

AD-A284 070



**"Who's Zooming Who?"
Joint Doctrine and the Army -
Air Force Debate Over the FSCL**

**A Monograph
by**

**Major Robert F. Barry II
Field Artillery**



**DTIC
ELECTE
SEP 09 1994
S G D**

94-29062



SAF

**School of Advanced Military Studies
United States Army Command and General Staff College
Fort Leavenworth, Kansas**

Second Term AY 93-94

Approved for Public Release; Distribution is Unlimited

DTIC QUALITY INSPECTED 3

94 9 06 119

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.

1. AGENCY USE ONLY (Leave blank)		2. REPORT DATE 5 May 1994	3. REPORT TYPE AND DATES COVERED Monograph	
4. TITLE AND SUBTITLE Who's Zooming Who? Joint Doctrine and the Army - Air Force Debate Over the FSCL			5. FUNDING NUMBERS	
6. AUTHOR(S) Major Robert F. Barry II				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) School of Advanced Military Studies ATTN: ATZL-SWV Fort Leavenworth, Kansas 66027-6900 Comm (913) 684-3437 DSN 552-3437			8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION/AVAILABILITY STATEMENT Approved for Public Release; Distribution Unlimited			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words) See Attached Abstract				
14. SUBJECT TERMS			15. NUMBER OF PAGES 53	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT UNCLASSIFIED	20. LIMITATION OF ABSTRACT UNLIMITED	

DTIC QUALITY INSPECTED 3

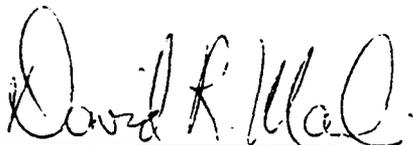
SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

Major Robert F. Barry

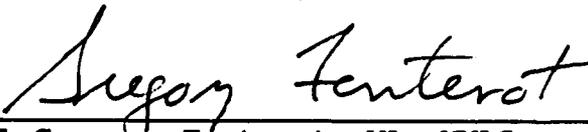
Title of Monograph: Who's Zooming Who? Joint Doctrine and the
Army - Air Force Debate Over the FSCL

Approved by:



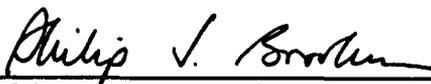
LTC David R. Manki, MMAS

Monograph Director



COL Gregory Fontenot, MA, MMAS

Director, School of
Advanced Military
Studies



Philip J. Brookes, Ph.D.

Director, Graduate
Degree Program

Accepted this 6th day of May 1994

ABSTRACT

"WHO'S ZOOMING WHO?" JOINT DOCTRINE AND THE ARMY - AIR FORCE DEBATE OVER THE FSCL by Major Robert F. Barry II, USA, 54 pages.

This monograph examines the current debate over the FSCL from a doctrinal perspective. Changes in the capabilities of Army and Air Force weapons systems, doctrine, and organizations are all affecting how each service views its role in the delivery and control of operational fires. With the defense budget declining at a fantastic pace, and with intense congressional scrutiny of service roles and missions, there has been a digression to parochial, service-oriented viewpoints over operational fires and the systems to deliver them. While the Service Chiefs battle over these issues, operational commanders must struggle to apply current capabilities and doctrine on a joint battlefield. This monograph examines the Army, Air Force, and joint doctrine with respect to the FSCL and operational fires.

The monograph first examines the evolution of the FSCL as it changed from an Army term to delineate control of the battlefield, to the current joint term that is hotly contested by each of the services. Next the doctrinal perspectives of the Army and Air Force are examined with respect to the FSCL. In addition, the solutions of two unified commanders are examined as methods of approaching operational fires and the use of the FSCL.

Finally, joint doctrine is assessed for its clarity and authority in articulating the meaning of the term "operational fires" and the proper use of the FSCL. Proposed changes to joint doctrine are put forth to establish an authoritative and clearly defined joint view of operational fires and the FSCL.

Accession For	
NTIS CRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

TABLE OF CONTENTS

Introduction	1
Evolution of the FSCL	5
The Air Force Doctrinal Perspective	11
The Army Doctrinal Perspective	19
The Doctrinal Disconnect	29
Conclusions	33
Recommendations	37
Annex A	42
Annex B	43
End Notes	44
Bibliography	49

INTRODUCTION

Throughout history, firepower has been a major component in generating combat power. The English used the devastating power of the longbow to destroy the cream of the French Army at Crecy in 1346. Napoleon commented that "Fire is everything, the rest does not matter," emphasizing the importance of firepower on the Napoleonic battlefield.¹ Massed batteries of Union artillery devastated Confederate forces at Malvern Hill, Gettysburg, and Peachtree Creek. In 1924 General John J. Pershing stated, "The World War demonstrated the importance of the Field Artillery. The majority of casualties were inflicted by this arm."²

Technological advancements since 1918 have extended the range and increased the lethality of the firepower available to commanders in the field. Additionally, the role of other services (Air Force, Navy) has increased with respect to the employment of firepower particularly at the strategic and operational levels. Naval gunfire and airpower paved the way for Army and Marine forces in the Pacific during World War II. Successful operations in the Philippines, Guam, Saipan, and Tinian were made possible by joint fires. Airpower isolated the Normandy beachhead preventing any successful Nazi counterattacks against vulnerable

Allied armies. The breakout from the Cotentin Peninsula was made possible by the devastating effects of massed airpower applied against German frontline units during Operation COBRA in July 1944, and it was airpower that broke the back of the Wehrmacht in the Ardennes.

Recently, US successes during Operations JUST CAUSE, and DESERT STORM have validated the role of firepower in the prosecution of a campaign. Indeed, firepower is now considered a co-equal of maneuver at the operational level as a basic element in joint campaign design.³ Future campaigns will be formulated with an emphasis on operational fires as a key component to victory.

As US forces are restructured for the future, and become smaller, the necessity for a standardized joint doctrine increases. The emphasis of our National Military Strategy has changed from forward deployed units to one of power projection. In an uncertain world, our forces will have to rapidly deploy and be prepared to fight immediately upon arrival. A common joint doctrine is essential to ensure our success.

The increasingly important role of operational fires in campaign design has spawned an intense debate over exactly what constitutes operational fires, who should control them, and

what assets should be used to deliver them. The recent explosion of technological advances has complicated this debate by shattering the traditional boundaries imposed by limitations in weapon's capabilities. For example, the increased range of intelligence sensors and attack systems allow the commander to acquire and attack targets at greater depths throughout the battlefield. This has challenged the Air Force's traditional role of providing deep fires and interdiction in support of ground forces. Army aviation now has the capability to perform the traditional close air support (CAS) mission, previously the exclusive domain of the Air Force. The military technological revolution has created new opportunities to optimize the employment of firepower at the operational level. This has allowed commanders to increase the synergistic effect created through the proper synchronization of joint fires. However, the proper employment of joint forces requires a common, clearly articulated, and understood doctrinal foundation.

Doctrine, as General George H. Decker said, "provides a military organization with a common philosophy, a common language, a common purpose, and a unity of effort."⁴ Doctrine is authoritative but not directive. Joint doctrine deals with the fundamental issue of how to best employ the collective force of

all the services together to achieve national objectives.⁵

Logically, it appears reasonable that joint and service specific doctrine would synchronize the efforts of services to ensure the best use of forces to achieve national military objectives.

This monograph examines the issue of "common" joint, Army, and Air Force doctrine with respect to operational fires. Of particular interest is the role the Fire Support Coordination Line (FSCL) plays in how each service defines its role in the planning and delivery of operational fires. Are the Services' and joint doctrine common and mutually supporting on this issue? If not, what are the differences and points of contention? Does joint doctrine provide authoritative guidance with respect to these issues or has joint doctrine failed to provide a "common philosophy" and thus hindered the Joint Force Commander?

US military doctrine acknowledges that all future conflicts will be fought using joint forces and that the leaders of these forces will need to understand fully the capabilities of all services to the extent required for effective operations.⁶ The conflict between the Army and Air Force over interdiction and operational fires is threatening to create an insurmountable rift between the services. The shrinking defense budget and service parochialism is exacerbating the problem as the Service Chiefs fight for control

of key weapons systems and to preserve their traditional roles and missions. Symbolic of this interservice rivalry is the debate between the Army and Air Force over the FSCL.

Joint Publication 3.0, Doctrine for Joint Operations, defines the FSCL as "a permissive fire support coordination measure" designed to facilitate the attack of targets beyond the line.⁷ The same document also states however, when attacking targets beyond the FSCL forces "must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide."⁸ These two views of the FSCL, one permissive one restrictive, have been championed by the Army and Air Force respectively, and created a highly charged debate between the services with each seeking to "prove" the validity of their position. More ominously however, is that the doctrinal positions taken by each service with respect to this issue are threatening to undermine the cooperation and coordination necessary for effective joint operations.

Evolution of the FSCL

The modern FSCL is an evolution of the Bomb Line used to coordinate aerial fires and ground maneuver during World War II. As the use of aircraft changed from primarily spotters in World War I to that of highly mobile, lethal, firepower delivery systems,

the need to develop doctrinal methods to both enhance the effectiveness of aerial firepower and avoid fratricide increased.

The 1940 version for FM 6-20, Field Artillery Tactics and Techniques, established the use of zones of fire for surface and aircraft delivered fires. Within each zone a specific form of firepower would be used to support ground forces.⁹

Deconfliction of fires was not necessary because delivery systems were confined to a specific area of the battlefield. There was no doctrine for the simultaneous use of air and surface delivered fires against targets in the same area.

The 1941 version of FM 100-5, Operations, stated that the enemy rear area was the most favorable zone for employing air power and that airpower was also useful in supporting mechanized and motorized units that had outrun their artillery support.¹⁰ US doctrine implied that the best use of airpower in support of ground maneuver was as a substitute for artillery rather than a complimentary force multiplier to other fires. Thus the optimal use of airpower was in situations that did not require deconfliction or synchronization with other fires.

The doctrinal preference for employing separate delivery systems in certain areas, instead of synchronizing all fire support had terrible consequences during Operation OVERLORD. To

support the breakout of General Omar Bradley's XII Army, the Army Air Corps was tasked to use medium and heavy bombers to bomb the German lines. The inability of the Allies to synchronize fires and ground maneuver caused the death of 111 American soldiers, including Lieutenant General Leslie McNair, and wounded 400 American soldiers.¹¹ Although the close air support during Operation COBRA was excellent due to innovations in air-ground communications, and the use of air support ground liaison officers riding with the lead columns, the lack of a doctrinal method for synchronizing operational fires proved disastrous.¹²

Before Operation COBRA ground and air force operating areas were well separated and distinct on the battlefield. However, the increasing potential of air power as a result of improved technology, was rapidly forcing changes to existing doctrine. The optimum use of airpower could no longer be predicated on confining it to distinct and separate zones of fire. Doctrinal solutions were needed to replace the ad hoc measures used during Operation COBRA.

Throughout the 1950s the lessons learned from World War II were incorporated into Army and Air Force doctrine. The no-fire line was established as the principal fire support coordination

measure (FSCM) for controlling surface fires. Short of this line, all fires had to be approved by the ground commander who established the no-fire line. Beyond the no-fire line surface to surface fires could be delivered without prior coordination. Also during this period the Bomb Line was used as the delineation between the ground and air forces. In addition, doctrine required that the bomblines be established along terrain easily identifiable from aircraft. The line in effect established an area beyond which the Air Force could bomb without prior coordination.¹³

During the 1960s and 1970s the FSCL was codified in fire support doctrine. In 1961 the first actual use of the term FSCL appeared in FM 6-20-1, Field Artillery Tactics.¹⁴ The FSCL was established by the Corps Commander who was responsible for coordinating and synchronizing all fires. The area beyond the FSCL became the domain of echelons above Corps and the Air Force. The FSCL became the dividing line between the Army and Air Force with respect to operational fires.

The 1977 version of FM 6-20, Fire Support in Combined Arms Operations, depicted the FSCL as the dividing line between close air support (CAS) and air interdiction (AI).¹⁵ This was significant because it further enhanced the view of the FSCL as the dividing line between Army and Air Force control of the battlefield. CAS,

the traditional embodiment of air force support to ground forces, was clearly confined to the area short of the FSCL. Air interdiction, the purview of the Air Force and the traditional example of operational fires, was doctrinally established beyond the FSCL. The Army and Air Force were each reinforced in their beliefs of who controlled fires on the battlefield even though it wasn't tested in combat theory and exercise only. Since Army weapons systems of the time could not generally reach beyond the FSCL, the Army acquiesced to Air Force control of fires beyond the FSCL.

The 1983 edition of FM 6-20, Fire Support in Combined Arms Operations, continued the trend of leaving all attacks beyond the FSCL in the hands of the Air Force. The manual stated that Air Force attacks beyond the FSCL required no "special considerations" by the Army. In effect, this abrogated any Army responsibilities other than the nomination of targets.¹⁶ Although CAS still comprised to be attacks of all targets short of the FSCL, a new category of air support known as Battlefield Air Interdiction (BAI) was added to bridge the gap between CAS and AI. BAI was described as air interdiction against enemy forces "in a position to directly affect friendly forces" and occurred in areas beyond the forward line of own troops (FLOT) but not deep enough to be

considered AI.¹⁷ The Army had direct control over the planning of BAI targets but, unless short of the FSCL, the Air Force coordinated the execution.

The current definition of the FSCL is found in Joint Publication 3.0 Doctrine for Joint Operations and in Army fire support doctrinal publications. FM 6-20-30, Fire Support for Corps and Division Operations defines the FSCL by stating:

The purpose of this permissive fire control measure is to allow the corps and its subordinate and supporting elements (such as the Air Force) to expeditiously attack targets of opportunity beyond the FSCL. The attack of targets beyond the FSCL by Army assets should be coordinated with supporting tactical air. This coordination is defined as informing and/or consulting with the supporting tactical air component. However, the inability to effect this coordination does not preclude the attack of targets beyond the FSCL.¹⁸

The definition of the FSCL in Joint Publication 3.0 is essentially the same as the Army version. Some minor differences between the two definitions form the basis for arguments over the interpretation and subsequent use of the FSCL. For example, Joint Publication 3.0 states that when attacking targets beyond the FSCL forces "must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide."¹⁹ In addition, the same document

also states that "the synchronization of operations on either side of the FSCL is the responsibility of the establishing commander. . ."20 These two statements seem to indicate that the FSCL is not in fact a permissive fire support measure, but instead a line used to delineate the area of absolute authority of a commander from an area of relative authority. In so much as his actions affect others, he must coordinate and synchronize.

This ambiguity has fostered the inter-service rivalries over the issue of control on the battlefield and forms the basis of the debate over the FSCL. Instead of fostering the teamwork necessary in joint warfare, the FSCL has evolved into a dividing line that threatens jointness.

The Air Force Doctrinal Perspective

Air Force doctrine recognizes four basic roles for aerospace forces: aerospace control, force application, force enhancement and force support.²¹ Within these roles, force application is defined as the use of aerospace power against surface forces; specifically "those missions that apply combat power against surface targets exclusive of missions whose objective is aerospace control."²² Force application is the primary role in which the Air Force has a direct effect on the land battle.

The role of force application is subdivided into three missions. Strategic attack encompasses those missions designed to destroy or neutralize an enemy's ability to produce or sustain military forces, or his will to use those forces. Interdiction is designed to destroy, delay, or disrupt existing enemy surface forces before they can affect the close battle. This implies that they are far enough away from friendly forces that detailed coordination between air and surface forces is not necessary. Close air support involves the use of air power to delay, disrupt, or destroy enemy targets in close proximity to friendly forces requiring detailed coordination and synchronization with the ground scheme of maneuver.²³ The key distinction in Air Force doctrine between operational level fires (interdiction) and tactical support (CAS) is the proximity to friendly surface forces, not the effect on the enemy.

As described in Joint Publication 3.0, interdiction is intended to destroy, divert or disrupt enemy forces before their potential can be used against friendly surface forces. The Air Force feels this temporal distinction between interdiction and CAS is justified. Building on this argument, the Air Force doctrinal position is that interdiction is an operational level use of airpower.²⁴ To reinforce this point, Air Force doctrine points to the role of the

Joint Force Air Component Commander (JFACC) as the Joint Force Commander's (JFC) functional component commander for air interdiction.²⁵

The JFACC is the supported commander for the JFC's air interdiction effort. As a supported commander, the JFACC has the authority to exercise general direction of the supporting effort. This includes the authority to designate targets or objectives, timing, and the duration of an operation.²⁶ The Air Force couples this concept with the joint doctrinal statement that "theater air sorties are not constrained by land boundaries. . ." ²⁷ This asserts that the JFACC, in his role as the functional component commander for air interdiction, can be the supported commander throughout the theater without regards to the boundaries of the land or naval component commanders.

Using this argument, the Air Force has established that the JFACC works for the operational commander, the JFC, and in this capacity delivers operational fires through the use of interdiction. Since by definition interdiction does not require coordination with the ground commander, it is logical that the JFACC should control all interdiction efforts. Having established these two points, the Air Force argues that all fires beyond the FSCL are

classified as interdiction and should come under the control of the JFACC.²⁸

Another argument used by the Air Force to justify their control of the battlefield beyond the FSCL begins with this doctrinal statement in Joint Publication 3.0.

Coordination of attacks beyond the FSCL is especially critical to commanders of air, land, and special operations forces. . . Finally, this coordination assists in avoiding conflicting or redundant attack operations. . . 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.²⁹

The Air Force regards the idea of coordination in this case to mean "clearance of fires," which in turn implies control of the area into which the fires are directed. Since the JFACC has the preponderance of assets at risk beyond the FSCL, it is only right that he exercise sufficient control to protect those assets from fratricide. The Air Force equates the view of the FSCL as a permissive measure to the acceptance of uncoordinated, and hence uncleared, fires into an area where they may be heavily engaged. The Air Force position is that, without JFACC control, the area beyond the FSCL becomes a "free fire zone" that places airmen at an unnecessary level of risk. Members of the Air Force view this as politically, militarily, and morally unacceptable.³⁰

Placing the JFACC in control of the area beyond the FSCL would also reduce the likelihood of redundant attacks, and avoid wasting scarce resources. This would support the Air Force's doctrinal position that the JFACC should control all interdiction efforts. Placing this authority in the JFACC's hands would allow him to conduct an integrated interdiction campaign that ensured maximum use of all interdiction capabilities while avoiding redundancy or omission of targets.³¹

The JFACC has the command, control, communications, and intelligence (C3I) architecture to support the battle beyond the FSCL. The Air Force believes that unity of command and economy of force are better served if one commander, the JFACC, is in control of the battlefield beyond the FSCL. Since the Air Force routinely operates beyond the FSCL and has the C3I structure in place to control the battle, assigning the JFACC responsibility for the area beyond the FSCL would be more efficient and effective. The Air Force position is that current joint doctrine assigns responsibility to a commander who does not have the ability to control the fight beyond the FSCL, namely the Land Component Commander (LCC).³²

The FSCL has traditionally been placed at the maximum range of Army weapons systems and until recently this has been

accepted without argument between the services. Now however, the Air Force views this practice as creating needless coordination and frougt with the potential for disaster. Placing the FSCL at the maximum range of the Army Tactical Missile System (ATACMS) or attack helicopters creates a very deep (150km) zone in which the Air Force has to integrate and synchronize air power with maneuver forces. This by definition precludes Air Force air interdiction and therefore creates a potential sanctuary for enemy forces.³³ Since ATACMS and Army Aviation are usually scarce resources the enemy forces would be beyond the attack capability of most Army systems. At the same time, enemy forces would not be subject to air interdiction because they are short of the FSCL. CAS would be difficult at best because of the Army's limited ability to control and integrate airpower at extended ranges. The Air Force argues therefore, that the FSCL should be placed at a range "where artillery and missiles stop being the greatest threat to the enemy and air attack becomes the greatest threat."³⁴ Positioning the FSCL in this manner would allow the Air Force to command and control operational fires and thus maintain unity of effort and apply economy of force on the deep battlefield.

The Air Force bases its doctrine on the strategic and operational control of air and space. On this premise, the Air Force contends that doctrinally, the most efficient use of air power occurs at these two levels.³⁵ CAS is the least efficient use of air power and is tactical by nature. Therefore, the Air Force concentrates on the operational and strategic levels of war as its priority effort in order to make the most efficient and effective use of its forces.

The Air Force views its primary role at the operational and strategic level while the centerpiece of Army operations, the Corps, focuses on the tactical level of war. This is significant since a Corps commander can establish an FSCL. A natural by-product of this is the Army's placement of the FSCL to suit its tactical needs. This reinforces the Air Force's position that the FSCL should be a dividing line between the operational and tactical battlefield.

An example of this occurred during Operation DESERT STORM and resulted in a well publicized argument between the Army and Air Force concerning air support during the Gulf War. After the war, the VII Corps' after action report stated that the JFACC had failed to provide needed air support during the Corps operations.³⁶ Specifically, the Army complaint stated that the

JFACC ignored VII Corps' nominations for AI, and that BAI targets prior to the ground assault were also not attacked. The Air Force responded that the targets attacked were in response to the operational commander's desires (CINCCENT). In addition, operational intelligence available to the JFACC was better than the tactical intelligence available to the VII Corps and many of the Corps targets were out of date by the time the JFACC received the AI target nominations.³⁷ The Air Force position is that the Corps Commander was not properly briefed by the higher headquarters, ARCENT, and that a corps "cannot expect to have dedicated sorties" when the Air Force is primarily concerned with the operational commander's targets.³⁸

Air Force doctrine defines operational fires by associating air interdiction with the needs of the JFC; the operational commander. Beginning with this point, the Air Force doctrinal position is clear. Air interdiction does not require close coordination with ground forces therefore, it occurs outside the control of the ground commander and should be under the command of the JFACC. The FSCL provides a convenient line of demarkation between the JFACC and the LCC for the control of those fires. From the Air Force perspective, operational fires support the operational commander's plan and since the Air Force

controls the majority of assets capable of performing these tasks, the JFACC should be in charge.

The Army Doctrinal Perspective

U.S. Army doctrine recognizes that Army operations will be conducted as part of a joint campaign. This theme is firmly imbedded in the 1993 version of FM 100-5, Operations. Unlike the Air Force, however, the Army feels that ground operations are the decisive element in a joint campaign.³⁹ FM 100-5 states that "In peace or in war, the Army is the nation's historically proven decisive military force."⁴⁰ Although the Army acknowledges the idea of fighting as part of a joint team, the Army clearly sees itself as the preeminent member of a joint force.

Within this doctrinal framework, the Army recognizes three distinct yet connected levels of war; strategic, operational, and tactical. The strategic level encompasses the employment of armed forces with other instruments of national power to secure national or coalition objectives. It is at this level of war that national objectives are translated into military policy and requirements. At the operational level of war, joint or combined forces conduct campaigns and major operations to achieve strategic objectives. The operational level is where strategic

goals are linked to the tactical employment of forces, with emphasis on conducting joint operations. At the tactical level of war, battles and engagements are conducted to achieve specific military objectives. These tactical actions are directed by the operational commander and their cumulative effects achieve operational results.⁴¹

The operational level of war is critical from an Army perspective. As the vital link between strategic objectives and the tactical actions of subordinate units, the operational level of war is necessary for the successful application of military power to achieve national objectives. While critical to success, the operational level of war is not confined to a particular echelon of command of unit size.

Army doctrine states that it is the intended purpose of a force, not its size or level of command, that determines whether an Army unit functions at the operational level.⁴² However, corps are normally the smallest unit that conduct operational level actions.⁴³ Therefore, an Army corps represents the transitional force that links the operational and tactical levels of war. Doctrinally, the Army considers the corps "the central point on the battlefield where combat power is synchronized to achieve tactical and operational advantage over the enemy."⁴⁴ The

lowest echelon that normally fills an operational role is also the central focus for Army operations.

Doctrinal changes and technological advancements are raising the potential that corps will become more involved in the operational battlefield. Among the doctrinal precepts that enhance this probability are the ideas of battle space and simultaneous deep attacks. Technologically, modernization programs in the Army are focusing almost exclusively on systems that will be employed by corps sized formations.

Battle space characterizes a key linkage between the three levels of war. Defined in FM 100-5 as "a physical volume that expands or contracts in relation to the ability to acquire and engage the enemy," this term ensures that Army commanders will expand their thinking beyond their current boundaries of time, space, and tempo.⁴⁵ A corps commander will therefore automatically think at the operational level even when engaged in tactical missions. The concept of battle space will cause corps commanders to plan for and use operational level forces, to include operational fires, as a matter of course. This is antithetical to the Air Force perspective in which the corps is viewed exclusively in a tactical role.

Army doctrine places a premium on the concepts of depth and simultaneous attack. The 1993 version of FM 100-5 recognizes the importance of independent deep operations. Where once the deep battle was seen as valuable only in its ability to shape the close fight, it is now seen as potentially decisive in its own right.⁴⁶ Placing such a high value on deep operations, focuses commanders at all levels on attacking the enemy at extended ranges. Simultaneous attacks disrupt his freedom of action, tempo and coherence of his actions, and directly affects the physical and mental capabilities of his forces. Since the corps area of operations (AO) extends well beyond the FSCL, the corps commander must now consider decisive combat operations in an area that has traditionally been the domain of the Air Force.⁴⁷

Concurrent attacks throughout the depth of the battlefield will require the integration and synchronization of air power with ground forces. Using Air Force definitions, this would imply that CAS and not AI would be used by a corps commander in the deep fight. However, as previously noted the Air Force generally considers missions beyond the FSCL as exclusively AI.

Technologically the Army is pushing the capabilities of the corps into the operational level of war as well. The Army modernization effort is keyed to building a force that, within its

assigned area, is dominant throughout the height, width, and depth of the sector. Force modernization planners envision the corps sector by 2010 AD to be 30 kilometers high, 200 kilometers wide, and 600 kilometers deep. (See Annex A)⁴⁸ Many of the technological advancements sought by the Army are keyed to attacking successfully throughout the 600 kilometer depth of the corps sector. Such systems include Unmanned Aerial Vehicles (UAV), the Joint Surveillance Target Attack Radar System (JSTARS) and its Ground Station Module (GSM) located at the corps headquarters, and the Tactical Exploitation of National Capabilities Program (TENCAP). These systems will provide the Corps with extended range, near real time intelligence throughout the sector. Weapons systems include the AH-64 Apache attack helicopter armed with the LONGBOW missile, and the third generation Army Tactical Missile System (ATACMS) armed with a variety of warheads to include the Sense and Destroy Armor Munition (SADARM), and the Brilliant Anti-Armor Submunition (BAT). (See Annex B)

These technological enhancements will allow the corps commander to acquire and attack targets at unprecedented ranges and accuracy. In the future, commanders will be able to conduct precision strikes, at operational depths, under almost any

weather conditions, with devastating results. Corps commanders will be able to execute Army doctrine by attacking simultaneously in depth throughout their battle space.

From the Army's perspective doctrine and technology have obviated the traditional role of the FSCL as the dividing line between Air Force controlled and Army controlled fires. Ground commanders can now acquire, track, and engage targets with organic assets at extended depths throughout the battlefield. Using the FSCL as anything more than a permissive measure impinges on the ground commander's battle space and potentially disrupts the tempo of his operations through unnecessary coordination.

Army doctrine, unlike the Air Force, is quite specific about operational fires. Operational fires are the "application of firepower to achieve a decisive impact on the conduct of a campaign or major operation."⁴⁹ Operational fires have three primary functions: facilitation of maneuver to operational depths by creating an exploitable gap in the tactical defense, isolation of the battlefield by interdiction of uncommitted enemy forces; and destruction of critical functions and facilities having operational significance.⁵⁰ Additionally, Army doctrine stresses that

operational fires must be "synchronized, systematic, and persistent" in their relationship to maneuver.⁵¹

The Army recognizes that currently the majority of operational fires are delivered through air power and therefore require coordination between the services for planning and execution. However, the Army acknowledges, that "as the range of those assets now used to support tactical maneuver increases, those same assets will play a more significant role in the delivery of operational fires."⁵² The Army expects that the modernization of its equipment will expand the role of Army systems in the delivery of operational fires into areas beyond the FSCL. Undoubtedly this will cause friction between the Army concept of operational fires, which requires close synchronization with ground forces, and the Air Force concept for AI which by definition precludes the need for detailed coordination with friendly ground forces. This will be particularly difficult at the corps level since the Army considers the corps an operational level force and the Air Force does not. The Army, however, feels well prepared for the coming battle, convinced its doctrine is firmly rooted in joint doctrinal practices.

Prior to the current Joint Publication 3.0 and Operation DESERT STORM, the FSCL was positioned to facilitate fires

beyond the line. Seen as an exclusively permissive measure, the FSCL reduced the burden on the ground commander to clear fires, especially air power, against deep targets. When coordinated with the air commander, the FSCL was a valuable tool that permitted the rapid engagement of targets beyond the line by all available assets. Without an FSCL, the ground commander's staff could easily be overwhelmed trying to clear fires throughout the sector. Additionally, the ground commander often did not have the organic assets necessary to acquire or attack deep targets. Therefore, by default the FSCL became a dividing line between the ground commander and air commander for planning, coordinating, and controlling deep fires.

During Operation DESERT STORM the Army felt the FSCL's were drawn to facilitate attacks of targets by air.⁵³ The FSCL became a boundary between the JFACC and ground commander which the Army could not fire across without permission. This resulted in the inability of the corps commanders to exploit the capabilities of all their weapons systems. An example of this occurred during Operation DESERT STORM, when VII Corps tried to launch a deep attack beyond the FSCL against Republican Guard forces. The attack was aborted because the JFACC would not authorize the VII Corps' operation nor clear planned fires in

that area.⁵⁴ Today Army planners feel that the current joint doctrine, specifically Joint Publication 3.0 will prevent this from happening in the future.

Joint Publication 3.0 allows the JFC to assign lateral, rear, and forward boundaries for land and naval forces.⁵⁵ This eliminates the previous ambiguity in which a land commander inferred his forward boundary by connecting the end points of lateral boundaries. This clearly defines the AO for the land commander and thus eliminates any question about who the JFC has assigned authority for the planning, synchronization, and deconfliction of operations. Within these boundaries, the ground commander is responsible for all operations.

Of particular interest to the Army is the statement in Joint Publication 3.0, "Within these AO's, land and naval operational force commanders are designated the Supported Commander (emphasis added) and are responsible for the synchronization of maneuver, fires, and interdiction."⁵⁶ It is obvious to the Army that within the boundaries established by the JFC, the Land Component Commander (LCC) controls all fires both short of and beyond the FSCL. As the "supported commander" the LCC has the authority to exercise general direction whenever a doctrinal void or service procedural difference exists. General direction

includes the ability to designate the duration of a supporting operation, selection of targets, and timing of attacks.⁵⁷ This reinforces the Army's position that the LCC is in control of all operational fires within his AO.

The Army doctrinal position on the FSCL is further solidified by three key components in the joint definition of the term. The joint definition states that forces firing beyond the FSCL must "inform" all affected commanders of their intent to do so, in order to avoid fratricide. From the Army perspective, "inform" implies a one way communication that is not synonymous with clearance of fires or coordination. For the Army "inform" does not equate to "get permission."⁵⁸

The joint definition of the FSCL also states that "the FSCL is not a boundary - the synchronization of operations on either side of the FSCL is the responsibility of the establishing commander out to the limits of the land force boundary."⁵⁹ This statement clearly obviates the Air Force argument that the JFACC should control fires beyond the FSCL. Since the LCC is responsible for synchronizing the fires he should also have control over the planning, coordination, and delivery of the fires.

Finally, the FSCL is intended to facilitate the expeditious attack of targets of opportunity beyond this line. A target of

opportunity is by definition an unplanned and time sensitive target. It is unreasonable to impose coordination and synchronization requirements to clear fires if the purpose of this measure is to "facilitate" attacks on these types of targets. The Air Force perspective is again out of synch with joint doctrine. JFACC control of fires beyond the FSCL would impose restrictions that would inhibit the rapid engagement of targets of opportunity.

The Army has built its doctrine, using the concepts of battle space and simultaneous attacks in depth, to accommodate and adapt to projected technological advances. This doctrine clearly recognizes an expanded and decisive role for Army systems at the operational level. Additionally, the Army sees current joint doctrine as the means to allow the Army an expanded role on the joint operational battlefield; a role the Army will not readily relinquish. Building upon the concept that, within his AO, the LCC is responsible for all operations and by designing forces to carry out that charter, the Army position is clear. All fires, both short of and beyond the FSCL should be planned, coordinated, and synchronized by the LCC.

The Doctrinal Disconnect

Joint doctrine offers a common perspective from which to plan and operate, and fundamentally shapes the way we think about and train for war.⁶⁰

The "common perspective" which joint doctrine is required to provide, is inadequate with respect to operational fires and the FSCL. It is apparent that the Army and Air Force perspectives on these subjects are each supportable by portions of current joint doctrine. It is equally apparent that the doctrinal views held by these two services clearly do not emanate from a "common perspective." Further evidence of this doctrinal failure can be found in the efforts of various CINCs to solve the problem with ad-hoc arrangements within their respective theaters.

In Korea, the Combined Forces Command (CFC) has established the Deep Battle Synchronization Line (DBSL). The purpose of the DBSL is to "delineate responsibility and synchronize fires of air, ground, and sea launched weapons."⁶¹ The line is established by the CINCCFC and all attacks beyond the line must be approved by the Combined Air Component Command (CACC). The DBSL clearly delineates control of fires beyond the line however, the same doctrine that establishes the DBSL substantially changes the meaning of the FSCL as well.

The FSCL, as defined by the CFC, is a "line recommended by the appropriate ground commander to ensure coordination of fire not under his control."⁶² In Korea, the purpose of the FSCL is the coordination of air, ground, and sea weapons using any type of ammunition against surface targets. This definition is not consistent with either the joint or Army definition of the FSCL.

United States Central Command (CENTCOM) has established another "doctrinal" framework for operational fires and the FSCL with the publication of CENTCOM Regulation 525-24, "Joint Interdiction Procedures." This regulation offers the JFC three options for structuring the battlefield to enhance operational fires.

The first option uses the FSCL as a strictly permissive measure. The LCC remains responsible for all fires in his AO, but places the FSCL at an appropriate distance to allow him to control all fires that will directly shape his deep battle.⁶³ Fires beyond the FSCL are deconflicted between the LCC and JFACC established using procedures within CENTCOM. CENTCOM recognizes that this option is supported by current joint doctrine.⁶⁴

The second option uses the Long Range Interdiction Line (LRIL) to separate areas of responsibility for interdiction. Short of the LRIL, the LCC is responsible for planning, coordinating, and

synchronizing all fires including interdiction. Beyond the LRIL, the JFACC has these responsibilities.⁶⁵ The LRIL is recommended by the LCC but approved by the JFC. An FSCL may be established by the LCC, however, all fires beyond the FSCL must be coordinated with the JFACC even if those fires are short of the LRIL.⁶⁶

The third option calls for the JFC to establish a boundary between the air and land component commanders. Within each AO the appropriate commander plans, coordinates, and synchronizes all operations. Commanders may not engage targets across boundaries without the approval of the affected commander.⁶⁷

These examples illustrate that joint doctrine has failed to establish a common framework within which joint forces will operate. CFC and CENTCOM represent established unified theaters. Within these theaters, there is potential for conflicts requiring the use of joint forces. Yet these theaters approach the use of operational fires and the FSCL in totally different ways. CFC's "doctrine" represents an Army approach, focused on the deep battle. CENTCOM's "procedures" reflect an airman's perspective, viewing operational fires and interdiction as synonymous terms. Neither approach is wholly consistent with

joint doctrine. The doctrinal disconnect goes beyond service rivalries or perspectives and the warfighting CINCs are disconnected as well.

In a force projection military, units must be trained and equipped to deploy rapidly into any theater, fight immediately, and win decisively. The current differences among each of the Unified Commands, as illustrated, makes it impossible for a unit to be adequately trained to fight in every theater. Only a common doctrine can make it possible to train effectively as a joint force. Joint doctrine is failing to provide the common perspective necessary to plan, operate, think, and train as a joint force.

Conclusions

Joint doctrine has failed to provide a common perspective for the services. With respect to operational fires and the FSCL, joint doctrine has failed one of the first tests of any doctrine; it is not authoritative.

Joint doctrine is viewed by the services as political more than functional. The language of each document is carefully crafted and measured to garner the necessary consensus from each service before publication.⁶⁸ "Consensus building" among the services holds joint doctrine hostage to the "wordsmithing" of

each service. Under such conditions there is little chance for producing an authoritative document.

The ambiguity found in Joint Publication 3.0 adds to the lack of authority in joint doctrine. As the Air Force and Army doctrinal perspectives show, there is something for everybody in the capstone joint manual. At first glance, the joint doctrine on the FSCL seems quite clear. However, the entire content of Joint Publication 3.0 is full of ambiguous terms, and conflicting guidance with respect to the FSCL, interdiction, and responsibility.

For example, what does this statement mean: "Forces attacking targets beyond an FSCL must inform all affected commanders in sufficient time to allow necessary reaction to avoid fratricide. . . ?"⁶⁹ Does "inform" mean you cannot fire until you have been told that the necessary "reaction to avoid fratricide" has occurred? Perhaps this is merely a quick "heads up" for the affected commander. Now overlay that statement to the one that states the purpose of the FSCL is to facilitate the "expeditious attack of targets" beyond the FSCL.⁷⁰ When the necessary reaction time to avoid fratricide inhibits the expeditious attack of targets, who decides if the opportunity outweighs the risk?

Joint Publication 3.0 is equally unclear on the integration of operational fires and AI. Within his AO the LCC is responsible for the synchronization of all maneuver, fires, and interdiction.⁷¹ However, the JFACC is charged with conducting the JFC's AI operations using air sorties that are not constrained by land boundaries. How does the LCC synchronize all maneuver, fires, and interdiction under these conditions? Once again joint doctrine is unclear.

Many of the key words needed to understand the seminal concepts of joint doctrine are shrouded in uncertainty and worse yet, are undefined in any joint documents. Such words as "coordinate," "synchronize," and "control" are not defined in Joint Publication 1-02, Department of Defense Dictionary of Military and Associated Terms. These definitions would be useful as commanders seek to establish a common perspective on how to implement joint doctrine. Other key words and phrases in the definition of the FSCL such as "inform," and "exceptional circumstances," are not precise enough to evoke an authoritative context for the joint definition.

The use of modal auxiliaries such as "may," "should," and "can," convey an air of cooperation and congeniality, not

authority. These words only add to the ambiguity of joint doctrine and further confuse already complicated issues.

An example of this appears in the Joint Publication, "A Doctrinal Statement of Selected Joint Operational Concepts," issued by the Chairman of the Joint Chiefs of Staff (CJCS) in November 1992. The document intended to provide guidance to help clarify many of the issues associated with Joint Doctrine. Consider this statement for clarity and authority, "Both the land force commander and special operations commander should be informed of attacks beyond the FSCL."⁷² The modal auxiliary "should," indicates a degree of obligation appreciably weaker than "must" or "will." It offers a somewhat less than authoritative view of the actions that a commander doctrinally considers prior to initiating the attack across the FSCL. The verb "inform" means to impart information, it does not mean that a commander must get permission or clear fires beyond the FSCL.

These examples illustrate the failure of joint doctrine to provide a common perspective through clearly articulated and understood concepts. Joint doctrine has sacrificed clarity and authority for consensus and acceptability among the services. The results are apparent. The Army and Air Force continue to exploit the ambiguity in joint doctrine to further their service

oriented perspectives. The warfighting CINCs have established ad hoc, theater specific procedures to compensate for the lack of clear joint doctrine. Neither approach enhances the ability of US military forces to operate in a joint environment.

Recommendations

The Goldwater-Nichols Act of 1986 caused a fundamental change in distribution of power in the Department of Defense. This legislation significantly increased the powers of the Chairman of the Joint Chiefs of Staff and the theater CINCs and substantially reduced the influence of the service chiefs. The intent of the legislation was to increase the power of the commanders responsible for employing US forces in given theaters of combat.⁷³ Goldwater-Nichols strengthened the authority of the theater CINCs; it is time joint doctrine reflected that authority.

The Defense Reorganization Act of 1986 ushered in a new era in warfighting based on the ability of US military forces to fight jointly. This new way of warfighting must be based on new doctrine that is not rooted in old paradigms nor subject to interpretation. The Army and Air Force must recognize that the issue of the FSCL and operational fires cannot be resolved by

carefully crafted doctrine that reflects a particular service's perspective or parochial interest. This issue requires bold, new, authoritative doctrine unencumbered by tradition or service rivalries.

The following recommendations are presented as a basis for resolving the doctrinal inconsistencies and interpretations that currently plague joint doctrine with respect to the FSCL and operational fires.

Recommendation 1. Remove the FSCL from joint doctrine and replace it with another term. Starting fresh with a new joint doctrinal term will sever the political baggage and traditional views that generate much of the controversy over this issue. Replace the FSCL with a new term; the Air Ground Coordination Line (AGCL).

The definition of the AGCL should read:

A temporary line established by the JFC within the land component commander's AO used to delineate the area of responsibility for the planning, coordination, synchronization, and control of all maneuver, fires, and interdiction. Short of the AGCL the JFLCC will have the responsibility for maneuver, fires, and interdiction. Beyond the AGCL the JFACC will have these same responsibilities. Components will not conduct any operations outside their respective areas (i.e. beyond the AGCL for the JFLCC) without the permission of the affected commander. The JFC will not direct any operations into these areas without

first advising the respective component commanders. The AGCL will only be moved by the JFC after consulting with the JFLCC and JFACC.

The AGCL would assign clearly defined areas to each component commander and fix responsibility for operations in each area on a single commander. This would facilitate unity of command and unity of effort. The temporary nature of the AGCL would allow the JFLCC to continue to focus on the entire expanse of his battle space while simultaneously providing focus for his operations within the theater campaign plan. This concept would also eliminate the current confusion over the coordination and control of air assets while providing the JFLCC adequate space to employ all his weapons systems.

The JFACC would also benefit from this concept since it provides him with a clearly defined AO. All operations beyond the AGCL would be controlled by the JFACC allowing him to synchronize all assets in the conduct of the JFC's interdiction effort. Both the JFLCC and the JFACC would be responsible for a joint effort in a clearly defined area of operations.

The JFC would use the AGCL to shape his battlefield by positioning it to support his concept of the operation. If he feels that the JFACC is better able to control the battle he will position the AGCL closer to the JFLCC's forward line of troops (FLOT). If

ground forces are better prepared to control the battle he will push the AGCL farther out. In either case, the JFC can apportion assets (air, ground, or fire support) to the commander who needs them. While this is a change to the current way apportionment is viewed, this concept represents the true nature of joint warfare. That is the best use of all military assets to achieve national objectives.

Recommendation 2. Clearly define coordination, synchronization, and control in joint doctrine. These three words are critical for the proper execution of any plan, but are ignored in joint doctrine. Once defined in joint doctrine, force the services to use these definitions in all subsequent publications. Allow no deviation or interpretation of these terms. Fundamental procedures for establishing and maintaining these activities must also be included in doctrinal publications.

Recommendation 3. The Joint Doctrine Center (JDC) located in Norfolk, Virginia should be the lead agency for all joint doctrine. The current system of using a particular service as the executive agent for the Joint Staff to write doctrine gives the services too much influence in shaping doctrinal concepts. Instead, the JDC should be responsible for producing all joint doctrine and it should be staffed accordingly. The service

components should review these joint documents for clarity only, not for the purpose of pointing out the inconsistencies with service doctrine. If such inconsistencies exist, the service doctrine should change to match joint doctrinal concepts.

Goldwater-Nichols has been with us only eight years. It is probably too soon to expect a significant decrease in service oriented views in joint doctrinal publications. Issues like the FSCL will continue however, until joint doctrine becomes authoritative rather than consensus based. Joint doctrine must focus on the most efficient use of all military forces, providing a common perspective from which each of the services can think, plan, and train to fight as a joint force. As the military gets smaller, we need to fight as an integrated force. Authoritative joint doctrine is the key to building that force.

ANNEX A
ARMY CONCEPT OF A TYPICAL CORPS AREA OF OPERATIONS
BY 2010 AD⁷⁴

ANNEX B

**POTENTIAL DEEP ATTACK BY EXTENDED RANGE MLRS ARMED
WITH BRILLIANT ANTITANK MUNITION (BAT)⁷⁵**

1 MLRS LAUNCHER

12 ROCKETS X 6 BAT SUBMUNITIONS = 72 BATS x.5 Pk

1 LAUNCHER = 36 VEHICLE KILLS OR ABOUT 1 BN OF ARMOR

1 MLRS BATTERY = 9 BN'S OF ARMOR

END NOTES

1. Gunther E. Rothenburg, The Art of Warfare in the Age of Napoleon (Bloomington, IN: Indiana University Press, 1980), p. 143.
2. United States Army Field Artillery School, Right of the Line - A History of the American Field Artillery (Fort Sill, OK, 1977), p. 32.
3. Joint Chiefs of Staff Publication 5-00.1, Doctrine for Joint Campaign Planning (Washington, D.C.: US Government Printing Office, 1992), p. II-17.
4. General George H. Decker, USA, speech given at the US Army Command and General Staff College, Fort Leavenworth, Kansas, 16 December 1960, quoted in Robert D. Heintz, Jr. Dictionary of Military and Naval Quotations (Annapolis, Maryland: Naval Press, 1966), p. 95.
5. Joint Chiefs of Staff Publication 1, Joint Warfare of the US Armed Forces, (Washington, DC: US Government Printing Office, 1991), p. 5.
6. Ibid. p. 7.
7. Joint Chiefs of Staff Publication 3.0, Doctrine for Joint Operations, (Washington, D.C.: US Government Printing Office, 1993), p. III-48.
8. Ibid.
9. US War Department, Field Manual 6-20, Field Artillery Tactics and Technique, (Washington, DC: US Government Printing Office, 1940), p. 40-43.
10. US War Department Field Service Regulations, Field Manual 100-5, Operations, (Washington, DC: US Government Printing Office, 1941), p. 13.
11. Russell F. Weigley, Eisenhower's Lieutenants, (Bloomington: Indiana University Press, 1981), p. 153.
12. Ibid. p. 164-166.

13. US Army, Field Manual 6-20, Field Artillery Tactics and Techniques (Washington DC: Department of the Army, 1948), p. 94-97.
14. US Army Field Manual 6-20-1, Field Artillery Tactics (Washington, DC: Department of the Army, 1961), p. 30-31.
15. US Army, Field Manual 6-20, Fire Support in Combined Arms Operations, (Washington, DC: Department of the Army, 1977), p. D-4.
16. US Army Field Manual 6-20, Fire Support in Combined Arms Operations, (Washington DC: Department of the Army, 1983), p. E-4.
17. Ibid. p. E-2.
18. US Army, Field Manual 6-20-30, Fire Support for Corps and Division Operations, (Washington DC: Headquarters, Department of the Army, 1989), p. F-3.
19. Joint Chiefs of Staff Publication 3.0, Doctrine for Joint Operations, (Washington DC: US Government Printing Office, 1993), p. III-48.
20. Ibid.
21. US Air Force, Air Force Manual 1-1, Vol. I, Basic Aerospace Doctrine of the United States Air Force (Washington, DC: Headquarters, Department of the Air Force, 1992), pp. 6-7.
22. Ibid.
23. US Air Force, Air Force Manual 1-1, Vol II, Basic Aerospace Doctrine of the United States Air Force (Washington DC: Headquarters Department of the Air Force, 1992), pp. 105-106.
24. Ibid. p. 164.
25. Joint Publication 3.0, p. II-18.
26. Ibid. p. II-10.
27. Ibid. p. III-47.

28. US Air Force, JFACC Primer, (Washington DC: Headquarters, Department of the Air Force, 1994), p. 33.
29. Joint Pub 3.0, p. III-49.
30. LTC Carl R. Pivarsky, Jr., "Dangerous Doctrine," Military Review, September 1993, 47.
31. JFACC Primer, pp. 33-34.
32. Ibid.
33. Ibid, p. 34.
34. Ibid.
35. Air Force Manual 1-1 Vol I, pp. i1-12.
36. Eliot Cohen, et al. Gulf War Air Power Survey (Draft), Chapter 5, (Washington, DC: Headquarters, Department of the Air Force, 1993), p. 10.
37. Ibid., pp. 11-12.
38. Colonel Richard Lewis, "JFACC Problems Associated with Battlefield Preparation in Desert Storm," Airpower Journal, Spring, 1994, pp. 20-21.
39. US Army, Field Manual 100-5, Operations (Washington, DC: Headquarters Department of the Army, 1993), p. 2-0.
40. Ibid., p. 1-4.
41. Ibid., pp. 6-2 - 6-3.
42. Ibid., p. 6-2.
43. US Army, Field Manual 100-15, Corps Operations, (Washington, DC: Headquarters Department of the Army, 1989), pp. 1-0 - 1-1.
44. Ibid., p. 1-1.
45. FM 100-5, p. 6-12.

46. Ibid., pp. 6-13 - 6-15.
47. FM 100-15, p. 6-2.
48. Major General Jay Garner, Presentation on Army Modernization Ft. Myers, VA., 13 January 1994.
49. US Army, Field Manual 100-7, Decisive Force: The Army in Theater Operations (Final Draft), (Washington, DC: Headquarters Department of the Army, 1994), p. 5-9.
50. US Army, TRADOC Pamphlet 11-9, Blueprint of the Battlefield (Final Draft), (Washington DC: Headquarters Department of the Army, 1993), p. 6-3.
51. Field Manual 100-7, p. 5-10.
52. Blueprint of the Battlefield, p. 6-3.
53. Major General John A. Dubia, "Targeting Responsibility Between the Fire Support Coordination Line (FSCL) and the Forward Boundary," United States Army Field Artillery School Position Paper (Draft), (Ft Sill, OK 1994), p. 2.
54. Lieutenant Colonel Steven E. Whittenberg, "Joint Doctrine: The Army/Air Force Disconnect," Naval War College Report, (Newport, RI, 1992), p. 20.
55. Joint Publication 3.0, p. III-47.
56. Ibid., p. IV-22.
57. Ibid., p. II-10.
58. Dubia, p. 7.
59. Joint Publication 3.0, p. III-48.
60. Joint Publication 1, p. 6.
61. Combined Forces Command Korea, "Deep Battle Synchronization Doctrine - Korea," (Seoul, Republic of Korea: Headquarters Combined Forces Command, 1993), p. x.

62. Ibid.

63. United States Central Command (CENTCOM) Regulation 525-24, "Joint Interdiction Procedures," (MacDill Air Force Base, FL: Headquarters United States Central Command, 1993), pp. 1-1 - 1-2.

64. Ibid.

65. Ibid., p. 1-4.

66. Ibid.

67. Ibid., pp. 1-6 - 1-7.

68. Colonel Tackaberry, Deputy J-7 for Doctrine. Lecture on the development of Joint Publications, 13 January 1994.

69. Joint Publication 3.0, p. III-48.

70. Ibid.

71. Ibid., p. iv-22.

72. Joint Chiefs of Staff, "A Doctrinal Statement of Selected Joint Operational Concepts" (Washington, DC: Joint Chiefs of Staff, November 1992), p. 18.

73. Ike Skelton, "Taking Stock of the New Joint Era," Joint Forces Quarterly, Winter 1993-94.

74. Garner, Briefing Slides, 13 January 1994.

75. US Army Field Artillery School, Directorate of Combat Developments Program and Project Summary (Fort Sill, OK: US Army Field Artillery School, June 1992), pp. 44-49.

Bibliography

Books

- Atkinson, Richard. Crusade. The Untold Story of the Persian Gulf War. New York: Houghton Mifflin Company, 1993.
- Blackwell, James. Thunder in the Desert. New York: Bantam Books, 1991.
- Heini, Robert D. Dictionary of Military and Naval Quotations. Annapolis, MD: Naval Institute Press, 1966.
- Rothenburg, Gunther E. The Art of War in the Age of Napoleon. Bloomington, IN: Indiana University Press, 1980.
- Scales, Robert H. Certain Victory: The US Army in the Gulf War. Fort Leavenworth, KS: US Army Command and General Staff College Press, 1994.
- Spiller, Roger J., ed. Combined Arms in Battle Since 1939. Fort Leavenworth, KS: US Army Command and General Staff College Press, 1992.
- United States Army Field Artillery School. Right of the Line - A History of the American Field Artillery. Fort Sill, OK. 1977.
- US News and World Report. Triumph Without Victory. The Unreported History of the Persian Gulf War. New York: Random House, Inc., 1992.
- Watts, Barry D. The Foundations of U.S. Air Doctrine - The Problem of Friction in War. Maxwell Air Force Base, Alabama: Air University Press, 1994.
- Weigley, Russell F. Eisenhower's Lieutenants. Bloomington, IN: Indiana University Press, 1981.

Manuals

Combined Forces Command Korea. "Deep Battle Synchronization Doctrine - Korea." Seoul, Republic of Korea: Headquarters Combined Forces Command, 1993.

Joint Chiefs of Staff. "A Doctrinal Statement of Selected Joint Operational Concepts." Washington, D.C.: Joint Chiefs of Staff, 1993.

Joint Chiefs of Staff Publication 1, Joint Warfare of the US Armed Forces. Washington D.C.: US Government Printing Office, 1991.

Joint Chiefs of Staff Publication 3.0, Doctrine for Joint Operations. Washington, D.C.: US Government Printing Office, 1993.

Joint Chiefs of Staff. Joint Publication 3-56.1, Command and Control for Joint Air Operations (Final Draft). Washington, D.C.: US Government Printing Office, 1993.

Joint Chiefs of Staff Publication 5-00.1, Doctrine for Joint Campaign Planning. Washington, D.C.: US Government Printing Office, 1992.

US Air Force. Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force, 2 Vols. Washington, D.C.: Headquarters Department of the Air Force, 1992.

US Air Force. JFACC Primer. Washington, D.C.: Headquarters Department of the Air Force, 1994.

US Army. Field Manual 6-20, Field Artillery Tactics and Techniques. Washington, D.C.: Department of the Army, 1948.

US Army. Field Manual 6-20, Fire Support in Combined Arms Operations. Washington, D.C.: Department of the Army, 1977.

US Army. Field Manual 6-20, Fire Support in Combined Arms Operations. Washington, D.C.: Department of the Army, 1983.

- US Army. Field Manual 6-20-1, Field Artillery Tactics. Washington, D.C.: Department of the Army, 1961.
- US Army. Field Manual 6-20-30, Fire Support for Corps and Division Operations. Washington, D.C.: Headquarters Department of the Army, 1989.
- US Army. Field Manual 100-5, Operations. Washington, D.C.: Headquarters Department of the Army, 1993.
- US Army. Field Manual 100-7, Decisive Force: The Army in Theater Operations. (Final Draft). Washington, D.C.: Headquarters Department of the Army, 1994.
- US Army. Field Manual 100-15, Corps Operations. Washington, D.C.: Headquarters Department of the Army, 1989.
- US Army. TRADOC Pamphlet 11-9, Blueprint of the Battlefield (Final Draft). Washington, D.C.: Headquarters Department of the Army, 1993.
- United States Central Command. Regulation 525-24, "Joint Interdiction Procedures." MacDill Air Force Base, FL: Headquarters United States Central Command, 1993.
- US War Department, Field Manual 6-20, Field Artillery Tactics and Techniques. Washington, D.C.: US Government Printing Office, 1940.
- US War Department. Field Service Regulations, Field Manual 100-5, Operations. Washington, D.C.: US Government Printing Office, 1941.

Reports

- Cohen, Eliot, ed. Gulf War Air Power Survey (Draft). Washington, D.C.: Headquarters Department of the Air Force, 1993.
- House, Jonathan M. Toward Combined Arms Warfare: A Survey of 20th-Century Tactics, Doctrine, and Organization. Fort Leavenworth, KS: US Army Command and General Staff College Press, 1984.

Powell, Colin. Chairman of the Joint Chiefs of Staff Report on the Roles, Missions, and Functions of the Armed Forces of the United States. Washington, D.C.: Office of the Chairman of the Joint Chiefs of Staff, 1993.

Shrader, Charles R. Amicide: The Problem of Friendly Fire in Modern War. Fort Leavenworth, KS.: US Army Command and General Staff College, 1982.

Articles

Barlow, Jason B. "Strategic Paralysis: An Air Power Strategy for the Present." Airpower Journal (Winter, 1993): 4-15.

Boudreau, Robert W. "The New AFM 1-1: Shortfall in Doctrine?" Airpower Journal (Winter 1992): 37-45.

Drew, Dennis M. "Desert Storm as a Symbol: Implications of the Air War in the Desert." Airpower Journal (Fall 1992): 4-13.

Dubia, John A. "Targeting Responsibility Between the Fire Support Coordination Line (FSCL) and the Forward Boundary." (Draft) Fort Sill, OK: United States Army Field Artillery School, 1994.

Lewis, Richard. "JFACC Problems Associated with Battlefield Preparation in Desert Storm." Airpower Journal. (Spring 1994): 4-21.

McCabe, Thomas. "The Limits of Deep Attack." Airpower Journal. (Fall 1993): 4-14.

Meilinger, Phillip S. "The Problem with Our Air Power Doctrine." Airpower Journal (Spring 1992): 24-31.

Pivarsky, Carl R. "Dangerous Doctrine." Military Review (September 1993): 42-51.

Roberts, Jerry A. "Ocean Venture 93 and the Joint Targeting Coordination Board." Field Artillery (October 1993): 20-21.

Skelton, Ike. "Taking Stock of the New Joint Era." Joint Forces Quarterly (Winter 1993-94): 15-21.

Whittenberg, Steven E. "Joint Doctrine: The Army/Air Force Disconnect." Newport, RI: Naval War College, 1992.