

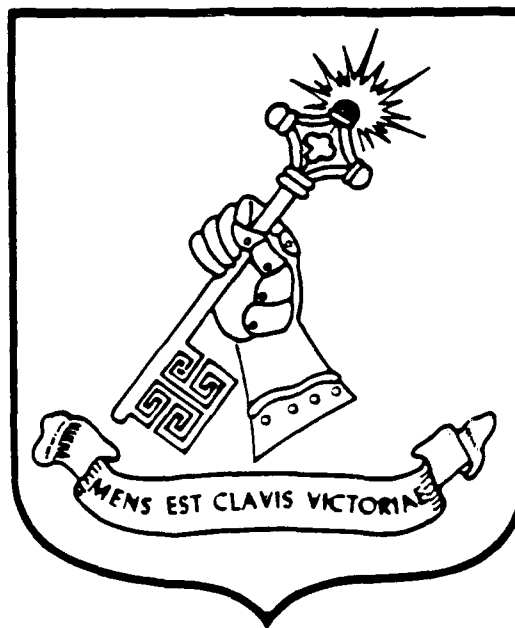
2

AD-A215 723

**PERSONALITY:
THE ONLY INHERENT LINK FOR AIR-LANL
SYNCHRONIZATION AT THE OPERATIONAL LEVEL**

**A Monograph
by
Major Albert P. Lawson
Infantry**

**SDTIC
ELECTE
DEC 20 1989
B D**



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

Second Term 88-89

Approved for Public Release; Distribution is Unlimited

**PERSONALITY: THE ONLY INHERENT LINK
FOR AIR-LAND SYNCHRONIZATION
AT THE OPERATIONAL LEVEL**

by

**Major Albert P. Lawson
Infantry**

**School of Advanced Military Studies
U.S. Army Command and General Staff College
Fort Leavenworth, Kansas**

8 May 1989

Approved for public release; distribution is unlimited

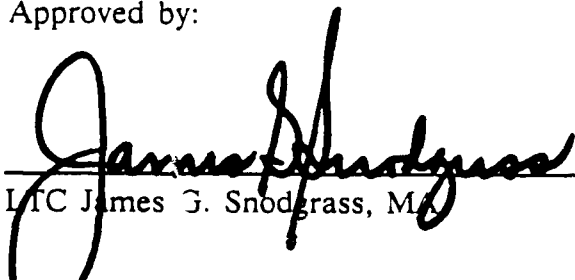
SCHOOL OF ADVANCED MILITARY STUDIES

MONOGRAPH APPROVAL

Name of Student: Albert P. Lawson, MAJ, Infantry

Title of Monograph: AirLand Operations: Parallel Operations or
Operational Art Linked by Personalities?

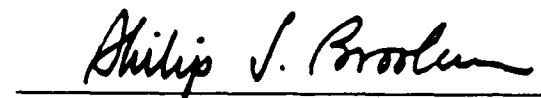
Approved by:



LTC James G. Snodgrass, MAJ Monograph Director



COL L. D. Holder, MAJ Director, School of
Advanced Military
Studies



Philip J. Brookes, Ph.D. Director, Graduate
Degree Program

Accepted this 15th day of May 1989

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1a. REPORT SECURITY CLASSIFICATION			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION / AVAILABILITY OF REPORT		
2b. DECLASSIFICATION / DOWNGRADING SCHEDULE					
4. PERFORMING ORGANIZATION REPORT NUMBER(S)			5. MONITORING ORGANIZATION REPORT NUMBER(S)		
6a. NAME OF PERFORMING ORGANIZATION		6b. OFFICE SYMBOL (If applicable)		7a. NAME OF MONITORING ORGANIZATION	
6c. ADDRESS (City, State, and ZIP Code)				7b. ADDRESS (City, State, and ZIP Code)	
8a. NAME OF FUNDING / SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (If applicable)		9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c. ADDRESS (City, State, and ZIP Code)		10. SOURCE OF FUNDING NUMBERS			
		PROGRAM ELEMENT NO.		PROJECT NO.	TASK NO.
				WORK UNIT ACCESSION NO.	
11. TITLE (Include Security Classification)					
12. PERSONAL AUTHOR(S)					
13a. TYPE OF REPORT		13b. TIME COVERED FROM _____ TO _____		14. DATE OF REPORT (Year, Month, Day)	
				15. PAGE COUNT	
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP			
19. ABSTRACT (Continue on reverse if necessary and identify by block number)					
20. DISTRIBUTION / AVAILABILITY OF ABSTRACT ☐ UNCLASSIFIED/UNLIMITED ☐ SAME AS RPT ☐ DTIC USERS					
21. ABSTRACT SECURITY CLASSIFICATION					
22a. NAME OF RESPONSIBLE INDIVIDUAL			22b. TELEPHONE (Include Area Code)		22c. OFFICE SYMBOL

89 12 19 059

ABSTRACT

**PERSONALITY: THE ONLY INHERENT LINK FOR AIR-LAND
SYNCHRONIZATION AT THE OPERATIONAL LEVEL.** by Major
Albert P. Lawson, USA, 55 pages.

This monograph looks at the impact of personality on Air-Land synchronization at the operational level of war. The thesis is personality provides the only inherent link to synchronization of Air-Land operations. Major operations and ground commanders during World War II are discussed to identify the role of personality and synchronization on operational results.

The impact of service bias, lack of joint doctrine and senior leadership decisions contribute to establishing preconditions for operational success or failure. Only the impact of personality is a common factor in the operational success of Air-Land synchronization. Other factors complicate, if not preclude, the synchronization of Air-Land combat operations.

The lack of any other consistent factor besides personality raises two issues--the importance of personality and the absence of other contributors through lack of priority within the U.S. Armed Forces. The results and conclusions of this monograph highlight the lack of joint doctrine, deep service biases, and the use of personality to overcome these institutional and doctrinal voids.

Accession For	
NTIS GRA&I	☒
DTIC TAB	☐
Unannounced	☐
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

TABLE OF CONTENTS

<u>TITLE</u>	<u>PAGE</u>
ABSTRACT	ii
TABLE OF CONTENTS.	iii
I. INTRODUCTION	1
Assumptions and Limitations	5
Definitions	6
Significance of the Study	7
II. WORLD WAR II EXPERIENCES	9
Dunkirk	9
North Africa -- Rommel and Kesselring	12
U.S. Operations in North Africa and Sicily	15
Patton	19
Bradley	21
Post-War Efforts	23
III. ANALYSIS	26
IV. CONCLUSIONS	31
V. RECOMMENDATIONS	36
VI. SUMMARY	38
ENDNOTES	40
BIBLIOGRAPHY	45

I. INTRODUCTION

The evolution and impact of Airpower on warfare for mid- and high-intensity conflict is a legacy of World War II. Airpower changed the conduct of war. "The control and use of Air will always affect operations; the effectiveness of Air operations in fact can decide the outcome of [a] campaign."¹ The recent resurrection of the operational level of war intertwines the use of Land and Air power.

The very title of the Army's warfighting doctrine-- AirLand Battle--emphasizes the importance of Air, and the joint nature of campaigns and battles.² "The Air Force is an equal partner in the Air-Land Battle."³ A predicament for Air-Land operations from World War II forward has been the tension between Air and Ground forces for the control of Air and the interdependence of operations. General Omar Bradley, in his report on "The Effect of Airpower on Military Operations," warns of the need to understand the interdependence of Air and Ground forces.

It is important to emphasize that a general analysis of the effects and manner of employment of Airpower must avoid a mental tendency to separate the campaign into Air warfare and Ground warfare. The most important overall conclusion of this report is the firm verification of the interdependence...each upon the other...any arrangement of our armed forces which prejudices it will likewise prejudice our success in war.⁴

The prejudice General Bradley cautions against is very much with us today. The Army and Air Force are still going in different directions. The current basic Air Force manual reflects this difference:

The basic objective of Land forces is to win the Land battle--to gain and/or maintain control of vital territories....

The basic objective of aerospace forces is to win the aerospace battle--to gain and/or maintain control of the aerospace environment and to take decisive actions immediately and directly against an enemy's warfighting capability.⁵

The differences in perspective between Air and Ground forces extend beyond general orientation and are significant. They do not provide the framework for a unified effort.⁶ The Air Force tends to deal centrally from the top down--meaning from strategic to the operational level; the Army, immaterial of doctrine, current or past, tends to concentrate at the tactical level. One of the authors of FM 100-5 said it best, "We [the Army] will all have to overcome an entrenched habit of thinking in solely tactical terms."⁷ This inverse relationship challenges planning and execution of Air-Land operations. As the Army develops an operational focus the interplay between Air and Ground increases in significance and sensitivity. Each service accuses the other of failure to understand and contribute to the other's position. The dialogue in both quality and quantity increases between the services yet "the tendency has been to continue going our separate ways in the Ground and Air forces; that is, to neglect, joint planning and execution."⁸

The focus of the Army's AirLand Battle doctrine and courses such as the Advanced Military Studies Course at the School for Advanced Military Studies (SAMS) acknowledge the need for development of officers who can identify, work with and articulate the linkage between the major levels of warfare from both directions--strategic through operational to tactical and the inverse. Colonel Huba Wass de Czege, the first SAMS director, felt "The artful practitioner is a master of the science of war."⁹

While the need for Air and Ground forces may not be in dispute, deeper aspects certainly are, specifically on the command and control (C²), unity of effort, and the means to accomplish synchronized Air-Land operations. The difference between coordination, cooperation, and synchronization is subtle but not clearly traceable historically, doctrinally or objectively by the United States Armed Forces. In fact, the perspective of each service mitigates against synchronized operations. The much simpler levels of coordination and cooperation are improving, thus keeping service interests intact while "appearing" to develop the synergistic impact of synchronization. This unfortunately serves to conceal the lack of actual synchronization.

The purpose of this monograph is to look at the Army and Air Force from an operational perspective. The Ground commander's influence on Air-Land synchronization at the operational level is the area of interest. The research

question: Is personality the only inherent linkage available to the Operational Ground commander for synchronization of Air-Land operations?

The approach to this subject will be to review specific World War II operations where senior Ground commanders at the operational level were deeply concerned with Air-Land operations. This approach is important because it lays bare the foundation for Air-Land operations under our AirLand Battle doctrine. Also, World War II was the basis of the Air Ground operations system in use today.¹⁰

A view of key German commanders from World War II is important because of their role and their current reputation concerning operational art. AirLand Battle doctrine has a strong basis in the theory and operational example of German military minds. Furthermore, whether it be fact or myth, Americans tend to look at Germany for operational art and artists. This was true in the late 1930s and it is true now. The striking demonstration of effective Air Ground teamwork by the Germans in their Blitzkrieg in France and the Low Countries in May and June 1940 attracted the attention of senior Airmen and army generals. Tests, maneuvers, doctrine, and equipment were all recommended to the War Department.¹¹ To appreciate the long lasting impact, the SAMS curriculum still emphasizes German contributions in theory, doctrine and campaign history.

The operational Ground commander must use Air as an

integral part of his plan. Even the need for local Air superiority, an American assumption since 1943, is actually a requirement for success. Where operational Ground commanders are able to synchronize Air and Ground operations, success is likely; where they are not, mission failure is probable. A number of major operations in World War II had Air as a major player: the Battle of France, North Africa, Sicily, the Breakout, and the Battle of the Bulge. Key Ground commanders during these operations were Guderian, Rommel, Patton, and Bradley. Each tried to synchronize Air and Ground operations with varying degrees of success.

Assumptions and Limitations

This subject requires a series of assumptions to constrain both discussion and research. First, the theoretical constructs for Air, Ground, and Air-Land operations from World War II are not invalidated by time and technology. Second, experience from previous conflicts is important but is not incorporated objectively into practice. Third, the operational level of war includes Air forces, Land forces, and their necessary interaction. Lastly, the linkage of strategy, operations, and tactics, in planning and execution, while not insuring success, will preclude failure.

This monograph excludes tactics and strategy as areas of prime focus. Second, this monograph acknowledges but excludes the Naval and Marine contribution to Air-Land operations past and present. Third, the area of interest is

only mid- and high-intensity conventional conflict at the operational level. Lastly, this monograph looks at World War II operations as a start point for analysis of the current status of Air-Land operational synchronization.

Definitions

concurrent - to conduct simultaneously but without interface.

cooperate - "to act or work with another to a common end."¹²

coordinate - "to bring into common action, movement or condition."¹³

doctrine - the fundamental principles by which "the military forces guide their actions in support of objectives. It is authoritative but requires judgment in application."¹⁴

operational art - "the employment of military forces to attain strategic goals in a theater of war or theater of operations through the design, organization and the conduct of campaigns and major operations."¹⁵

parallel - to conduct operations simultaneously toward similar strategic objectives but without inherent direct interaction or influence.

procedure - "a particular way of doing or going about the accomplishment of something; a series of steps followed in a regular, orderly definite way."¹⁶

synchronization - "the arrangement of battlefield activities in time, space and purpose to produce maximum relative combat power at the decisive point. Synchronization is

both a process and a result."¹⁷

Significance of the Study

Current Air and Land operational commanders have no effective synchronization procedure inherent within the operational level of command. "There is no foundation of joint doctrine...."¹⁸ Joint doctrine does not exist, just procedural agreements. The joint commander at theater level (strategic) has a system due to his control of the Land and Air component commander. The formal interface is the theater commander via his campaign plan with the apportionment and allocation process. Unfortunately, the operational Ground commander has to create synchronization with Air assets through the strength of personality which by exclusion degrades Air-Land efforts from optimal execution. We have not fully implemented the lessons of the past specifically from World War II. The efforts of men like generals Eisenhower and Bradley to guarantee the interdependence of Air-Land operations have gone only as far as conceptual theory and historical acknowledgement.

The same tension which formally separated Air from Ground forces in 1947 (but actually by 1943) is still with us today. The separation of forces was mandated by FM 100-20, Command and Employment of Air Power.

LAND POWER AND AIR POWER ARE INTERDEPENDENT FORCES; NEITHER IS AN AUXILIARY OF THE OTHER.... CONTROL OF AVAILABLE AIR POWER MUST BE CENTRALIZED AND COMMAND MUST BE EXERCISED THROUGH THE AIR FORCE COMMANDER.... THE COMMAND OF GROUND AND AIR FORCES IN A THEATER OF

OPERATIONS WILL BE VESTED IN THE SUPERIOR COMMANDER CHARGED WITH THE ACTUAL CONDUCT OF OPERATIONS IN THE THEATER, WHO WILL EXERCISE COMMAND OF AIR FORCES THROUGH THE AIR FORCE COMMANDER AND OF GROUND FORCES THROUGH THE GROUND FORCES COMMANDER.¹⁹

This split impeded the advancement of operational art by virtue of parallel or competing priorities. "It makes the smallest details of doctrine, procedures, and force structure into issues of roles and missions, involving the prestige of military services."²⁰ Until Air and Ground commanders learn how dangerous the lack of operational synchronization was and is, we will face potential disaster. Past failures and successes do not provide formulas or solutions to this current controversy. They only provide opportunities to expand the level of awareness while raising the chance of pragmatic working relationships.

"The power of personality in war is immeasurable"²¹ and "man is still the most important element in war in spite of all improvement."²² This factor while valid does not logically extend to personality as being the only important component. The history of U.S. Air-Land operations finds personality as the mandatory glue for success. The components necessary to weld a force together still must be present, cooperative, and properly positioned in space and time for personality (glue) to be effective. The thesis of this monograph concerns the U.S. excessive reliance on personality to make Air-Land synchronization occur, much less succeed.

II. WORLD WAR II EXPERIENCES

The basis of American Air Force and Army doctrine is directly traceable to the World War II era.²³ This was the last time large American maneuver forces were employed. This was also the time of a rapid Air evolution in warfare. It is only appropriate that a relook of several major operations, both U.S. and German, occurs to demonstrate how important Air-Land synchronization was to operations.

Dunkirk

The clearest disintegration of Air-Land synchronization was the German inability to trap and destroy the British at Dunkirk. The Ground forces were halted and the mission was turned over to the Luftwaffe to handle alone. The result was a major psychological defeat for the Luftwaffe and a moral victory for Britain.

The German Land commanders had no influence through General von Rundstedt to Hitler. General Guderian was furious at having armor forces halted a few miles from the beach with over a quarter of a million trapped British Expeditionary Force (BEF) soldiers and Allies concentrated for annihilation.²⁴ What had been a synchronized operation during the Battle of France turned into a sole Air effort with tremendous loss of momentum, mass, energy, and timing. The overwhelming advantages of German combat power were

dissipated by the decision to uncouple Air and Ground operations.

Prior to Dunkirk, Air and Ground force coordination was key to the rapid movement and destruction of French and British forces. Under the pressure of the German drive, supported by strong Air forces, the enemy forces retreated in disorder.²⁵ Synergy was evident between Air and Ground in the Battle of France. "A notable characteristic of the campaign had been the close cooperation between the Air and Ground forces."²⁶ Air superiority and interdiction were effective but the decisive operation of the crossing of the Meuse by spearheads of von Rundstedt's army under Guderian portrays almost perfect synchronization with Air.²⁷ "A mistake here, and the whole basis of the German plan would be at risk. Air support from Sperrle's Luftwaffe was given high priority...the point of main effort of our Western offensive lies in the sector of Group von Kleist. Almost the whole of the German Air Force will support this operation."²⁸

Guderian used Air as an integral part of his operational maneuver. He placed a premium on the need for "Air superiority over heavy concentrations of armored forces which comprised the main effort."²⁹ He used tactical air reconnaissance and close support aircraft to locate and attack any threat to his front or flanks. Guderian also used interdiction to isolate the battlefield, disrupt supply, and preclude reinforcement. After crossing the Meuse he directed

interdiction of an average depth of 76 kilometers behind the enemy front lines.³⁰ The speed of Guderian's movement was directly linked to Air-Land synchronization as he approached Dunkirk. He even knowingly exposed his flanks to the French but covered them with Air vicinity the Aisne River. Guderian was after the British. Air provided the security and intelligence to maintain both speed and direction for Guderian's armor.³¹ However, at the last moment, a decisive victory escaped the Germans by their conscious failure to maintain synchronization between Air and Ground at Dunkirk.

Lulled into overconfidence, the Luftwaffe felt they could close the back door to Britain, preclude evacuation and literally destroy the British on the beachhead. They did not need Ground forces. Goering said, "If Hitler would give the order that this operation was to be left to Luftwaffe alone, he would give an unconditional assurance that he would annihilate the remnants of the enemy; all he wanted was a free run, the tanks must be withdrawn."³²

The concept of Air operating alone rather than in combination with Ground forces at a minimum serves to highlight two points regardless of who helped Hitler make the final decision:

- 1) Sole force actions are not effective. This was especially clear since a hammer and anvil concept was already in use with synchronization of Air and Land forces up to Dunkirk.

- 2) The German Ground commander's loss of ability to influence or control Air set the precondition for failure. Eliminating a decisive victory for Germany by allowing a major British force to escape was linked directly to the loss of Ground leverage over operational decisions involving Air.

The separation of the Luftwaffe and Army forces disrupted German timing, momentum and combat power. Halting Ground forces reduced the pressure on the BEF. The British were able to concern themselves with only one dimension of combat. Instead of closing the trap, the German approach created a window of opportunity in both time and space for British escape. British commanders, operating from a position of vulnerability, expected a decisive defeat. Yet they would escape with ingenuity and initiative due primarily to German failure to use Air and Ground as a unified effort. Ironically, Guderian, the great operational artist, had used Air and Ground to get within sight of Dunkirk.

North Africa -- Rommel and Kesselring

Rommel's success in North Africa, even with his eventual defeat, is remarkable given his lack of Air support and his inability to influence Air operations in the Mediterranean. His successes were achieved "without any command of the Air. No other generals on either side gained the victory under such conditions."³

Kesselring and Rommel worked at cross purposes during much of the North African campaign. Kesselring was the senior Air commander and the theater commander. He would not divert the Air support Rommel required to insure parity or provide adequate Air support to Rommel for a three dimensional mobile war. Kesselring felt Air superiority over the Mediterranean and interdiction of the sea lines of communication could decide the war.

Each had his own agenda and contributed to mutual failure. Rommel made numerous trips back to Berlin attempting to obtain Air support. Even when Rommel was successful, Kesselring would divert the Air to his Mediterranean interdiction campaign. The best example was the diversion of Luftwaffe elements from the Balkans and Crete. Rommel was expecting their arrival in North Africa but Kesselring diverted them to attack Malta.³⁴ The result was that both Rommel and Kesselring lost. Rommel could not maintain his mobility due to sustainment problems created by Allied Air superiority. Furthermore, a lack of operations security and attrition resulting from the lack of Luftwaffe Air cover significantly reduced Rommel's combat effectiveness. Allied Air attrition of Ground forces and their timely intelligence of Rommel's redistribution of forces and movement were devastating.

Kesselring, on the other hand, looked for a sole effort opportunity. He thought "Malta was particularly vulnerable

to Air attack...the Luftwaffe could prove capable of acting independently from the other two services,.... The war in North Africa would be won or lost by the battle for command of the Air over the Mediterranean."³⁵ There is a thread of continuity in this Air Force interest in sole efforts; the Air Forces continually search for an opportunity to demonstrate unilateral success.

Rommel did not control the Luftwaffe in North Africa. In the first year he said,

One thing that worked very seriously against us was the fact that the Luftwaffe in Africa was not subordinate to the Africa Korps.... It would have been far better for the cause as a whole if the Luftwaffe Commander Africa had been responsible for the Africa Korps while X Luftwaffe Korps took care of the strategic tasks.³⁶

A key point to highlight was Rommel's critical concern with Air. He understood Allied strengths and his weaknesses. He felt Air was the initial and crucial factor after the North African campaign.

For an army to be able to stand in battle, [there must be] parity or at least something approaching parity in the Air.... In [the] future the battle on the Ground will be preceded by the battle in the Air. This will determine which of the contestants has to suffer the operational and tactical disadvantages..., and thus be forced, throughout the battle, into adopting compromise solutions.³⁷

The inability to resolve his differences with Kesselring was fundamental to his eventual defeat. The remarkable fact is how well and how long Rommel fought the Allies in North Africa without adequate Air support. The inability to synchronize Air-Land operations stymied both Rommel and

Kesselring, two commanders whose strength of personality could carry them only so far without resources and synchronized efforts. With the failure of the Luftwaffe, the German position in North Africa was untenable.³⁸

U.S. Operations in North Africa and Sicily

The initial efforts of American Air-Land operations were disastrous and deserve coverage to enlarge the simplistic Air Force version of "facts" supporting the centralized control of Air Forces after 1943. A 1964 MMAS Thesis, "Close Air Support of the Field Army," by Captain Francis Ianni reviews North Africa with a tremendous number of primary sources. The results were eye opening and provide an interesting perspective on this aspect of Air Ground history.

The failure of the early Air effort in Africa was not due to the system of Ground control of supporting Air. It was due to the logistic and political problems as well as Air Corps doctrine and practices which prevented the full application of the Allied Air effort.³⁹

Training for Air-Ground operations going into North Africa was a failure. "The development of a U.S. Air-Ground system was impeded by the prewar controversy of the role of air power."⁴⁰ The vehemence of the dispute between Air and Ground forces is difficult to portray. The Air Corps was decidedly oriented toward bombardment following the example of Billy Mitchell. Air Ground doctrine was inadequate and untested.⁴¹ The major Air-Ground demonstration in 1942, directed by the War Department, was attended by only 2 out of 75 Air Generals. One of the two, Brigadier General Lynd,

wrote to General McNair saying this is actually a true indication of the interest of the air forces in Air support.⁴²

The United States Army Air Force (USAAF) fought all efforts to work Air-Ground coordination. Army General McNair, as commander of the Air-Ground Board, was frustrated by the lack of progress. He wrote that progress in Air-Ground training was slow, and that Air Ground cooperation had been a paper battle with the participants going through the motions.⁴³ The USAAF was convinced that bombardment and separation from the Army were two crucial goals. The war was a means to create justification and support for these goals. The Army Air Force was moving away from any policy of close cooperation with the Ground forces.⁴⁴

Besides lack of training and familiarity with each other, the Air side lacked other critical factors-- maintenance and Airfields. The lack of spares, mechanics, and priorities on maintenance put Airframe readiness during Operation Torch below 30 percent.⁴⁵ These factors, more than the popular misuse by Ground force version, influenced the need to consolidate Airpower. It was absolutely essential that Air be consolidated for both mass and flexibility. The British used a better system with a significantly better organization. The complete picture of North Africa makes piecemeal use by the "tactically oriented Ground commander" a weak justification but a sellable cover for the more

important reasons for failure.

Brigadier General Lawrence S. Kuter's report on Air in North Africa and his subsequent authorship of FM 100-20 at General Arnold's direction are significant but not thoroughly understood. General Kuter was responsible for a large portion of Ground support in North Africa.⁴⁶ However, he was allowed to make his own decisions by the weak Ground commander he supported. General Fredendall, instead of giving guidance for the Air, allowed the air forces free rein.⁴⁷ The result was poor support, but the analysis from Kuter's own hand bore little resemblance to the facts.⁴⁸ Furthermore, it did support the consolidation issue and fulfill the pre-war agenda of the USAAF to be separate from control of Ground forces.

No American Ground commander in North Africa and Sicily could initially get Air support in the quality or quantity expected. Eisenhower's leadership, initiative, and tactful unwillingness to accept Air Force opposition on a critical support requirement forced slow evolution of an Air-Ground team which improved through practice. His selection of a British Air commander set the stage for concentrating Air forces with the Air superiority battle being the initial effort. The success of Eisenhower in melding opposing friendly forces was a key factor in his rapid rise during World War II. Furthermore, his recognition of the potential use of Airpower coupled with his guidance and command

direction cannot be discounted. It was not a question of dominance by either force. Rather it was a matter of hard earned experience with comparatively little initial coordination. The lessons would come together by Overlord allowing every major Ground campaign for the remainder of the war to be coordinated with Air.⁴⁹ However, the earlier times in North Africa and Sicily were totally different. Air and Ground were not coordinated, much less synchronized.

After completion of the North African campaign, the War Department published FM 100-20 over the opposition of the Army Ground Forces Commander, General McNair.⁵⁰ "The subsequent invasion of Sicily got off to a bad start with the Air Corps conducting its operations without regard to the Army plan."⁵¹

The generals involved had a harsher tone about the situation:

General Pinky Bull -- "The Air plan was a masterful piece of uniformed prevarication, totally unrelated to the Naval and Military Joint Plan."⁵²

General Lucian Truscott -- "The lack of Air participation in the joint planning at every level was inexcusable."⁵³

General Omar Bradley -- "We were soon to discover that our fears were not groundless. The Air support provided us on Sicily was scandalously casual, careless, and ineffective."⁵⁴

Patton

Patton learned early and the hard way that Air superiority was crucial. He did not have it initially in North Africa. His Air umbrella was withdrawn as the Air forces reorganized and concentrated on achieving defeat of Luftwaffe airfields. The controversy required General Eisenhower to send Air Marshal Tedder to Patton's headquarters to iron out the problem.⁵⁵ He also learned that Air support is relative to the Ground commander's influence and control. He wanted support and a smoothly organized Air-Land operation.

Patton went into Sicily like everyone else--without Air. He did, however, work to obtain every asset available for Seventh Army. He may have only gotten eighteen (18) missions a day but it was better than everyone else.⁵⁶ Consistent effort paid off for Patton once he got into Europe. In addition, he made extensive use of Air assets, rounding out his combined arms concept with an integrated Air-Ground team. "Patton, a great believer in the potency of tactical Airpower, personally took part in all Air planning connected with the movement of his Third Army."⁵⁷ He recognized the value of Airpower and worked hard to establish a good working relationship with General Wayland, Commander of XIX TAC. Patton felt two ingredients were necessary; intimate confidence and friendship between Air and Ground, and ruthless driving on the part of the Ground commander.⁵⁸ With

his personality, he would accept nothing less.

Patton used interdiction, reconnaissance, and Close Air Support (CAS) for multiple purposes. He wanted to reduce enemy momentum and isolate enemy forces with interdiction. He used Air reconnaissance for tactical and operational Air-Ground coordination. Patton expanded use of aerial photography to help develop operational plans. He used aerial photos to overlap forward and to his flanks thus increasing intelligence security and time available. This was also a product of his experience as an operational commander.⁵⁹ In addition, his adjustments to plans on the move was a result of intelligence obtained by Air. Perhaps the critical point, he used interdiction and CAS to lead his Ground forces and to cover his open flank. This improved intelligence, security, and mobility while concurrently reducing enemy mobility, timing, and movement of reserves.

The actions of Patton during the Battle of the Bulge were crucial because it was his plan for synchronized Air-Land operations which blocked German resupply and reserves while his Army attacked north.⁶⁰ He used Air to pave the way for his rapid movement while concurrently minimizing the German ability to react or reinforce from any direction. He even directed Air to resupply Bastogne. His thinking was clear since his Third Army opened a corridor but it was under German fire. Rather than lose men and supplies he directed resupply by Air until the corridor could be reinforced and

widened.⁶¹ The lessons of experience, initiative, and a strong personality were crucial to Patton's success at the operational level.

Bradley

Bradley, more than any other World War II commander, used Air effectively to support Ground operations. He was in position to command while observing and working with Eisenhower and Patton. He also worked with an openly supportive Air Force General--Pete Quesada. The operations in France were the culmination of years of experience and trial and error with Air-Land synchronization.

The planning and execution of Operation Cobra established Bradley's deep participation and interest in Air-Land operations. His plan for the breakout was to be on a very narrow front in St. Lo using VII Corps. A key feature would be a massive paralyzing Air attack in the narrow front.⁶² The risk to friendly troops was great and pinpoint accuracy was called for in a rectangle, three and one-half miles wide and over one and one-half miles deep south of the St. Lo-Periers Road. "I [Bradley] proposed a plan whereby our Aircraft would approach...parallel to the east-west road and of course south of it. Our planes would not fly over our own troops."⁶³ Flying to Leigh-Mallory's headquarters, a final discussion was held on the plan. Bradley briefed Air Marshal Tedder, General Carl Spaatz, Air Marshal Leigh-Mallory, and others. In the end, after objections, the

Airmen agreed that the bombing runs would be parallel to the St. Lo-Perriers Road. At the same time, Bradley agreed to withdraw General Collins, the Seventh Corps Commander, 1500 yards. The attack flew perpendicular to the lines, and tremendous casualties were caused to friendly forces. "It was duplicity--a shocking breach of good faith."⁶⁴

Bradley launched an investigation trying to find out why the difference in direction.

To my astonishment, the Air Force brass lied claiming they had never agreed to bomb parallel.... Not only that they put me over an impossible barrel. They would not mount a second attack except perpendicular. Fearing the Germans were onto us, I had no choice but to accept what the Airmen offered and we reset the jump off date to the following day, 25 July.⁶⁵

The second day, loss of friendly forces was shocking--over one hundred dead and almost 500 wounded to include General McNair.⁶⁶ The attack overall was successful and the breakout succeeded. The Ground commander did not have the influence needed to properly position or control Air. The potential for disaster was partially realized. That lesson was never forgotten by General Bradley. When he moved to Twelfth Army Group from First Army he concentrated on synchronized operations with General Quesada. General Quesada's support and coordination with Bradley was crucial for reorienting USAAF priorities for Twelfth Army Group. This duo has not seen their efforts imitated in the last 30 years; consequently, prognosis for the future is not overly bright.

Post-War Efforts

The efforts of Bradley and Eisenhower were crucial for Air-Land operations. They both understood the criticality of Air and in the post-war period were supporters of a separate Air Force. The important factor is the caveat placed on Eisenhower's support of a separate Air Force. His conditions, in 1947, mandated dedicated Air Force support of Ground forces. His action forced the creation of the Tactical Air Command (TAC). This single action works today to keep the Air Force supportive of the Army. Even when then Colonel Momyer recommended significant reduction of Tactical Air Command (TAC), the concern with Eisenhower's mandate was raised within Air Force leadership. The Air Force was afraid the Army would build its own Air force if this agreement was not kept. Priority for Air-Land interaction has never been high on the Air Force priority list, but Eisenhower's anticipation precluded disappearance of Ground support. His action set the conditions for the resurgence of mutual cooperation in the 1970s.

Air-Land operations are difficult to master. World War II, Korea, and Vietnam have each seen controversy over the lack of acceptable Air-Land working relationships. The Army expressed consistent frustration. This is reflected in the 1965 Congressional Hearings which castigated the Air Force for failure to properly support the Army. The advantages of size, industrialization, and Air superiority have been

America's for each war; however, they do not inherently provide the application of combat power to win.

The interdependency of Air-Land operations during war is clear. As a concept, it is accepted by both services. The predicament is taking a theory concerning Air-Land and synchronizing efforts for a single purpose. Making concept become an effective and understood process is difficult. We have not been successful in that end in theory or process. Douhet's theories are piecemealed by the Air Force and largely ignored by the Army. Yet, Douhet was the John Cushman of a much earlier era. He understood synchronization and the means to institutionalize it within the Armed Forces. He believed in joint doctrine, joint warfare, and even in the lack of ability to obtain it due to service interests. Generalists or pure joint officers still do not exist. Those that do are normally voices in the wilderness among service leadership and peacetime priorities.

The Air-Land components were crucial to Allied victories in World War II. The inability to synchronize Air and Land forces after 1943 was devastating to the Germans. The relationships on each side may have been different in certain aspects but unification of effort was the goal. The inability to synchronize Air-Land operations was the basis for failure on innumerable occasions for both German and Allied forces. The critical role of personality in both

success and failure stands out above any and all factors.

Personality made or broke the opportunity to obtain Air-Land
synchronization for both sides.

III. ANALYSIS

The inherent tension between Luftwaffe and Wehrmacht and between Allied Army and Air Force was rarely overcome during World War II. It may have been precluded by concurrent or superficially "coordinated" specific operations but it was not solved. The only resolution for comparatively short periods was the direct result of command personalities. "Personalities played a major part in the way the Air and Ground organizations developed."⁶⁷ Generals Bradley and Quesada are the notable success stories in U.S. history.

General Omar Bradley and General "Pete" Quesada were a rare pair of leaders who managed to create true synchronization with an army group and a numbered Air force.

The overall system of Air-Ground cooperation developed within the Ninth Air Force--12th Army Group tactical team had a direct and highly satisfactory effect upon operations. It assured close coordination in combined operations, joint planning at all levels, and the continuous exchange of information between the services. The cloud of mystery with which even now some authorities tend to surround Air cooperation was dispelled in the clarity of mutual confidence and simplicity.⁶⁸

The Ground commanders mentioned in this work recognized the crucial importance of Air and not just for superiority or strategic bombing. The problem was influence and "control of air." Both played a major role in the success or failure of operational Ground plans. Each commander's approach to the situation was different, but one common thread is con-

sistent--Air is crucial. When the Ground commander cannot or does not influence Air operations and/or Air does not meet promised expectations, the Ground commanders fail in their ultimate missions.

Current and past U.S. Air commanders prefer concurrent and, at best, coordinated Air-Land operations. Central control of Air is valid, but the extreme sensitivity and reluctance to working with operational Ground commanders are difficult to comprehend. The missions of Air superiority, interdiction, and close Air support are consistent from World War II through the present.⁶⁹ The efforts between Training and Doctrine Command (TRADOC) and the Tactical Air Command (TAC) in the 1970s could not produce a synchronized doctrine. Both General DePuy (TRADOC CDR) and General Dixon (TAC CDR) backed away from General Cushman's Air-Land proposal for doctrine. "They had agreed to coordinate procedure only, not doctrine."⁷⁰ Further cooperation would require significant redefinition of service roles and apportionment of assets. By rejecting Cushman's AirLand Battle concept, Generals DePuy and Dixon agreed on what they determined to be a far safer, more advantageous approach--tacit acceptance of two arenas of battle, one on the Ground and one in the Air.⁷¹ The best result available was concurrent operations. Each force, inherently biased and defensive, was not able to link up accept at the theater level. The need for operational synchronization is acknowledged by some but we have not

significantly progressed since 1943 and FM 100-20, Command and Employment of Air Power.

Objective and visionary operational artists are rare and a clear function of personality. Service bias, turf, budgets, and historical propaganda are largely the "important" reasons for each service's position. The service perspective has been able to preclude establishment of joint doctrine even though operations are not in the service charter. "Services are responsible for preparation of forces, not their operations."⁷²

Overall improvement in the American way of war is superficially supported by each respective service agenda. Doctrine is a service oriented and controlled program. Each service develops and maintains its own doctrine. "Service doctrine serves to reinforce service roles and missions."⁷³ This complicates and in many cases precludes effective synchronization.⁷⁴ The JCS definition of doctrine uses "their actions" referring to the separate service.⁷⁵ There is not "our action" as a unified entity for doctrine.

Doctrine for U.S. multiservice forces is so tied up in service roles and missions...it has not been possible for the Joint Chiefs of Staff...to write meaningful how to fight guidance for multiservice Forces--or to even set up a mechanism for the development of such doctrine.⁷⁶ [Note - the J-7 responsibility in this arena is not yet visible.]

Even the Army/Air Force written agreement concerning AirLand Battle clarifies the Air Force position as supporting AirLand Battle but it is not Air Force doctrine.⁷⁷

The development of Joint Attack of the Second Echelon (J-SAK) in 1984 with the Battlefield Coordination Element (BCE) as the Land Component Commander's (LCC) representative with the Tactical Air Control Center (TACC) was a significant improvement in procedures.⁷⁸ Unfortunately, the respective service bureaucracies have not accepted Ground influence of Air operations at the operational level. This applies to both services. The Army has been unwilling or unable to aggressively utilize the BCE. The Air Force is reluctant to meet the intent of the agreement because it reduces Air Force overall control. The Air Force retains control and the BCE system is not good enough.⁷⁹ The system uses the Tactical Air Control Center and, while improvements are there in procedures, the Air Force still has the power to ignore the operational Land commander. Even collocating commanders is not enough to insure synchronization.

The BCE is not used in Europe. When used elsewhere, junior officers are given the mission and responsibility of "selling" the Air Force on CAS, Battlefield Air Interdiction (BAI), and Air Interdiction (AI) targets and priorities. A number of Allied Air Forces and Army Groups do collocate but working relations are still a function of command personality. The Ground commander either works out a system derived by his and the Air Force commander's relationship or the Ground commander does without synchronized support. Currently, the Ground commander has little leverage unless

his wants happen to match Air Force interests. The Air-Land operational level has been reached, but current cooperative procedures do not support success at the operational level of war.⁸⁰ Colonel Huba Wass de Czege described this as an area where we have not done very well for the operational commander. To solve the problem, both the Army and Air Force must agree we have a problem.⁸¹ Granted, tremendous progress has been made since Patton and Rommel in North Africa were hamstrung for lack of Air support. Operational synchronization is still a dream, a rarity, and not a fundamental building block of AirLand Battle.

The assumption since 1943 of U.S. Air superiority is an inherent portion of any plan. It is not just the goal which the Air Force uses for Offensive Counter Air (OCA) and Defensive Counter Air (DCA). It is a prerequisite for both services to operate. The Land force bases everything it plans and does on the assumption of Air superiority. Even FM 100-5, Operations, is clear that "The first considerations in employing Air forces are gaining and maintaining the freedom of action to conduct operations against the enemy."⁸²

IV. CONCLUSIONS

The operational art of synchronizing Air-Land operations is nothing more than a theoretical and academic exercise within the United States military forces. The sole mechanism for transfer of operational art into the pragmatic, hopefully objective world of reality for planning and execution is command personality. Joint doctrine does not address nor provide for operational synchronization of Air-Land operations. The Memorandum of Agreement between Army and Air Force on the use of AirLand Battle is a procedural fix which evades the fundamental problem of linking the Air-Ground perspectives. The personality of commanders, both Air and Ground, has been and continues to be the sole critical life line enabling synchronization of Air-Land operations.

Each force acknowledges the other but they do not function together as one. Subtle differences in interpretation of doctrine, compounded by service bias and mistrust, continue to restrain operational art. This was a lesson of World War II and it has not been eradicated. The last several sets of service chiefs have worked slowly but progressively on the predicament. The "31 initiatives" of General Wickham and General Gabriel in 1984 brought Air-Land planning and coordination closer together.⁸³ We are at the threshold of greatly increased joint effectiveness.⁸⁴ Synchronization is not yet obtainable, though both services

are addressing the topic.

Louis Sigaud in Air Power and Unification, in 1949, felt it crucial to quote Douhet extensively from Command of the Air. He felt the U.S. and specifically the Air Force was misinterpreting Douhet's theories through selective reading. The following passage of Douhet's proves his contention:

We find ourselves in a favorable situation as far as such a war organization is concerned, inasmuch as we have already achieved the fusion of our armed forces under a single command. But, unfortunately, although everyone agrees on the advantages of such a fusion, the thinkers and writers on military affairs seem to find it humanly impossible to see beyond their own special interests.

The army student will deal essentially with the army; the navy student will deal with the navy; the aeronautical student with the aerial forces; and when they deal with war in general, each emphasizes the part which is of more interest to the armed force to which he belongs. THERE ARE ARMY EXPERTS, NAVY EXPERTS, AND AERIAL EXPERTS; BUT THERE ARE NO WAR EXPERTS. AND WAR IS INDIVISIBLE, AND SO IS ITS PURPOSE. In my opinion this situation makes it difficult to come to any intelligent agreement on a sound doctrine of war. I therefore believe that it will be necessary to create general war experts, for they are the only ones who can bring into being the new doctrine of war, and only from them can we seek the solution of the fundamental problem of war preparations.⁸⁵

It may be irony that I turn back to Douhet concerning Air-Land operations, but his points are crucial. He understood the single purpose of war and the need for common understanding and doctrine. Furthermore, General officers are needed not by rank but as experts on joint forces and synchronized war. The need for joint doctrine is clear and concisely explained by Douhet.

The United States has not taken Douhet's theories and

the lesson of World War II to their logical extension--joint doctrine.

The greatest lesson of this war, General Arnold said in his final report as AAF Commanding General on November 12, 1945, has been the extent to which Air, Land, and Sea operations can and must be coordinated by joint planning and unified command.⁸⁶

We stay within our respective service lines and tentatively attempt to make progress through procedural agreement.

Colonel Thomas A. Cardwell (USAF) wrote extensively on Air-Land combat and the differences between Army and Air Force.

His 1986 book, AirLand Combat: An Organization for Joint Warfare, has a strongly worded forward by General John

Vessey, (former CJCS). The lack of doctrine and synchronization makes the effective employment of all arms toward a single objective difficult, wasteful, and dangerous.⁸⁷ Colonel Cardwell paraphrases General Momyer:

I hope this attempt to develop a greater appreciation of the importance of joint doctrine for AirLand combat will not have been in vain so that future military people will not have to pay the price in combat again for what some have already purchased.⁸⁸

The Army and the Air Force are crucial components for the conduct of campaigns and major operations.

"Synchronization between the Army and the Air Force is vital for operational success on the AirLand battlefield."⁸⁹ We need to acknowledge the critical role of personality in war but we also must progress beneath it to keep personality from being the sole option for success. Personality is a critical entity which FM 100-5 acknowledges as important. Leadership

and personality are virtually indivisible. "The most essential element of combat power is competent and confident leadership.... The skill and personality of a strong commander represent a significant part of his unit's combat power."⁹⁰ Personality is not a crutch; it is a lubricant to reduce friction, guide forces, and provide central direction in order to facilitate success. If we remove the service obstacles when and where we find them, we save command personality from filling institutional and doctrinal voids. Our overall opportunities for synergy of combat power will improve if a strong base in joint doctrine is established. Then and only then will personality reach its optimal potential for operational art.

The military environment, as we know it now, relies just as much on personality to synchronize Air-Land operations as in World War II. "The experience of World War II amply demonstrates that war is an art rather than a science and that victory depends upon expert judgment of responsible commanders."⁹¹ This situation is understandable but unfortunately unacceptable. Personality will always play a major role in warfare. It is urgent and necessary that its role be the capstone to operations. Personality is deserving of having to always be the solution. The current and historical service perspectives dramatically reduce the opportunity for success by allowing the current disjointed way of war. We cannot afford synchronized operations to be

an exception through reliance on the luck of operational command personalities. "The problem is too great for the competence of a single individual or a small group of individuals."²

The success of Air-Land operations requires more than personal relations at the operational level if operational art is to flourish. "The solution lies in a joint approach and understanding of each service's capabilities."³ It requires joint doctrine imbedded and effectively implemented by all the members of our Armed Forces. As difficult and contentious as joint doctrine may be, it remains the central weakness of our Armed Forces primarily by its absence.

V. RECOMMENDATIONS

The historical pattern of weakness in Air-Land synchronization buoyed intermittantly by the power of personality leads to the following recommendations:

- Greater efforts to grapple with the operational interface of Air-Land operations must receive command emphasis by both services and the JCS. The time for token efforts is long since past. When Congress is tired and disgusted with our lack of success, we should realize how serious the situation has become. Joint doctrine needs to be written, implemented and executed.
- The Combat Studies Institute (CSI) at Fort Leavenworth should study the traits and attributes of Air-Land commanders who synchronized operational Air-Land warfare. Where, why, and how these traits developed should be identified for each commander. These traits and attributes should then be nurtured and developed in our current officers through institutional exposure and practical experience.
- The revisionist history of Air Force leaders to "legitimize" concepts, agendas, and actions during World War II should be confronted. The creation of joint doctrine requires dissolving the facade of service generated "facts."

- Douhet should be read and studied in his entirety. Douhet was not always the zealot the Air Force and Billy Mitchell might lead one to believe. He understood the need for synchronized warfare. In fact, he was much farther along in synchronization theory and how to obtain it than our current Army and Air Force leadership.
- Parochial views are to be expected and even encouraged, but they must be analyzed and unveiled for what they are and what they can create--tension, bureaucratic stagnation, and operational failure. Warfare in the future will not allow us to relearn World War II's lessons the hard way.
- The operational level of warfare is not a comfortable arena for either Air or Land forces. The Air Force is comparatively more comfortable because of their sole mission orientation with Air superiority, AI, and strategic operations. After all, centralized control has been in effect since 1943, greatly simplifying Air Force operational efforts if they avoid Air-Land synchronization.

VI. SUMMARY

The U.S. Armed Forces rarely conduct truly synchronized operations. When they are conducted or even approached in execution, a critical factor is the impact of command personality. This predicament is not just dangerous but also alarming. The criticality of Air-Land operations echoes from 1939 forward, yet the military has not brought synchronization into the realm of the consistently achievable. Reliance on personality must be supplemented with a foundation of doctrine augmented by operational procedures.

Procedures and operational level directives have not overcome the insidious presence of American service bias and agendas. In fact, service bias and agendas preclude obtaining those very needs for joint warfare. The Air Force and Army have mutual distrust for rather understandable reasons. U.S. history is full of their conflicts. Their perspectives and orientations are different but not irreconcilable. They both work for a joint commander in wartime and should have common goals. The importance of synchronized Air-Land operations for campaign success has irrefutable historical precedent.

We have to get beyond excessive reliance on personality for solutions at the operational level. "The United States cannot afford the luxury of waiting until the next war to

organize for that war."⁹⁴ Trusting and hoping for a Bradley, Patton or Rommel is not an acceptable solution for operational art. Objective officers who plan and work to synchronize warfare are the optimal and only viable solution for creation of joint doctrine and synchronized operations.

The Army cannot afford to ignore the Air Force nor can the Army tolerate the opposite situation. The Army's doctrine acknowledges and demands synchronized efforts. The Army's doctrine properly creates preconditions for success. The Army's doctrine also has a decidedly Land focus. We need to provide additional tools besides personality for synchronization of Air-Land operations. Quality joint doctrine is something Air-Land operations needs to imbue in all of us. We currently do not have joint doctrine to use in war. Reliance on only future command personalities does not make for acceptable odds given the historical predicament with synchronization of Air-Land operations.

END NOTES

1. FM 100-5, Operations, (Washington, D.C.: Government Printing Office, 1986), p. 4.
2. Bielefeld, William C., "Air Interdiction: Will it Support AirLand Battle?," (Fort Leavenworth, KS: SAMS Monograph, 1986) p. 3.
3. FM 100-5, Operations, (Washington, D.C.: Government Printing Office, 1982), p. 7-6.
4. Bradley, General Omar, Effect of Airpower on Military Operations, p. 191.
5. AFM 1-1, Basic Aerospace Doctrine of the United States Air Force, p. 1.3.
6. Hamilton, David, "Close Air Support and Battlefield Air Interdiction in the AirLand Battle," (Fort Leavenworth, KS: MMAS Thesis, 1983), p. 50.
7. Holder, L. D., "Catching up With Operational Art," (Army, March 1985), pp. 22-32.
8. Galvin, John R., "Warrior Preparation Center, USAF/Army Hammer Out Close Cooperation," (The Armed Forces Journal, August 1984), p. 102.
9. Wass de Czege, Huba, "Toward a Science and Art of War," (Art of War Quarterly, June 1983), p. 23.
10. Momyer, William W., Air Power in Three Wars, (Washington, D.C.: Department of the Air Force, 1978), p. 256.
11. Cushman, John H., Future Directions of U.S. Air Force Tactical Air, (Fort Leavenworth, KS: CGSC, 1984), p. 24.
12. Webster's Third New International Dictionary, (Chicago, IL: Encyclopedia Britannica, 1971), p. 501.
13. Ibid.
14. JCS Pub 1, Dictionary of Military and Associated Terms, (Washington, D.C.: Government Printing Office, 1 June 1987), p. 118.
15. FM 100-5, Operations, (1986), p. 10.

16. Webster's Third New International Dictionary, p. 1807.
17. FM 100-5, Operations, (1986), p. 17.
18. Bielefeld, p. 2.
19. FM 100-20, Command and Employment of Air Power, (Washington, D.C.: Government Printing Office, 1943).
20. Cushman, Future Directions of U.S. Air Force Tactical Air, p. 27.
21. Louis Sigaud, Air Power and Unification (Harrisburg, Pennsylvania: Military Service Publishing Company, 1949), p. IX.
22. Ibid, p. X.
23. AFM 1-1, Basic Aerospace Doctrine of the United States Air Force (Annex A),
24. Cooper, Matthew, The German Army 1933-1945 Its Political and Military Failure, (New York: Stein and Day, 1978), p. 232.
25. Cooper, Matthew, The German Air Force: An Anatomy of Failure, (London, England: Janes, 1981), p. 115.
26. Ibid, p. 120.
27. Ibid, p. 115.
28. Ibid.
29. Higgens, George A., The Operational Tenets of Generals Heinz Guderian and George S. Patton, Jr., (Fort Leavenworth, KS: MMAS Thesis, CGSC, 1985), p. 34.
30. Ibid, p. 32.
31. Ibid, p. 33.
32. Cooper, The German Air Force, p. 117.
33. Hart, B. H. Liddell, The German Generals Talk, (New York: William Morrow, 1948), p. 50.
34. Hart, B. H. Liddell, editor, The Rommel Papers, (New York: Harcourt, Brace and Company, 1953), p. 139.
35. Cooper, The German Air Force, p. 201.
36. Hart, The Rommel Papers, p. 134.

37. Ibid, p. 328.
38. Cooper, The German Air Force, p. 217.
39. Ianni, Francis A., "Close Air Support for the Field Army," (Fort Leavenworth, KS: MMAS Thesis, 1964), p. 5.
40. Steadman, Kenneth A., "A Comparative Look at Air-Ground Support Doctrine and Practice in WWII," (Fort Leavenworth, KS: Combat Studies Institute, 1 September 1982), p. 9.
41. Ibid, p. 2.
42. Ianni, p. 23.
43. Ibid, p. 61.
44. Ibid, p. 24.
45. Ibid, p. 37.
46. Ianni, p. 41.
47. Blumenson, Martin, "The Relevance of Kasserine Pass," Army, March 1987, p. 59.
48. Ianni, pp. 54-55 and Kuter L. S., Letter to Commanding General, Army Air Force, SUBJECT: Organization of American Air Forces, 12 May 1943.
49. Momyer, p. 166.
50. Steadman, p. 9.
51. Ianni, p. 3.
52. Bradley, General Omar N., A General's Life, (New York: Simon and Schuster, 1983), p. 178.
53. Ibid.
54. Ibid.
55. Momyer, p. 49.
56. Steadman, Kenneth A., "A Comparative Look at Air-Ground Support Doctrine and Practice in WWII," p. 9.
57. Puryear, Edgar F. Nineteen Stars, (Orange, VA: Green Publishers, 1971), p. 327.
58. Higgs, p. 110-111.

59. Ibid, pp. 152-153.
60. Ibid.
61. Puryear, p. 327.
62. Bradley, A General's Life, p. 272.
63. Ibid, p. 276.
64. Ibid, p. 279.
65. Ibid.
66. Ibid.
67. Momyer, p. 163.
68. Bradley, Effect of Air Power on Military Operations, p. 66.
69. Momyer, p. 256.
70. Herbert, Paul W., "Deciding What Has to be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations, Leavenworth Paper #16, (Fort Leavenworth, KS: CSI), p. 71.
71. Ibid, pp. 70-71.
72. Cushman, John H., Organization and Operational Employment of AirLand Forces, (Carlisle Barracks, PA: Army War College, 1983-1984), p. viii.
73. Ibid, p. 3-9.
74. Ibid, p. 3-8.
75. JCS Pub. 1, p. 118.
76. Cushman, p. ix.
77. Bielefeld, p. 2.
78. Rippe, Stephen T., "An Army and Air Force Issue: Principles and Procedures for AirLand Warfare," (Fort Leavenworth, KS: MMAS, May 1985), p. 122.
79. Ibid, p. 29.
80. Bielefeld, p. 28

81. Huba Wass de Czege, Letter to the Editor, Military Review, January 1986, pp. 85-86.
82. FM 100-5, Operations, (1986), p. 47.
83. Gabriel, General Charles A., and General John A. Wickham, "CSA/CSAF Initiatives for Action," Memorandum of Agreement on U.S. Army-U.S. Air Force Joint Force Development Process, (Washington, D.C.: 22 May 1984).
84. McPeak, Lieutenant General Merrill A., "TACAIR Missions and the Fire Support Coordination Line," (Maxwell Air Force Base, Alabama: Air University Review, September-October 1985), p. 65.
85. Douhet, Giulio. The Command of the Air (New York: Coward - McCann, 1942), pp. 291-292.
86. Futrell, Robert E. "Airpower Lessons of World War II," (Air Force/Space Digest, September 1965), p. 47.
87. Cardwell, Thomas A., "AirLand Combat: An Organization for Joint Warfare," (Maxwell Air Force Base, AL: Air University Press, 1986), p. XII.
88. Ibid, pp. XVIII-XIX
89. Bielefeld, p. 29
90. FM 100-5, Operations, (1986), p. 13.
91. Futrell, p. 47.
92. Sigaud, p. 99.
93. Cardwell, Thomas A., "Extending the Battlefield: An Airman's Point of View," (Maxwell Air Force Base, Alabama: Air Force Review, March-April 1983), p. 92.
94. Ibid.

BIBLIOGRAPHY

BOOKS

- Andrews, Allen. The Air Marshals - The Air War in Western Europe. New York City: William Morrow and Company, 1970.
- Arnold, Lieutenant Colonel H. H., and Ira C. Eaker. Army Flyer. New York: Harper and Brothers, 1942.
- Borneman, Lieutenant Colonel Frederick E., USA, et al. The Development, Promulgation, and Implementation of Doctrine for Joint Operations. Carlisle Barracks, Pennsylvania: Army War College, 1975.
- Bradley, General Omar N. Effect of Air Power. Wiesbaden, Germany: Twelfth Army Group, 1945.
- Bradley, General Omar N. and Clay Blair. A General's Life. New York: Simon and Schuster, 1983.
- Brodie, Bernard. Strategy in the Missile Age. Princeton, New Jersey: Princeton University, Press, 1971
- Cardwell, Colonel Thomas A. III, USAF. AirLand Combat: An Organization for Joint Warfare. Maxwell Air Base, Alabama: Air War College, 1986.
- _____. Command Structure for Theater Warfare: The Quest for Unity of Command. Maxwell Air Force Base, Alabama: AU Press, 1984.
- Clausewitz, von Carl. On War. Princeton, NJ: Princeton University Press, 1984.
- Cooper, Matthew. The German Army 1933-1945 Its Political and Military Failure. New York: Stein and Day, 1978
- _____. The German Air Force 1933-1945: An Anatomy of Failure. London, England: Janes, 1981.
- Cushman, Lieutenant General John H., USA, Retired. Future Directions of U.S. Air Force Tactical Air. Fort Leavenworth, KS: CGSC, 1984).

- _____. Organization and Operational Employment of Air/Land Forces. Carlisle Barracks, Pennsylvania: U.S. Army War College, 1983-1984.
- Deichmann, Paul. German Air Force Operations in Support of the Army. Maxwell Air Force Base, Alabama: Air University Press, June 1962.
- Dupuy, Trevor N. Combat Leader of World War II. New York: Franklin Watts, Inc., 1965.
- Douhet, Giulio. The Command of the Air. New York: Coward - McCann, 1942.
- Emme, Eugene M., editor. The Impact of Air Power. Princeton, New Jersey: D. Van Nostrand Company, Inc.)
- Frisbee, John L., editor. Makers of the United States Air Force. Washington, D.C.: Office of Air Force History, 1987.
- Gaston, James C. Planning the American Air War Four Men and Nine Days in 1941. Washington, D.C.: Nation Defense University Press, 1982.
- Goldberg, Alfred and Donald Smith. Army - Air Force Relations: The Close Air Support Issue. Santa Monica, California: Rand Corporation, October 1971.
- Hart, B. H. Linddell. The German Generals Talk. New York: William Morrow and Company, 1948.
- _____. History of the Second World War. New York: G. P. Putnam's Sons, 1970.
- _____. The Rommel Papers. New York: Harcourt, Brace and Company, 1953.
- Irving, David. The Trail of the Fox. New York: First Avon Printing, November 1978.
- Johnson, Colonel Tom, USA; Susan Smith Sedgewich; and Lieutenant Colonel Victor C. Ortloff, USAD. Unity of Command--Does it Exist in the Field? Washington, D.C.: National War College Research Paper, April 1983.

Kohn, Richard H. and Joseph P. Harahan. Air Superiority in W.W. II and Korea: An Interview with General James Ferguson, General Robert M. Lee, General William Momyer, and Lieutenant General Elwood R. Quesada. Washington, D.C.: Office of Air Force History, 1984.

Mac, Isaac. Strategic Bombing in World War II - The Story of the U.S. Strategic Bombing. New York: Garland Publishing, 1976.

Meilinger, Philip S. Hoyt S. Vanderbert, The Life of a General. Washington, D.C.: Library of Congress, 1989.

Mitchell, Colonel Corless W., USA. The Extended Battlefield Concept: A Potential Problem for the Command and Control of Air Power. Maxwell Air Force Base, Alabama: Strategy/Employment Assessment Paper, Air War College, April 1982.

Momyer, William W. Airpower in Three Wars. Washington, D.C.: Department of the Air Force, 1978.

Myers, Grover E. Aerospace Power - The Case for Indivisible Application. Maxwell Air Force Base, Alabama: Air University Press, September 1986.

Puryear, Edgar F., Jr. Nineteen Stars. Orange, VA: Green Publishers, 1973.

Sigaud, Louis. Air Power and Unification. Harrisburg, PA: Military Service Publishing Company, 1949.

Simpkin, Richard E. Deep Battle. London, England: Brassey's Defense Publishers Limited, 1987.

_____. Race to the Swift. London, England: Brassey's Defense Publishers Limited, 1985.

Strategic Planning. Strategic Studies Institute, Carlisle Barracks, Pennsylvania: Army War College, 4 January 1988.

Tedder, Baron Arthur William. Air Power in War. Westport, Connecticut: Greenwood Press, Publishers, 1975.

von Freytag-Loringhoven, Major General Baron Hugo. The Power of Personality in War. Harrisburg, Pennsylvania: Military Service Publishing Company, April 1955.

von Manstein, Erich. Lost Victories. Munich: Bernand und Graefe Verlag, 1982.

Waldrop, Thomas L. The Tactical Air Control System. Maxwell Air Force Base, Alabama: Air War College, 1977.

Watts, Lieutenant Colonel Barry D. The Foundations of U.S. Air Doctrine: The Problem of Friction in War. Maxwell Air Force Base, Alabama: Air University Press, December 1984.

Webster's Third New International Dictionary. Chicago, IL: Encyclopedia Britannica, 1971.

Weigley, Russell F. The American Way of War. New York: MacMillan Publishers, 1983.

GOVERNMENT PUBLICATIONS

AirLand Bulletin, No. 84-2, "Tactical Air Command, TRADOC Air-Land Forces Applications Memorandum of Agreement of U.S. Army--U.S. Air Force Joint Development Process." Fort Monroe, Virginia: TAC/TRADOC ALFA, August 27, 1984, pp. 11-13.

AFM 1-1, Basic Aerospace Doctrine of the United States Air Force. Washington, D.C.: Headquarters, United States Air Force, 16 March 1984.

AFM 1-1, Functions and Basic Doctrine of the United States Air Force. Washington, D.C.: Headquarters, United States Air Force, 14 February 1979.

Campaign Planning (Final Report), Carlisle, Pennsylvania: Strategic Studies Institute, U.S. Army War College, 4 January 1988.

Combined Arms Training Tips, Volume 1 - #1. Fort Leavenworth, Kansas: Combined Arms Center, August 1982.

FM 100-5, Operations. Washington, D.C.: Headquarters, United States Army, 1982.

_____. Washington, D.C.: Headquarters, United States Army, 20 August 1986.

FM 100-6, Large Unit Operations (Coordinating Draft). Fort Leavenworth, Kansas, 30 September 1987.

FM 100-20, Command and Employment of Air Power. Washington, D.C.: Government Printing Office, 1943.

FM 100-103, Army Airspace Command and Control in a Combat Zone. Washington, D.C.: Government Printing Office, 7 October 1987.

JCS Pub 1. Department of Defense Dictionary of Military and Associated Terms. Washington, D.C.: Government Printing Office, 1 April 1984.

JCS Pub 2, Unified Action Armed Forces (UNAAF). Washington, D.C.: Joint Chiefs of Staff, 1974.

_____. Washington, D.C.: Joint Chiefs of Staff, 1984.

JCS Pub 2, Joint Doctrine for Theater Counter Air Operations. (J-SAK), Washington, D.C, 1984.

Leavenworth Papers, NO. 16, Deciding What Has to Be Done: General William E. DePuy and the 1976 Edition of FM 100-5, Operations. By Major Paul H. Herbert. Fort Leavenworth, Kansas: Combat Studies Institute, U.S. Army Command and General Staff College, 1988.

Memorandum of Agreement on U.S. Army-U.S. Air Force Joint Force Development Process. CSA/CSAF Initiatives for Action. Washington, D.C.: 22 May 1984.

NATO MAS ARP-27(B) (w/Chg. 1). Offensive Air Support. HQ NATO, 1983.

TRADOC Pamphlet 525-45, General Operating Procedures for Joint Attack of the Second Echelon (J-SAK). Fort Monroe, Virginia: United States Army Training and Doctrine Command, 31 December 1984.

ARTICLES AND PERIODICALS

Alberts, Lieutenant Colonel Donald J. "An Alternative View of Air Interdiction." Air University Review. July-August 1981, pp. 31-44.

- Bingham, Price T. "Ground Maneuver and Air Interdiction in the Operational Art." Parameters, March 1989, pp. 16-31.
- Blumenson, Martin. "The Relevance of Kasserine Pass." Army, March 1987, p. 59.
- Boyles, Lieutenant Colonel, USAF; and Captain Greg K. Mittelman, USAF. "Paradox of the Headless Horseman." Airpower Journal, Spring 1989, p. 29
- Canan, James W. "Sorting Out the AirLand Partnership." Air Force, April 1988, p. 50.
- Cardwell, Colonel Thomas A., III. "AirLand Battle Revisited." Military Review, September 1985, pp. 4-13.
- _____. "Extending the Battlefield." Air University Review, March-April 1983, pp. 86-93.
- _____. "Follow-On Forces Attack: Joint Interdiction By Another Name." Military Review, February 1986, pp. 4-11.
- _____. "Managing Theater Air Assets." Military Review, May 1983, pp. 40-45.
- _____. "One Step Beyond-AirLand Battle, Doctrine Not Dogma." Military Review, April 1984, pp. 45-53.
- Chastain, Lieutenant Colonel Dave, and Major Ken Francis. "Basic Aerospace Doctrine and Tactical Air Support." Air Land Bulletin, NO. 88-3, 30 September 1988, p. 16.
- Doerfel, Lieutenant Colonel John S. "The Operational Art of the AirLand Battle." Military Review, May 1982, pp. 3-10.
- Donnelly, General Charles L. Jr., USAF, Retired. "A Theater-Level View of Air Power." Airpower Journal, Summer 1987, p. 3.
- Drew, Dennis M. "Two Decades in the Air Power Wilderness - Do We Know Where We Are?" Air Power Review, September-October 1986, pp. 2-13.
- Dugan, Lieutenant General Michael J. "Airpower: Concentration, Responsiveness, and the Operational Art." Unpublished and undated.

- Futrell, Dr. Robert W. "Airpower Lessons of WWII." Air Force/Space Digest, September 1965, p. 42.
- Galvin, Lieutenant General John R. "Warrior Preparation Center - Air Force and Army Hammer Out a Close Cooperation." The Armed Forces Journal, August 1984, pp. 48-50.
- Gilster, Colonel Herman L. "Air Interdiction in Protracted War: An Economic Evaluation." Air University Review,
- Hannig, Lieutenant Colonel Norbert, Retired. "NATO's Defense - Conventional Options Beyond FOFA." International Defense Review, July 1986, p. 897.
- Hofstetter, Major (P). "J-SAK." Air Land Bulletin, NO. 85-1, 29 March 1985, p. 5.
- Holder, L. D. "Catching Up With Operational Art." Army, March 1985, pp. 22-32.
- Holley, I. B. "Of Saber Charges, Escort Fighters and Spacecraft." Air University Review, September-October 1983, pp. 2-11.
- Hosmer, Lieutenant General Bradley C. "American Air Power and Grand Tactics." Air Power Journal, Summer 1987, p. 9.
- Ogan, Major Andrew J., USAF. "Thinking About Air Power." Airpower Journal, Spring 1989, p. 43.
- Owen, Captain. "The Battlefield Coordination Element." Air Land Bulletin, NO. 85-4, 31 December 1985, p. 20.
- Krieger, Colonel Clifford R., USAF. "Air Interdiction." Airpower Journal, Spring 1989, p. 4.
- McPeak, Lieutenant General Merrill A. "TACAIR Missions and the Fire Support Coordination Line." Air University Review, September-October 1985, pp. 65-72.
- Owen, Captain Thomas A. "The Battlefield Coordination Element: The Key to AirLand Synchronization." AirLand Bulletin, Bulletin NO. 85-4, 31 December 1985, pp. 20-23.
- Raden, Colonel William K. "Targeting Air Interdiction in Support of AirLand Battle." Student Essay. Carlisle Barracks, Pennsylvania: Army War College, 1985.

Redden, Lieutenant Colonel Joseph J. "AirLand Battle - The Global Doctrine?" Study Project. Carlisle Barracks, Pennsylvania: Army War College, 1983.

Russ, General Robert D. "Open Letter to the Field." Air Land Bulletin, NO. 87-1, 31 March 1987, p. 7.

Starry, Donn A. "Extending the Battlefield." Military Review, March 1981.

Sullivan, John J. "The Botched Air Support of Operation Cobra." Parameters, March 1988, p. 97.

Sweeney, Major Mike, and Captain Don Spence. "TACAIR Targeting." Air Land Bulletin, NO. 87-1, 31 March 1987, pp. 9-13.

Postlethwait, Lieutenant Colonel Edward M., USA. "Unified Command in Theaters of Operation." Military Review, NO. 8, November 1949, pp. 23-30.

Robinson, Major. "Command and Control of Air Operations in a Theater." Air Land Bulletin, NO. 86-1, 31 March 1986, p. 20.

Walker, Air Vice Marshal J. R. "Air Power: Present and Future." RUSI, 2 June 1986, p. 15.

Wass de Czege, Huba. Letter to Editor. Military Review, January 1986, pp. 84-87.

_____. "How to Change an Army." Military Review, November 1984, pp. 32-49.

_____. "Toward a Science and Art of War." Art of War Quarterly, June 1983, pp. 12-27.

_____. "Understanding and Developing Combat Power." Unpublished paper, Fort Leavenworth, Kansas, 1984.

THESIS, INTERVIEWS, MEMORANDUMS, AND REPORTS

Bielefeld, William C., "Air Interdiction: Will it Support AirLand Battle?," Fort Leavenworth, KS: School of Advanced Military Studies, Command and General Staff College, 1986.

- Bond, Major John M. "Operational Cobra, AirLand Battle Doctrine, and Joint Attack of the Second Echelon." Master of Military Arts and Science, Fort Leavenworth, Kansas: Command and General Staff College, 1985.
- Busico, Major Roger P. "Battlefield Air Interdiction: Air Power for the Future." Master of Military Arts and Science Thesis. Fort Leavenworth, Kansas: Command and General Staff College, June 1980.
- Bradley, General Omar N., and Air Effects Committee Group, 12th Army Group. "Effect of Air Power on Military Operations: Western Europe." 1945.
- Craft, Lieutenant Colonel Douglas W. "Operational Art in the Western Desert Theater of Operations, 1940-43." Monograph, Fort Leavenworth, Kansas: School of Advanced Military Studies, Command and General Staff College, 7 May 1987.
- Combest, Major Michael L. "Apportionment and Tactical Airpower in AirLand Battle--An Evaluation of CAS, BAI and AI from an Operational Perspective." Monograph, Fort Leavenworth, Kansas: School of Advanced Military Studies, Command and General Staff College, 8 May 1987.
- Curran, Major John M. "Air Support for AirLand Battle." Monograph, Fort Leavenworth, Kansas: School of Advanced Military Studies, Command and General Staff College, 16 May 1986.
- Dalecky, Major William J. "Battlefield Air Interdiction by the Luftwaffe at the Battle of Kursk - 1943." Master of Military Arts and Science, Fort Leavenworth, Kansas: Command and General Staff College, 1980.
- A Draft Report Prepared for Sandia Laboratories Under Contract Number 07-5874. "An Historical Analysis of the Effectiveness of Tactical Air Operations Against, and in Support of Armored Forces." Dunn Loring, Virginia: Historical Evaluation and Research Organization, January 1980.
- Gardner, Gregory C. "Generalship in War: The Principles of Operational Command." Monograph, Fort Leavenworth, Kansas: School of Advanced Military Studies, Command and General Staff College, 4 May 1987.

- Hamilton, Major David. "Close Air Support and Battlefield Air Interdiction in the AirLand Battle." Master of Military Arts and Science Thesis. Fort Leavenworth, Kansas: Command and General Staff College, June 1983.
- Harned, Major Glenn M. "The Spirit of Au Gay: Putting the Air Back into AirLand Operations." Monograph, Fort Leavenworth, Kansas: School of Advanced Military Studies, Command and General Staff College, 12 May 1986.
- Headquarters, USAF. "Historical Data on Tactical Air Operations." Dunn Loring, Virginia: Historical Evaluation and Research Organization, 15 February 1970.
- Henderson, Major James B. "The 'Air' in AirLand Battle." Master of Military Arts and Science Thesis. Fort Leavenworth, Kansas: Command and General Staff College, 1982.
- Higgins, Major George A. "The Operational Tenets of Generals Heinz Guderian and George S. Patton, Jr." Master of Military Arts and Science Thesis. Fort Leavenworth, Kansas: Command and General Staff College, 1985.
- Holley, I.B. An Enduring Challenge - The Problem of Air Force Doctrine. Colorado Springs, Colorado: U.S.A.F. Academy, 1974.
- Hyten, Major Blaine W. "In Search of the Optimal Relationship: Air Interdiction to Ground Operation." Monograph, Fort Leavenworth, Kansas: School of Advanced Military Studies, Command and General Staff College, 2 May 1988.
- Ianni, Francis A. "Close Air Support for the Field Army." Master of Military Arts and Science Thesis. Fort Leavenworth, Kansas: Command and General Staff College, 1964.
- Izzo, Lieutenant Colonel Lawrence L., USA. "An Analysis of Manstein's Winter Campaign on the Russian Front, 1942-43." Monograph, Fort Leavenworth, Kansas: School of Advanced Military Studies, Command and General Staff College, 1986.
- Kuter L. S. Letter to Commanding General, Army Air Force, SUBJECT: Organization of American Air Forces, 12 May 1943.

Mock, Major David C., USA. "A Look at Deep Operations-
The Option of Deep Maneuver." Monograph, Fort
Leavenworth, Kansas: School of Advanced Military
Studies, Command and General Staff College, 31
December 1987.

Nophsker, Major H. G. "Perceptions of Fighter Strikes: An
Investigation in to Army and Air Force Officers'
Concepts of Close Air Support, Air Interdiction and
Tactical Air Control, Master of Military Arts and
Science Thesis. Fort Leavenworth, Kansas: Command
and General Staff College, 1976.

Poole, Major Thomas B. "The Effects of Interdiction in
World War II: The European Theater of Operations."
Master of Military Arts and Science Thesis, Fort
Leavenworth, Kansas: Command and General Staff
College, 1984.

Reeves, Lieutenant Colonel John M. "Rethinking the
application of the Army-Air Force Team on the Modern
Battlefield." Carlisle Barracks, Pennsylvania: U.S.
Army War College, 12 May 1978.

Rippe, Major Stephen T. "An Army and Air Force Issue:
Principles and Procedures for AirLand Warfare."
Master of Military Arts and Science Thesis. Fort
Leavenworth, Kansas: Command and General Staff
College, May 1985.

Steadman, Lieutenant Colonel Kenneth A. "A Comprehensive
Look at Air-Ground Support Doctrine and Practice in
World War II." Fort Leavenworth, Kansas: Combat
Studies Institute, 1982.

Streater, Major Donald A. "Air Power Theory and
Application: An Historical Perspective." Master of
Military Arts and Science Thesis, Fort Leavenworth,
Kansas: Command and General Staff College, 1980.