interview. This same sentiment, however, did not seem so apparent during Desert Storm where BAI remained off the ATO even after the complaints of VII Corps.

57. See Drew, "Inventing a Doctrine Process," 43; and Gene Myers, memorandum for record. Drew and Myers believe USAF officers do not read nor understand their doctrine. Myers noted that in his 26 years of experience that everyone ignored USAF doctrine except those in the doctrine community.

58. Drew, "Inventing a Doctrine Process," 43. Drew does not include the 1992 AFMAN 1-1 in the third category because it came with a second volume of essays that explained the rationale for the doctrinal statements presented in volume one. He also noted (see p. 46) that the 1992 doctrine was the first written to educate the force, rather than fight interservice battles at the Pentagon. Doctrine written to fight interservice battles, this author suspects, is largely the reason few "warriors" read or understood basic USAF doctrine. Also Gene Myers, memorandum for record. See his discussion of USAF leadership indigence for doctrine, the problems with academia in doctrine, and his argument against moving the Air Force Doctrine Center to Maxwell AFB.

59. Drew, "Inventing a Doctrine Process," 46.

60. Ibid.

61. Myers, memorandum for record, 1.

62. Deptula, memorandum for record, 2.

63. Myers, memorandum for record, 3.

64. Army FM 3-0, 2-21.

65. Holley, "Fifty Questions for Doctrine Writers."

66. See especially Trainor, "Jointness, Service Culture, and the Gulf War," 71-74; Szafranski, "Interservice Rivalry in Action," 48-58; Gene Myers, "A Commentary," 60-64; Snider, "The US Military in Transition to Jointness," 16-27; Wells, "Deep Operations, Command and Control, and Doctrine," 101-5; Grant, "Closing the Doctrine Gap"; Ankersen, "A Little Bit Joint," 116-21; and Fautua, "The Paradox of Joint Culture," 81-86; and Grant, "Deep Strife."

67. Hollis, "Making the Most of Airpower," 5.

68. AFDD 2-1.3, *Counterland Air Force Doctrine*, 28.

69. Herrly, "The Plight of Joint Doctrine after Kosovo," 102.

Chapter 6

Conclusions and Implications

I am tempted indeed to declare dogmatically that whatever doctrine the Armed Forces are working on now, they have got it wrong. I am also tempted to declare that it does not matter that they have got it wrong. What does matter is their capacity to get it right quickly when the moment arrives.

—Sir Michael Howard, 1973

One of the distressing traits of airpower theorists is their tendency to claim too much for their chosen weapon. Airpower does not have to win wars alone in order to be decisive, any more than does an army. True unification—what today we would call “jointness”—recognizes that all weapons and services have unique strengths and weaknesses. Wise commanders choose those weapons and capabilities that will most effectively accomplish their objective.

—Col Phillip S. Meilinger, 1997

This CADRE Paper embarked on a journey to determine why battlefield air interdiction disappeared from the military lexicon following the Persian Gulf War. To accomplish this task, the study demonstrated that BAI was present in both USA and USAF doctrine before the war and that it was removed after the war. The burden was to investigate three possible explanations for this occurrence. First, it considered whether BAI was eliminated because it no longer served a useful purpose. Second, the study contemplated whether service self-interest was instrumental in removing BAI from the doctrine. Third, the study examined each service’s doctrine process to determine if the processes were contributing factors. Hallion noted similar areas of interest in the conclusion to his 1989 book, *Strike from the Sky*. Of his 13 points developed from more than seven decades of airpower on the battlefield, three are directly applicable here: (1) Armies and air forces *traditionally bicker* over the nature and control of CAS or BAI operations (self-

interest); (2) We have *always done* what we are now delineating as CAS or BAI operations (relevance); and (3) Air interdiction works best only when it is *synchronized with ground maneuver warfare* (doctrinal imperative).¹

The principal conclusion is that BAI was eliminated and failed to reemerge as a doctrinal mission because of service self-interest and bickering over issues of control. Evidence supporting this explanation appeared in nearly every interview the author conducted and in dozens of articles on the subject. Both services believed they knew the best way to accomplish the mission on the battlefield. The USAF believed that because it has the C² and the majority of firepower in the deep battle area, it should not give control of its assets to another service. This is especially true because airpower is a limited resource and Airmen want to ensure there are enough aircraft for missions they believe are more important than supporting land operations. The USA may understand this position but insists that airpower is also essential to effective ground combat operations. It believes that it should be able to influence operations inside its AO. It allows air forces to operate without any coordination on the far side of the FSCL but is unwilling to abdicate responsibility for its JFC-appointed missions inside its boundaries. The reality is that each service's solution is so similar, the two cannot see past the periphery. The two services' arguments are almost completely at the margins.

Each service's doctrine process ranked second. The importance is because doctrine is the official platform each service uses to voice its beliefs. Most interesting in relation to this study is that service doctrines were often complementary; however, they were often in contradiction or, at least at odds, to the prevailing rhetoric. In the doctrine process category, the USA did very well. The TRADOC leads the Army through establishing a "buy-in" for doctrinal concepts before publication and then establishing training to instill new doctrinal processes and ideas into the service. The success of this system has also made it difficult to return to a construct that would necessitate the USAF as a major contributor. Under AirLand Battle and BAI, the USA was expecting and counting on USAF support. Elimination of BAI and AirLand Battle has

caused the Army to pursue its own deep battle systems and processes. Although a BAI-type mission could complement these processes, TRADOC's advocacy of a BAI-type mission in official doctrine has waned. Regardless, the Army has continued to do well at learning and understanding USAF doctrine and has even reached the conclusion that the Air Force may be reinitiating BAI through flexible AI (a position not held by the USAF). This Army tendency to expect the USAF to operate in accordance with its doctrine will again lead to disenchantment and distrust if the Air Force fails to follow it. The Air Force, on the other hand, did a dismal job in the doctrinal arena. Its problem was almost exclusively an issue of disjointed organizations and doctrinal ignorance. These key problems are at least partially to blame for BAI's demise. Part of a doctrine process must be not only a way to print and disseminate doctrine but also to get at least senior service members to read it. Few, if any, senior Air Force officers in the AOC during Operation Desert Storm were aware that BAI was not only NATO but also USAF doctrine. If Gen Curtis E. LeMay were correct when he said, "At the very heart of war lies doctrine," it would seem that Desert Storm was a doctrinal cardiac arrest.² Ever since BAI's exclusion as a doctrinal mission—even amidst the rhetoric that made BAI a dirty word—USAF commanders have been in search of a mission that fits the mold of what was BAI. However, they seek a mission that is not CAS because detailed integration is not required but not exactly AI either because coordination is required with ground forces inside their AO. Added to that, what appears to be at least a close cousin to BAI—flexible AI—has not been recognized as such, except by the Army. The real failure of the doctrine process is that it has been unable to join two very complementary doctrines. What is missing is a joint collaboration that develops the process of synchronizing the two services' complementary ideas. The BAI was that process; a new one is warranted.

Relevance of the mission itself conceded no real explanatory value as to the continued reluctance toward a joint shallow-interdiction construct. Ever since the Gulf War failed to use BAI as a mission type, problems have emerged. The broadening of AI and CAS definitions in an attempt to cover the mission

gap on the battlefield has rendered both terms less useful. The search for a construct to fill the doctrinal void has been long and unprofitable. Both services know that surface maneuver and AI create synergy, but neither is willing to give a little in control to gain a lot in effectiveness against the enemy. In Kosovo, although airpower was ultimately successful without introducing ground forces, the job was much more difficult in their absence. The current conflict in Afghanistan would look much different if there were no ground forces to help fix and target enemy forces for air attack. Still, what has been missing since the Gulf War is the synergism of airpower and ground power that together causes the most difficult dilemma for the enemy. The mission is relevant, and all the technological advances developed since the Gulf War have made it not only more relevant, but more manageable.

Implications

The implications of not having a BAI-type construct are interservice disagreement on the battlefield leading to ad hoc arrangements when soldiers, Airmen, sailors, and marines are in harm's way. One marine who advocated BAI's return and inclusion in joint doctrine in 1994 stated: "When BAI targets must always compete with theater targets for attention, BAI will usually come up short. This will likely remain true until such a time as the ground war goes to hell in a handbasket, or the importance of mission success in that AOs take on theater-level significance."³ Another implication of failure to create a viable shallow-interdiction or medium-attack construct is the distinct possibility of losing the enemy in a seam on the battlefield, similar to what happened during Operation Desert Storm, by creating a "no mission zone" such as General McPeak warned of in 1985.⁴

However, the question remains, how can we fix it? Two things are necessary. First, joint doctrine must address the issue and develop a process that synchronizes rather than merely advocates joint operations on the battlefield. Second, that joint development must be tested and exercised in realistic joint command post and field training exercises to determine the best way to accomplish the mission. A return to the

attitude prevalent in the mid-1980s where TRADOC and TAC commanders worked to solve issues without concern over which service got the credit is a vital ingredient. On 3 April 1958, President Eisenhower in a special message to the Congress on Reorganization of the Defense Establishment stated, "Separate ground, sea, and air warfare is gone forever. If ever again we should be involved in war, we will fight in all elements, with all services, as one single, concentrated effort. Peacetime preparatory and organizational activity must conform to this fact."⁵ It is time to understand this viewpoint, along with Goldwater-Nichols Act of 1986, and work toward a common solution, not four different ones.

One of the main complaints about the TAC-TRADOC relationship that led to AirLand Battle and BAI was that TAC did not speak for the entire Air Force. During the 1980s, no one did. Beginning in 1993, however, the AFDC is now the agency that should join with TRADOC to work out the details required for battlefield operations. In the spirit of the 31 initiatives of 1984, the services must together commit to solving the problem. General McPeak's comments in 1985 could well apply today:

Today our basic concept features an AirLand battlefield of considerable depth, where operational success is achieved by employing well-coordinated ground and air forces. The BCE plays an important role in ensuring that we attack the target set jointly, with jointly agreed objectives and timing. Air Force missions and associated control measures, including the FSCL, need not change. They are flexible enough to accommodate the new approach. But with the introduction of coordinated BAI, we have every reason to expect that our chances of achieving good results in joint operations will be considerably brighter.⁶

Current doctrine is sufficiently flexible to accommodate another new approach. The process that institutes the coordination will be the new approach that is essential. Whatever approach is developed must be refined until it works.

The process of refining the new approach requires joint testing and exercises to ensure they can accomplish the desired effect. Here, the desired effect is to arrive as closely as possible to the proverbial seamless operation so often touted in the literature. The only way to create a seamless operation is to eliminate the seams through coordination and synergy across the battlefield.

Donald Rumsfeld, secretary of defense, discussed seamlessness in 2002:

The ability of forces to communicate and operate seamlessly on the battlefield will be critical to success. In Afghanistan, we saw “composite” teams of US Special Forces on the ground working with Navy, Air Force, and Marine pilots in the sky to identify targets, communicate targeting information, and coordinate the timing of air strikes—with devastating consequences for the enemy. The lesson of this war is that effectiveness in combat will depend heavily on “jointness”—how well the different branches of our military can communicate and coordinate their efforts on the battlefield. And achieving jointness in wartime requires building it in peacetime. We must train like we fight—and fight like we train.⁷

The need remains for a continued effort in this area. The USAF chief of staff, Gen John P. Jumper, made similar remarks during a closing briefing to a recent joint exercise. He remarked that the services “need to keep service parochialism out of JTF [Joint Task Force] training.” He also said, “We need to stop worrying about doing it by ourselves and take advantage of each other’s strengths.”⁸

The essential element of these joint operations and synergy is trust. Trust is nearly the opposite of selfishness or control. If one is in control, he need not trust in another—only himself. In the military, trust is reinforced either through personal relationships or in their absence, training, and doctrine. Keeping one’s word reinforces it. General Horner discussed trust during the Persian Gulf War as a one-way street when he said, “It’s up to the airman to think about using air power properly—not the ground guy. It’s up to the ground guy to worry about the ground guys, and we have to educate our forces [and] train together. What is missing often is trust.”⁹ The issue here, however, is really not about trust, because only one side of this air-ground team *must* trust the other. The Army has acknowledged since at least 1976 that it could not “win the land battle without the Air Force.”¹⁰ This statement requires the Army to trust that airpower will always be there to support it. Doctrine that insists that ground force support the JFACC are not normally about necessity, but about control. Trust is based on training and knowledge of doctrine and capabilities, just as General Horner suggested, but when doctrine is not followed, or worse yet, not even known, trust is in

jeopardy. The trust and mutual cooperation that permeated the relationship between TAC and TRADOC was dramatically severed during Desert Storm and remains fragile today. An exposition of flexible AI—used to educate the CGSC students on airpower—discussed the relationship that must be cultivated between air and ground commanders:

Flexibility is the key to airpower. However, flexibility is often at odds with control. Effective command and control are the keys to unlocking the tremendous capabilities of air interdiction, flexibly applied to a dynamic battlefield. Command and control relationships based on *mutual understanding and trust*, are essential. Three qualities must be constantly nurtured—coordination, cooperation, and communication. . . . *Mutual understanding begins with knowledge of joint force capabilities and doctrine* (emphasis added).¹¹

What is the best solution to fill the doctrinal void in the shallow interdiction area? This is the most difficult question of all and not the burden of this study. The solution to the question, however, can only be found by the services joining in a spirit of cooperation to reach it. If they lay aside self-interest and control issues, examine the capabilities, doctrine, and relationships that exist together, the answer will most probably be better than any that could possibly be suggested here. What is needed to reach that goal is the spirit exuded by Generals Starry and Creech as they sought cooperation when it was neither yet congressionally mandated nor popular within their cultures or services. General Starry recollected that neither he nor General Creech cared about “who owned anything.” He continued, “He [Creech] and I never had an argument about jurisdiction. The staffs did because the staff weenies are looking ahead and saying, well, the Army is trying to do this and the Army is trying to do that. I think General Creech and I looked at it as if there is something in it for both of us.”¹² This attitude from the top should have been contagious, but it was not. The staffs, infected by the need to defend programs and service interests, did not ultimately decide in favor of what was best for the DOD but what was best for them.

A mutual doctrinal relationship that seeks to solve the shallow interdiction problem will likely not be sufficient to reach a full solution. Modification of doctrinal processes will be required. Currently, the USAF doctrine process continues to be plagued by a less-than-foolproof system to write, disseminate, and

incorporate its doctrine into an Air Force culture. In 1997 Dr. Holley acknowledged that during a professional lifetime of trying to influence the USAF doctrine process, he was mostly unsuccessful.¹³ If a man of his talent and intellect was unable to influence the system over a lifetime, the bureaucracy may be forever entrenched. The problem with the Army's process is that although it is adaptable, the nature of change is slow. The TRADOC of the 1980s took more than 15 years to create a cooperative doctrine, and the Army has transformed into a different service over the last 11 years. A quick return to the era of trust TRADOC enjoyed before the Gulf War will not only be hard to regain, it will also take a lot of time, especially if the Air Force continues rhetoric of self-interest in joint circles.

The bottom line is that "what is needed are ground and naval officers who see that there is a role for an air campaign, and air and naval officers understand that at some point support of ground forces becomes their primary mission."¹⁴ The need, finally, is to address the failures of Desert Storm, which were caused by service practices and misapplication of doctrine that impeded "effective coordination and cooperation between the Air Force and the Army."¹⁵ The way forward is to correct the issues that "were addressed on an ad hoc basis during the Gulf War."¹⁶ According to a RAND study, "Workable solutions with minimal operational cost [were] found because there existed the time and will to do so. Plentiful air and ground resources permitted commanders the luxury of ducking the issue or compromising on particular points."¹⁷ These luxuries are not likely to present themselves again. Since the attack on America on 9/11, the United States is and may be involved in more contingency operations throughout the globe. The time to develop the procedures for cooperation and coordination are dangerously at hand. The time to establish either BAI or a similar process is now. The current doctrine is ripe, and conflict is continual. The time to be joint is now.

Notes

1. Hallion, *Strike from the Sky*, 263–65. Also, see Hallion, "Battlefield Air Support," 8–28. These three points line up with the three explanations closely: relates to service self-interest; relates to continued relevance of the

mission; and relates to the process of synchronization that must be included in doctrine to succeed.

2. Gen Curtis LeMay's statement as cited in Air Force Manual (AFMAN) 1-1, *Basic Aerospace Doctrine of the United States Air Force*, 1984, i. This 1984 manual has a very good review of USAF doctrinal history as an appendix.

3. Whitlow, "JFACC," 68. This is an excellent post-BAI argument for the return and codification in joint doctrine of the BAI mission.

4. See McPeak, "TACAIR Missions and the Fire Support Coordination Line," 65-72.

5. Quoted in Army Field Manual (FM) 3-0, *Operations*, 2-1.

6. McPeak, "TACAIR Missions."

7. Rumsfeld, "Secretary Rumsfeld Speaks on '21st Century Transformation' of the U.S. Armed Forces."

8. Gen John P. Jumper, remarks given to outbrief the Futures Exercise, 14 December 2001. Author was present; remarks in his personal notes.

9. Horner, oral history interview.

10. Army FM 100-5, *Operations*, 1976, 8-1.

11. Evans, "Flexible Air Interdiction," 4-70.

12. Starry, oral history interview, 9.

13. Holley, "Fifty Questions for Doctrine Writers."

14. Winnefeld and Johnson, *Joint Air Operations*, 137.

15. *Ibid.*

16. *Ibid.*

17. *Ibid.*

Glossary

air interdiction (AI): AI is the wider category, of which BAI was a component part. “Air operations conducted to destroy, neutralize, or delay the enemy’s military potential before it can be brought to bear effectively against friendly forces at such distance from friendly forces that detailed integration of each air mission with the fire and movement of friendly forces is not required.” (Joint Publication [JP] 1-02, *Dictionary of Military and Associated Terms*, April 2001, 16.)

area of operations (AO): “An operational area defined by the joint force commander for land and naval forces. AOs do not typically encompass the entire operational area of the joint force commander, but should be large enough for component commanders to accomplish their missions and protect their forces.” (JP 1-02, 34)

area of responsibility: “(1) The geographical area associated with a combatant command within which a combatant commander has authority to plan and conduct operations. (2) In naval usage, a predefined area of enemy terrain for which supporting ships are responsible for covering by fire on known targets or targets of opportunity and by observation.” (JP 1-02, 34)

battlefield air interdiction (BAI): BAI was last doctrinally defined in Air Force Manual (AFMAN) 1-1. “Air interdiction attacks against targets which are in a position to have a near term effect on friendly land forces are referred to as BAI. The primary difference between BAI and the remainder of the AI effort is in the level of interest and emphasis the land commander places on the process of identifying, selecting, and attacking certain targets. Therefore, battlefield air interdiction requires joint coordination at the component level during planning, but once planned, BAI is controlled and executed by the air commander as an integral part of a total air interdiction campaign.” (AFMAN 1-1, *Basic Aerospace Doctrine of the United States Air Force*, 1984). The acronym BAI is spelled out in JP 1-02, A-12, although the term is not defined.

boundary: “A line that delineates surface areas for the purpose of facilitating coordination and deconfliction of operations between adjacent units, formations, or areas.” (JP 1-02, 56)

close air support: “Air action by fixed- and rotary-wing aircraft against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces.” (JP 1-02, 71)

fire support coordination line (FSCL): The definition of the FSCL changed in 2001 in an attempt to eliminate confusion. Additionally, level of control based on the FSCL also changed. The 1997 definition of the FSCL applied to coordination of fires *not under the control of* the establishing commander, but that may affect his operations. Due to issues of misuse of the FSCL, it now states that short of the FSCL “all air-to-ground and surface-to-surface attack operations are *controlled* by the appropriate land or amphibious force commander” (see below).

FSCL circa 1965–2001: “A line established by the appropriate land or amphibious force commander to ensure coordination of fire not under the commander’s control but which may affect current tactical operations. The fire support coordination line is used to coordinate fires of air, ground, or sea weapons systems using any type of ammunition against surface targets. The fire support coordination line should follow well-defined terrain features. The establishment of the fire support coordination line must be coordinated with the appropriate tactical air commander and other supporting elements. Supporting elements may attack targets forward of the fire support coordination line without prior coordination with the land or amphibious force commander provided the attack will not produce adverse surface effects on or to the rear of the line. Attacks against surface targets behind this line must be coordinated with the appropriate land or amphibious force commander. (JP 3-03, *Doctrine for Joint Interdiction Operations*, 1997, GL-4)

FSCL circa 2001: “A fire support coordinating measure that is established and adjusted by appropriate land or amphibious force commanders within their boundaries in consultation with superior, subordinate, supporting, and affected commanders. Fire support coordination lines facilitate the expeditious attack of surface targets of opportunity beyond the coordinating measure. *An FSCL does not divide an area of operations by defining a boundary between close and deep operations or a zone for close air support.* The FSCL applies to all fires of air-, land-, and sea-based weapon systems using any type of ammunition. Forces attacking targets beyond an FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide. Supporting elements attacking targets beyond the FSCL must ensure that the attack will not produce adverse effects on, or to the rear of, the line. Short of an FSCL, all air-to-ground and surface-to-surface attack operations are controlled by the appropriate land or amphibious force commander. The FSCL should follow well-defined terrain features. Coordination of attacks beyond the FSCL is especially critical to commanders of air, land, and special operations forces. In exceptional circumstances, the inability to conduct this coordination will not preclude the attack of targets beyond the FSCL. However, failure to do so may increase the risk of fratricide and could waste limited resources.” (JP 1-02, 160, emphasis added)

supported commander: “The commander having primary responsibility for all aspects of a task assigned by the Joint Strategic Capabilities Plan or other joint operation planning authority. In the context of joint operation planning, this term refers to the commander who prepares operation plans or operation orders in response to requirements of the chairman of the Joint Chiefs of Staff.” (JP 1-02, 411)

supporting commander: “A commander who provides augmentation forces or other support to a supported commander or who develops a supporting plan. Includes the designated combatant commands and Defense agencies

as appropriate. See also supported commander.” (JP 1-02, 412)

synchronization: “(1) The arrangement of military actions in time, space, and purpose to produce maximum relative combat power at a decisive place and time. (2) In the intelligence context, application of intelligence sources and methods in concert with the operational plan.” (JP 1-02, 415)

Abbreviations

| | |
|----------------|--|
| AAF | Army Air Force |
| AAFCE | Allied Air Forces Central Europe |
| ABCCC | airborne battlefield command and control center |
| ACC | Air Combat Command |
| AC&SS | Air Command and Staff School |
| AFATDS | Army Field Artillery Tactical Data System |
| AFDC | Air Force Doctrine Center |
| AFDD | Air Force Doctrine Document |
| AFHRA | Air Force Historical Research Agency |
| AFMAN | Air Force Manual |
| AI | air interdiction |
| ALFA | Air-Land Forces Application |
| ALO | air liaison officer |
| AMC | Air Mobility Command |
| AO | area of operations |
| AOC | air operations center |
| AOR | area of responsibility |
| ATACMS | Army Tactical Missile System |
| ATO | air tasking order |
| ATP | Allied Tactical Publication |
| AU | Air University |
| AUSA | Association of the United States Army |
| AWACS | Airborne Early Warning and Control System |
| BAI | battlefield air interdiction |
| BCD | battlefield coordination detachment |
| BCE | battlefield coordination element |
| C ² | command and control |
| CADRE | Center for Aerospace Doctrine, Research, and Education (now College of Aerospace Doctrine, Research and Education) |
| CAS | close air support |
| CENTAF | Central Command Air Forces |
| CENTCOM | Central Command |
| CGSC | Command and General Staff College |
| CINC | commander in chief (now combatant commander) |
| CONOPS | concept of operations |

| | |
|---------|---|
| CONUS | continental United States |
| DCA | defensive counterair |
| DOCC | deep operations control cell |
| DOD | Department of Defense |
| EAF | Expeditionary Air Force |
| EUCOM | European Command |
| FAC | forward air controller |
| FLOT | forward line of troops |
| FM | Army Field Manual |
| FOFA | follow-on forces attack |
| FSCL | fire support coordination line |
| GPO | Government Printing Office |
| GPS | Global Positioning System |
| “GWAPS” | “Gulf War Air Power Survey,” draft |
| GWAPS | <i>Gulf War Air Power Survey</i> |
| JCS | Joint Chiefs of Staff |
| JFACC | joint force air and space component commander |
| JFC | joint force commander |
| JFSC | joint fires support coordinator |
| JOA | joint operations area |
| JP | joint publication |
| J-SAK | joint attack of the second echelon |
| JSEAD | joint suppression of enemy air defense |
| JSTARS | Joint Surveillance Target Attack Radar System |
| JTF | Joint Task Force |
| JWFC | Joint Warfighting Center |
| KTO | Kuwaiti theater of operation |
| LOC | lines of communication |
| MAC | Military Airlift Command |
| MLRS | multiple launch rocket system |
| NATO | North Atlantic Treaty Organization |
| NSC | National Security Council |
| OAS | offensive air support |
| OCA | offensive counterair |
| OPLAN | operational plan |
| recce | reconnaissance |
| SAC | Strategic Air Command |
| SAMS | School of Advanced Military Studies |
| SEA | Southeast Asia |

| | |
|--------|------------------------------------|
| SECDEF | secretary of defense |
| SOF | Special Operations Forces |
| TAC | Tactical Air Command |
| TACAIR | tactical air |
| TACC | Tactical Air Control Center |
| TACM | Tactical Air Command Manual |
| TAGS | theater air-ground system |
| TOT | timeover target |
| TR | training regulation |
| TRADOC | Training and Doctrine Command |
| USA | United States Army |
| USAF | United States Air Force |
| USAFE | United States Air Forces in Europe |
| USAFR | United States Air Force Reserve |
| USMC | United States Marine Corps |

Bibliography

- Adolph, Robert B., Jr.; Charles W. Stilles; and Franklin D. Hitt Jr. "Why Goldwater-Nichols Didn't Go Far Enough." *Joint Force Quarterly*, Spring 1995, 48-53.
- Air Assault in the Gulf: An Interview with Maj Gen J. H. Binford Peay, III*. Washington, D.C.: United States Army Center of Military History, 1991. <http://www.army.mil/cmh-g/documents/SWA/DSIT/Peay.htm>.
- Air Command and Staff School Pamphlet No. 36. *Tactical Air Operations*. Maxwell AFB, Ala.: Air University Press, 1949.
- Air Corps Field Manual (FM) 1-5. *Employment of Aviation of the Army*, 1940.
- Air Force Doctrine Document (AFDD) 1. *Air Force Basic Doctrine*, September 1997.
- AFDD 2-1.3. *Counterland Air Force Doctrine*, 27 August 1999.
- Air Force Manual (AFMAN) 1-1. *Functions and Basic Doctrine of the United States Air Force*, 1979.
- . *Basic Aerospace Doctrine of the United States Air Force*, 1984.
- . *Basic Aerospace Doctrine of the United States Air Force*, 2 vols. March 1992.
- AFMAN 1-7. *Theater Air Forces in Counter Air, Interdiction, and Close Air Support*, March 1954.
- Alberts, Donald J. "An Alternative View of Air Interdiction." *Air University Review*, July-August 1981, 31-44. <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1981/jul-aug/alberts.htm> (accessed 6 December 2001).
- Andrews, William F. *Airpower against an Army*. Maxwell AFB, Ala.: Air University Press, 1998.
- Ankersen, C. P. "A Little Bit Joint." *Joint Force Quarterly*, Spring 1998, 116-21.
- Army FM 3-0. *Operations*, June 2001.
- Army FM 6-20. *Fire Support in the AirLand Battle*, 1988.
- Army FM 6-20-10. *Tactics, Techniques, and Procedures for the Targeting Process*, May 1996.
- Army FM 6-20-30. *Fire Support for Corps and Division Operations*, 1989.
- Army FM 31-35. *Air-Ground Operations*, 1946.

- . *Aviation in Support of Ground Forces*, 1942.
- Army FM 100-5. *Operations*, 1976.
- . *Operations*, 1982.
- . *Operations*, 1986.
- . *Operations*, 1993.
- Army FM 100-20. *Command and Employment of Air Power*, 1943.
- Army releases, "Army Vision 2000." *Army News Link*. <http://www.dtic.mil/armylink/news/Nov1996/a199611152010.htm> (accessed 23 October 2001).
- Bahow, David L., et al. "Mission Ready: Canada's Role in the Kosovo Air Campaign." *Canadian Military Journal*, Spring 2000, 55–56.
- Barr, Richard Guy. "US Military Doctrine: Culture, Contrast, and Agendas." Research Report, Newport, R.I.: Naval War College, 1994.
- Berry, F. Clifton, Jr. "TAC and TRADOC Talk a Lot, But Do They Communicate?" *Armed Forces Journal International*, September 1979, 27–36.
- Bingham, Price T. "Air Force Manual 1-1." *Military Review*, November 1992, 12–20.
- . "Air Interdiction and the Need for Doctrinal Change." *Strategic Review*, Fall 1992, 24–33.
- . "Air Power in Desert Storm and the Need for Doctrinal Change." *Airpower Journal*, Winter 1991, 33–46. <http://www.airpower.maxwell.af.mil/airchronicles/apj/price.html> (accessed 8 February 2002).
- Blechman, Barry M., William J. Durch, and David R. Henshaw. *Key West Revisited: Roles and Missions of the US Armed Forces in the Twenty-first Century*. Washington, D.C.: Henry L. Stimson Center, March 1993.
- Boutelle, Steven W., and Ronald Filak. "AFATDS: The Fire Support Window to the 21st Century." *Joint Force Quarterly*, Spring 1996, 16–21.
- Byrd, Butch. Memorandum for record. Subject: Highlights of Visit with Lt Gen Gary Luck, XVIII (Airborne) Corps, and Lt Gen Charles Horner, Central Command Air Forces, and Headquarters Tactical Air Command A-Team Briefing, 16 August 1991. Air Force Historical Research Agency (AFHRA) document no. NA-133.

- Carlton, William B. "FSCM on Future Battlefields." *Field Artillery*, August 1992, 35–38.
- Carter, William R. "Air Power in the Battle of the Bulge: A Theater Campaign Perspective." *Airpower Journal*, Winter 1989, 10–33.
- "CAS/BAI (Night)." AFHRA document no. K417.054-217, 20 May 1991–25 July 1991.
- Chief of Staff of the Army. Memorandum of agreement with chief of staff of the Air Force. Subject: Joint Force Development Process, 22 May 1984.
- Christie, Thomas P., et al. *Desert Storm: Fixed-Wing BAI/CAS Operations Lessons Learned* (U). Institute for Defense Analyses, Alexandria, Va., 1992. AFHRA document no. NA-194 (Secret). Information extracted is unclassified.
- Coffman, Robert D. Commander, Air Force Doctrine Center. Memorandum. To DXOX and XOX. Subject: NATO Doctrine Meetings, 20 September 1996.
- Cook, Donald G. "Global Engagement with an Expeditionary Aerospace Force." Address. Air Force Association Air Warfare Symposium, Orlando, Florida, 4 February 1999. <http://www.aet.org/symposia/cook.html> (accessed 18 March 2002).
- Cooper, Bert H., and Steven R. Bowman. *Close Air Support: Issues and Perspectives*. Washington, D.C.: Congressional Research Service, 13 November 1987.
- Corum, James S. *The Luftwaffe: Creating the Operational Air War, 1918–1940*. Lawrence, Kans.: University Press of Kansas, 1997.
- Creech, Wilbur L. Address. Association of the US Army, Washington, D.C., 21 October 1981. Transcript. Creech Papers. AFHRA document no. 168.7339-746.
- . Oral history interview by Hugh M. Ahmann, 1 June 1992. Transcript. Creech Papers. AFHRA document no. K239.0512-2050.
- Cronin, William R. "C³I during the Air War in South Kuwait." *Marine Corps Gazette*, March 1992, 34–37.
- D'Amico, Robert J. "Joint Fires Coordination: Service Competencies and Boundary Challenges." *Joint Force Quarterly*, Spring 1999, 70–77.

- Davis, Richard G. *The 31 Initiatives: A Study in Air Force–Army Cooperation*. Air Staff Historical Study. Washington, D.C.: Office of Air Force History, 1987.
- Deal, C. Lanier, Jr. “BAI: The Key to the Deep Battle.” *Military Review*, March 1982, 51–54.
- Deptula, David A., SAF/OSX. Memorandum for record. Subject: Trends in Joint, Army, and USAF Doctrine Development, 27 August 1991. Desert Storm Collection, AFHRA document no. K239.0472-1.
- Dixon, Robert J. “TAC-TRADOC Dialogue.” *Strategic Review*, Winter 1978, 45–54.
- Dotson, Robert S. “Tactical Air Power and Environmental Imperatives.” *Air University Review*, July–August 1977, 27–35.
- Drew, Dennis M. “Inventing a Doctrine Process.” *Airpower Journal*, Winter 1995, 42–52.
- . “Joint Operations: The World Looks Different from 10,000 Feet.” *Airpower Journal*, Fall 1988, 4–16.
- Duncan, Robert E. “Responsive Air Support.” *Air Force Magazine*, February 1993. http://www.afa.org/magazine/perspectives/desert_storm/0293support.html (accessed 27 August 2001).
- Emerson, Harry M., and Michael T. Edwards. “Deep Operations: A Look from BCTP at the Process.” *Combined Training Center Quarterly Bulletin* no. 94-1, 1994. http://call.army.mil/product/ctc_bull/94-1/94-1p4a.htm (accessed 3 January 2002).
- Evans, Robert D. “Flexible Air Interdiction.” Lesson 4, Advance Sheet, Command and General Staff College (CGSC), Fort Leavenworth, Kans., 01AUGC300L4A5je, 2001.
- Fautua, David T. “The Paradox of Joint Culture.” *Joint Force Quarterly*, Autumn 2000, 81–86.
- Fawcett, John M. “Which Way to the FEBA?” *AirLand Bulletin* no. 91-2/3, 30 September 1991, 17–18.
- Feege, Edward H., Jr. “NATO: Air Operations after Arms Control.” *Airpower Journal*, Summer 1990. <http://www.airpower.maxwell.af.mil/airchronicles/apj/2sum90.html> (accessed 12 March 2002).

- Fowler, Kevin J. "Avoiding the Seam: An Analytical Framework for Deep Attack." Master's thesis, School of Advanced Airpower Studies, Maxwell AFB, Ala., 1998.
- Franks, Frederick M., Jr. "Continuity and Change: Discussing Our Evolving Doctrine." *Military Review*, October 1991, 1.
- . Oral history interview. <http://www.pbs.org/wgbh/pages/frontline/gulf/oral.html> (accessed 27 December 2001).
- Fries, Doug. "The BUFF at War." *Air Force Magazine*, June 1992. http://www.afa.org/magazine/perspectives/desert_storm/0692buff.asp.
- Futrell, Robert Frank. *Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 1907-1960*, vol. 1. Maxwell AFB, Ala.: Air University Press, 1989.
- Glosson, Buster C. Oral history interview. http://www.pbs.org/wgbh/pages/front_line/gulf/oral.html (accessed 27 December 2001).
- Gordon, Michael R., and Bernard E. Trainor. *The Generals' War*. New York: Little, Brown and Co., 1995.
- Grant, Rebecca. "Closing the Doctrine Gap." *Air Force Magazine*, January 1997. <http://www.afa.org/magazine/jan1997/0197doctrine.html> (accessed 27 February 2002).
- . "Deep Strife." *Air Force Magazine*, June 2001, 54-58. <http://www.afa.org/magazine/june2001/0601airland.html> (accessed 5 November 2001).
- Greenfield, Kent. "Army Ground Forces and Air-Ground Battle Team." Study 35, Historical Section—Army Ground Forces, Washington, D.C., 1948, 3.
- "Gulf War Air Power Survey," draft documents and material. Vols. 2 and 3, 1992. AFHRA document nos. TFM-72 and TFM-73.
- Hall, David P. "Integrating Joint Operations Beyond the FSCL: Is Current Doctrine Adequate?" Research Report. Maxwell AFB, Ala.: Air War College, 1997.
- Hallion, Richard P. "Battlefield Air Support: A Retrospective Assessment." *Airpower Journal*, Spring 1990, 8-28. <http://www.airpower.maxwell.af.mil/airchronicles/apj/2spr90.html> (accessed 27 August 2001).

- . *Strike from the Sky: The History of Battlefield Attack, 1911–1945*. Washington, D.C.: Smithsonian Institution Press, 1989.
- . *Storm over Iraq: Air Power in the Gulf War*. Washington, D.C.: Smithsonian Institution Press, 1992.
- Hammond, Grant. Quoted in Col Richard Szafranski. “Inter-service Rivalry in Action.” *Airpower Journal*, Summer 1996, 48–59.
- Hansborough, John W. *Air Support of Army Operations: A Proposed Revision of FM 31-35*, 1949.
- Herrly, Peter F. “The Plight of Joint Doctrine after Kosovo.” *Joint Force Quarterly*, Summer 1999, 99–104.
- “Historical Overview of the Army Training and Doctrine Command” (TRADOC). Official TRADOC History Web site. <http://tradoc.monroe.army.mil/historian//pubs/TRADOC25/chap3.htm> (accessed 13 October 2001).
- Holley, I. B. “Fifty Questions for Doctrine Writers.” *Airpower Journal*, Fall 1997. <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj97/fal97/holley.htm> (accessed 1 November 2001).
- . *Ideas and Weapons*. Washington, D.C.: Office of Air Force History, 1983.
- Hollis, Patrecia Slayden. “Making the Most of Air Power: An Interview with Gen Ronald R. Fogleman.” *Field Artillery*, September–October 1996, 3–5.
- Holt, Bryan A. “The Expeditionary Story: Everyone’s Responsibility.” *Air Combat Command News Service*, 18 April 2001.
- Horner, Charles. Oral history interview. <http://www.pbs.org/wgbh/pages/frontline/gulf/oral.html> (accessed 27 December 2001).
- Houle, Yvan. “Media Daily Brief,” 26 March 1997. http://www.dnd.ca/menu/Operations/echo/articles/26mar99media_fe.htm (accessed 4 January 2002).
- Howard, Michael. “Military Science in an Age of Peace.” *Royal United Services Institute Journal*, March 1974, 3–11.
- Joint Publication (JP) 1-02. *Department of Defense Dictionary of Military and Associated Terms*, April 2001.
- JP 3-0. *Doctrine for Joint Operations*, February 1995.
- . *Doctrine for Joint Operations*, 10 September 2001.

- JP 3-03. *Doctrine for Joint Interdiction Operations*, December 1990.
- . *Doctrine for Joint Interdiction Operations*, April 1997.
- JP 3-09. *Doctrine for Joint Fire Support*, May 1998.
- JP 31-35A. *Joint Training Directive for Air-Ground Operations*, 1 September 1950.
- JP 3-56.1. *Command and Control for Joint Air Operations*, November 1994.
- Kagan, Frederick. "Army Doctrine and Modern War: Notes Toward a New Edition of FM 100-5." *Parameters*, Spring 1997, 134-51.
- Keaney, Thomas A., and Eliot A. Cohen. *Gulf War Air Power Survey*, vol. 1, pt. 1, *Planning*, pt. 2, *Command and Control*; vol. 2, pt. 1, *Operations*, pt. 2, *Effects and Effectiveness*; vol. 3, pt. 1, *Logistics*, pt. 2, *Support*; vol. 4, pt. 1, *Weapons, Tactics, and Training*, pt. 2, *Space*; and vol. 5, *A Statistical Compendium and Chronology*. Washington, D.C.: Government Printing Office (GPO), 1993.
- . *Revolution in Warfare?* Annapolis, Md.: Naval Institute Press, 1995.
- Kresge, Ted, and Max De Sosa. "AirLand Operations: A Concept for the Evolution of AirLand Battle for the Strategic Army of the 1990s and Beyond." *Air Land Bulletin*, September 1991, 3-7.
- Lambeth, Benjamin S. *The Transformation of American Air Power*. Ithaca, N.Y.: Cornell University Press, 2000.
- Laughbaum, Kent. *Synchronizing Airpower and Firepower in the Deep Battle*. Maxwell AFB, Ala.: Air University Press, 1997.
- Leurs, Michael. "Joint Doctrine: New Pubs, Old Controversies." *Joint Force Quarterly*, Summer 1994, 111-13.
- Lewis, Richard B. H. "Desert Storm—JFACC Problems Associated with Battlefield Preparation." Research Report. Carlisle Barracks, Pa.: Army War College, 1993.
- Link, Charles D. "The Role of the US Air Force in the Employment of Air Power." In *The Future of Air Power in the Aftermath of the Gulf War*. Edited by Richard H. Shultz, Jr. and Robert L. Pfaltzgraff, Jr. Maxwell AFB, Ala.: Air University Press, 1992.

- Machos, James A. "TACAIR Support for AirLand Battle." *Air University Review*, May–June 1984, 16–24. <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1984/may-jun/machos.html> (accessed 10 October 2001).
- Mann, Edward C., III. *Thunder and Lightning: Desert Storm and the Airpower Debates*. Maxwell AFB, Ala.: Air University Press, April 1995.
- Mason, Tony. *Air Power: A Centennial Appraisal*. London: Brassey's, 1994.
- McCaffrey, Barry R. "Lessons of Desert Storm." *Joint Force Quarterly*, Winter 2000–2001, 12–17.
- McCrabb, Maris "Buster." "The Evolution of NATO Air Doctrine." In *The Paths of Heaven: The Evolution of Airpower Theory*. Edited by Phillip S. Meilinger. Maxwell AFB, Ala.: Air University Press, 1997.
- McDonough, James R. "Building the New FM 100-5: Process and Product." *Military Review*, October 1991, 2–12.
- McPeak, Merrill A. "TACAIR Missions and the Fire Support Coordination Line." *Air University Review*, September–October 1985, 65–72. <http://www.airpower.maxwell.af.mil/airchronicles/aureview/1985/sep-oct/mcpeak.html> (accessed 10 October 2001).
- . *Selected Works, 1990–1994*. Maxwell AFB, Ala.: Air University Press, 1995.
- Meilinger, Phillip S. "Alexander P. de Seversky and American Airpower." In *The Paths of Heaven: The Evolution of Airpower Theory*. Edited by Phillip S. Meilinger. Maxwell AFB, Ala.: Air University Press, 1997.
- Mortensen, Daniel R. *Airpower and Ground Armies*. Maxwell AFB, Ala.: Air University Press, 1998.
- Mowbray, James A. "Air Force Doctrine Problems: 1926–Present." *Airpower Journal*, Winter 1995, 21–41. <http://www.airpower.maxwell.af.mil/airchronicles/apj/mowbray.html> (accessed 27 August 2001).
- Myers, C. E., Jr. "Air Support for Army Maneuver Forces," *Armed Forces Journal International*, March 1987, 46.
- Myers, Gene. "A Commentary: Interservice Rivalry and Air Force Doctrine: Promise, Not Apology," Summer 1996, 60–64.

- . Memorandum for record. Subject: Doctrine Reorganization: Another View, 16 October 1996. Air Force Doctrine Center-XDD, Maxwell AFB, Ala.
- NATO Allied Tactical Publication (ATP) 27 (B). *Offensive Air Support Operations*, 1991.
- NATO ATP 33 (B). *NATO Tactical Air Doctrine*, April 1997.
- NATO ATP 35 (B). *Land Force Tactical Doctrine*, September 1997.
- New, Terry L. "Where to Draw the Line between Air and Land Battle." *Airpower Journal*. <http://www.airpower.maxwell.af.mil/airchronicles/apj/new-terr.html> (accessed 27 August 2001).
- O'Hanlon, Richard. Quoted by Associated Press, "Opposition Takes Key Taliban City." *Montgomery Advertiser*, 10 November 2001, 1A-2A.
- O'Rourke, Ronald. *Persian Gulf War: Defense-Policy Implications for Congress*. Report to Congress. Washington, D.C.: GPO, 1991.
- Pena, Rick, et al. "New Doctrine on Deep Battle Coordination," 5 July 1995. <http://www-cgsc.army.mil/cdd/papers/deepbatt.htm> (accessed 25 March 2002).
- Powell, Jon S. "AirLand Battle: The Wrong Doctrine for the Wrong Reason." *Air University Review*, May-June 1985, 15-22.
- Rasmussen, Robert D. "The Central Europe Battlefield: Doctrinal Implications for Counterair-Interdiction." *Air University Review*, July-August 1978, 2-20.
- Reimer, Dennis J., and Ronald R. Fogleman. "Joint Warfare and the Army-Air Force Team." *Joint Force Quarterly*, Spring 1996, 9-15.
- Reynolds, Richard T. *Heart of the Storm: The Genesis of the Air Campaign against Iraq*. Maxwell AFB, Ala.: Air University Press, 1995.
- Robinson, William. "AirLand Battle Tactics: An Analysis of Doctrine and Experience." Research Report. Fort Leavenworth, Kans.: CGSC, 1994.
- Romjue, John L. *American Army Doctrine for the Post-Cold War*. Fort Monroe, Va.: TRADOC Center for Military History, 1997.
- . "The Evolution of the AirLand Battle Concept." *Air University Review*, May-June 1984, 4-15.

- . *From Active Defense to AirLand Battle: The Development of Army Doctrine, 1973–1982*. Fort Monroe, Va.: TRADOC Center for Military History, 1984.
- Rumsfeld, Donald H. “Secretary Rumsfeld Speaks on ‘21st Century Transformation’ of the U.S. Armed Forces.” Address. National Defense University, Washington, D.C., 31 January 2002. <http://www.defenselink.mil/speeches/2002/s20020131-secdef2html> (accessed 14 March 2002).
- Russ, Robert D. “Army CAS/BAI Concept.” Russ Personal Papers Collection. AFHRA, Maxwell AFB, Ala., 1987.
- . “Battlefield of the 1990s.” *Defense*, July–August 1988, 12–17.
- . “Open Letter to the Field.” *AirLand Bulletin TAC-TRADOC ALFA*, 31 March 1988, 7–9.
- Scales, Robert H. *Certain Victory: The US Army in the Gulf War*. Fort Leavenworth, Kans.: CGSC Press, 1993.
- Schwarzkopf, H. Norman. Oral history interview. <http://www.pbs.org/wgbh/pages/frontline/gulf/oral.html> (accessed 27 December 2001).
- “Secretary of Defense CAS/BAI Inputs.” AFHRA document no. K417.054-82, 7–26 June 1991.
- Simpkin, Richard. *Deep Battle: The Brainchild of Marshal Tukhachevskii*. London: Brassey’s, 1987.
- Slessor, J. C. *Air Power and Armies*. London: Oxford University Press, 1936.
- Snider, Don M. “The US Military in Transition to Jointness.” *Airpower Journal*, Fall 1996, 16–27.
- Starry, Donn A. Oral history interview by Harold R. Winton, 13 May 1995. Transcript. AFHRA, document no. K239.0512.2140, Maxwell AFB, Ala.
- Stein, David J. *The Development of NATO Tactical Air Doctrine: 1970–1985*. Santa Monica, Calif.: RAND, 1987.
- Stijger, Eric. “Peace in the Atlantic.” *Code One*, April 1998. http://www.codeonemagazine.com/archives/1998/articles/apr_98/apr_298_p.htm (accessed 19 February 2002).
- Szafranski, Richard. “Interservice Rivalry in Action: The Endless Roles and Missions Refrain.” *Airpower Journal*, Summer 1996, 48–59.

- Tactical Air Command Manual (TACM) 1-1, *Tactical Air Forces in Joint Operation*, June 1964.
- . *Tactical Air Forces in Joint Operation*, March 1966.
- TACM 55-3, *Joint Air-Ground Operation*, September 1957.
- TRADOC Pamphlet 525-5, "Force XXI Operations." Fort Monroe, Va.: Department of the Army, August 1994. <http://www/atdcl.armyh.mil/cgi-bin/atdcl.dll/pam/525.5/toc.htm> (accessed 26 February 2002).
- Trainor, Bernard E. "Jointness, Service Culture, and the Gulf War." *Joint Force Quarterly*, Winter 1993–1994, 71–74.
- Warden, John A., III. *The Air Campaign: Planning for Combat*. Washington, D.C.: Brassey's, 1989.
- Waters, Gary. *Gulf Lesson One—The Value of Airpower: Doctrinal Lessons for Australia*. Canberra: Air Power Studies Centre, 1992.
- Watts, Barry D. and James O. Hale. "Doctrine: Mere Words, Or a Key to War-Fighting Competence?" *Air University Review*, September–October 1984, 4–15. http://www.airpower.maxwell.af.mil/air_chronicles/aureview/1984/sep-oct/sep-oct84.html (accessed 12 December 2001).
- Wells, Gordon M. "Deep Operations, Command and Control, and Doctrine." *Joint Force Quarterly*, Winter 1996–1997, 101–5.
- Whitlow, J. L. "JFACC: Who's in Charge?" *Joint Force Quarterly*, Summer 1994, 64–70.
- Wickham, John A., Jr. Joint Service Agreement. Subject: USA/USAF Agreement for Joint Attack of the Second Echelon (J-SAK). AFHRA document no. K168.03-2342, pt. 3, 28 November 1984.
- Wickham, John A., Jr., and Charles A. Gabriel. Memorandum of agreement. Subject: US Army–US Air Force Joint Force Development Process. AFHRA, 22 May 1984.
- Winnefeld, James A., and Dana J. Johnson. *Joint Air Operations: Pursuit of Unity in Command and Control, 1942–1991*. Annapolis, Md.: Naval Institute Press, 1993.
- Winnefeld, James A.; Preston Niblack; and Dana J. Johnson. *A League of Airmen: U.S. Air Power in the Gulf War*. Santa Monica, Calif.: RAND, 1994.

- Winton, Harold R. "An Ambivalent Partnership: US Army and Air Force Perspectives on Air-Ground Operation, 1973-90." In *The Paths of Heaven: The Evolution of Airpower Theory*. Edited by Phillip S. Meilinger. Maxwell AFB, Ala.: Air University Press, 1997.
- . "Reflections on the Air Force's New Manual." *Military Review*, November 1992, 20-31.
- Zook, David H. "The Fire Support Coordination Line: Is It Time to Reconsider Our Doctrine?" Research Report. Fort Leavenworth, Kans.: CGSC, 1992.

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