

# **DOES THE AIR FORCE SUPPORT ARMY COMBINED ARMS WARFARE?**

**A MONOGRAPH  
BY  
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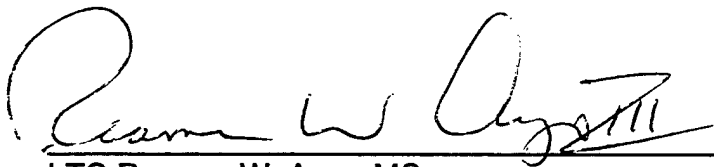
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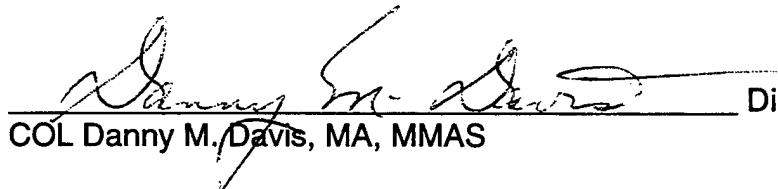
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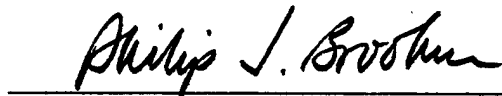
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## ABSTRACT

DOES AIR FORCE DOCTRINE SUPPORT ARMY COMBINED ARMS WARFARE? by MAJ Rick W. Schmidt, USMC, 45 pages.

Does Air Force doctrine support the Army's combined arms approach to tactical warfare? When national political objectives require the commitment of American land forces to the battlefield to achieve those objectives, then all other means of war should be brought to bear in support of the ground effort. The introduction of the infantry clearly implies a surface focus. As important as aircraft are to controlling the enemy's airspace, and the littoral stranglehold imposed by our navy in denying the enemy access to freedom of the seas, victory is only driven home to a recalcitrant enemy when a US infantryman is standing over him with a bayoneted rifle to his chest.

History has shown that a determined and resourceful enemy can overcome a more technologically sophisticated force. However, the enemy's strength, or will to resist is most affected when he stands face to face with the American infantryman, who as part of a finely tuned combat arms team, threatens him with certain physical destruction. It is the ground combat arms team which truly confronts the enemy with the naked moral aspect of war. This belief is the foundation from which the author explores the controversial issue of whether Air Force aviation doctrine adequately supports combined arms warfare in the US Army in pursuit of land victory and moral superiority.

## TABLE OF CONTENTS

	Page
Introduction.....	1
Chapter One COMBINED ARMS.....	6
Chapter Two AIR POWER- THEORY TO DOCTRINE.....	13
Chapter Three AIR FORCE DOCTRINE- A BURR IN THE ARMY SADDLE....	27
Chapter Four AIRLAND BATTLE AND THE AIR FORCE.....	35
Conclusion.....	42
Endnotes.....	46
Bibliography.....	51

## INTRODUCTION

Does Air Force doctrine support the Army's combined arms approach to tactical warfare? When national political objectives require the commitment of American land forces to the battlefield to achieve those objectives, then all other means of war should be brought to bear in support of the ground effort. The introduction of the infantry clearly implies a surface focus. As important as aircraft are to controlling the enemy's airspace, and the littoral stranglehold imposed by our navy in denying the enemy access to freedom of the seas, victory is only driven home to a recalcitrant enemy when a US infantryman is standing over him with a bayoneted rifle to his chest. History has shown that a determined and resourceful enemy can overcome a more technologically sophisticated force. He can avoid or outlast it until he finds a way to defeat it. However, the enemy's strength, or will to resist is most affected when he stands face to face with the American infantryman, who as part of a finely tuned combat arms team, threatens him with certain physical destruction. It is the ground combat arms team which truly confronts the enemy with the naked moral aspect of war. This belief is the foundation from which this monograph will explore the controversial issue of whether Air Force

aviation doctrine adequately supports combined arms warfare in the US Army in pursuit of land victory and moral superiority.

Army Field Manual 100-5, Operations, states the Army is a maneuver oriented force which "prefers to fight as a combined arms team."<sup>1</sup> FM 100-5 further states that maneuver is one of the Army's principles of war as well as one of four dynamics of combat power. As a maneuver oriented force, the application of combined arms is important to achieving decisive operations. Aviation is also a critical member of the combined arms team. Yet for various reasons, Air Force aviation has distanced itself over the years from the ground combat element in decisive operations.<sup>2</sup> One of the primary reasons for the Air Force growing distant from the Army close fight however, is their absolute belief that warfare applied in accordance with the early air power theorists is paramount. This belief has put the Air Force in direct conflict with the Army's approach to warfare.

Many air power proponents in and outside of the Air Force believe that air power is the dominant form of war today.<sup>3</sup> These proponents believe that air power can be decisive. Moreover, air power theorists believe air power will so completely dominate the battlefield that

ground forces may only be required to conduct mop-up operations.<sup>4</sup> Not only are integrated, combined arms operations with the Army unnecessary and undesirable, they are an inefficient use of air power and a distraction from air power's true capabilities when properly applied. Too often, combined arms operations with the Army put the Air Force in a supporting or subordinate role which is inconsistent with their doctrine. Evidence of this is found in the Air Force's relentless pursuit of combat mission "affirmative action" which states that since all services are equal, they (the Air Force) should occasionally be the supported effort as they execute their vision of warfighting.

What impact does this view have for the Army? Foremost is that there are fewer aviation assets from the Air Force available for influencing the close ground fight due to the Air Force's focus and resourcing on strategic attack and air interdiction.<sup>5</sup> This parochial focus has made it more difficult to integrate Air Force aviation into the ground scheme of maneuver at the tactical level. The Air Force, consistent with their doctrine, refuses to let the Army control any air assets that may be made available to support ground operations; while at the same time the Air Force would like to



control integration of the deep fight- missiles and air, to include the Army's attack aviation assets. This is problematic for the Army which has developed and increasingly uses its own attack aviation in order to gain more control and enhance flexibility to better shape the ground commander's entire Battlespace.

The debate over whether or not the Air Force does or should support Army combined arms operations at the tactical level is not a recent development. Air Force doctrine has been driven by the early air power theorists since WW II. Over the course of the last fifty years, doctrinal concepts such as air superiority first, centralized control of all air assets commanded by an airman, independent operations and decisive strategic attack, have lead the Air Force steadily away from directly supporting the soldier on the front to indirectly supporting him by fighting deep. Indeed, today the Air Force believes it may provide the ultimate support for the soldier- who need not risk his life because air power is decisive enough to bring the enemy to terms without him.<sup>6</sup>

Airmen have not always been of one mind concerning support of Army operations. Nearly all airmen believe air superiority and centralized control of air power are paramount. But to what degree air power should support

ground operations, and more importantly, how it should support ground operations has been hotly debated within the Air Force for years.<sup>7</sup> As recently as Desert Storm, the Joint Force Air Component Commander (JFACC), General Charles A. Horner, stirred up a hornet's nest when he declared the air main effort be directed in support of surface forces where "the ground commander sees that its needed."<sup>8</sup> This caused great concern with the strategic air power zealots who felt that Horner and other "tactical airmen" had been captured by the Army's AirLand Battle.<sup>9</sup> Today however, it would appear that doctrinally, the strategic air power proponents have prevailed.

To fully appreciate the problem of integrating the Air Force with Army combined arms operations, we will first establish what is meant by combined arms operations. Then we will look at the disparity between the two services concerning integration of the close fight, and how it grew to its present state. While the Air Force has not completely abandoned the soldier, it has abandoned the Army's doctrinal approach to warfare for the sake of its own style of waging war.

## CHAPTER 1

### COMBINED ARMS

To fully ascertain whether or not the Air Force supports Army combined arms operations (CAO), we must articulate the definition of combined arms and illustrate its methodology. Since CAO carries a slightly different meaning for each of the services, it must also be defined within the proper context.

FM 100-5, Operations, defines combined arms warfare as "the simultaneous application of combat, [combat support], and [combat service support] toward a common goal" in order to produce effects which are more powerful than the application of an individual arm.<sup>10</sup> Synchronizing all available weapon systems, including air-based platforms, in an attack from all directions is key to overwhelming the enemy. The goal is to reduce or eliminate the enemy's will to fight through the overwhelming impact of the combined arms effect.

The Marine Corps defines combined arms in the maneuver warfare context as the full integration of weapon systems in such a way that to counter one, the enemy exposes himself to another.<sup>11</sup>

Marine Corps doctrine distinguishes between supporting arms and combined arms. The principle difference is how supporting arms are brought to bear. The goal is to pose the enemy with a dilemma, as opposed to a problem. If the enemy are dug in and you call in an air strike followed by artillery to dislodge him, the enemy stays down to avoid the impact of both weapons systems. This synchronized employment of supporting arms faces the enemy with a problem to which he has a solution, even if he takes some attrition.

The combined arms solution puts the enemy on the horns of a dilemma. If the enemy encounters a minefield laid with Family of Scatterable Mines (FASCAM) which is covered by attack helicopters, then he is faced with a dilemma. To avoid the mines he must move slowly and maintain visibility. To avoid the helicopters he must move quickly and obscure visibility. His problem has no solution; either puts him in harms way.<sup>12</sup>

The distinction between combined arms and supporting arms is important for two reasons. First, combined arms requires no additional firepower, but will normally be more effective. If fighting outnumbered, or as a lighter force, the need to get the greatest possible effect from our fire support systems is paramount. Secondly, the synchronization of supporting

arms requires a great deal of deliberate planning and soldiers that are competent at employing their weapon systems. Training is important but there can be a tendency to focus on process- the synchronization process. To achieve the combined arms effect, competent soldiers and training are crucial to its success. Planning is important but the focus is on execution. The battle rarely develops as planned and the successful employment of combined arms on the fluid, modern battlefield must be second nature as a result of lessons learned as a combined arms team trained in the field.

The point is not to debate the difference between the Army and Marine Corps definition of combined arms. If the doctrinal manuals do not say exactly the same thing, at the tactical level soldiers and Marines understand how to integrate their fire support systems for maximum effectiveness. They also know it takes a great deal of training in the field to do so, especially when striving to integrate air-borne fire support systems (this term is unacceptable to the Air Force) or air power into the combined arms effort. For the Marine Corps, which has its own organic aviation, this is not a problem. Marine air functions as part of the combined arms team every day, owned and controlled by the Marine Air Ground Task Force commander. The Army however,

struggles to integrate Air Force tactical aviation into its combined arms team. Combined arms often is used to create or exploit an opportunity, or to avert a disaster; it may not have been deliberately planned. Supporting arms must be available for timely execution. Training together to achieve competent levels of execution, while an important goal, is all too scarce. Trying to integrate air that is centrally controlled by the air commander slows the ability of the ground commander to act before the enemy does. Air Force support for combined arms, as envisioned by the Army, receives the lowest priority because the Air Force does not believe that the "actual clash of men on the front" is the only or best way to wage war.<sup>13</sup> Indeed, they believe in most cases, that it is the most costly and least productive approach to warfare today.<sup>14</sup>

Air Force Doctrine Document (AFDD) 1, September 1997, presents the guiding principles of Air Force doctrine from the airman's perspective. Combined arms is not mentioned anywhere in the document. One of the themes of AFDD 1 is the concept of strategic perspective. Within this context "interdiction and surface maneuver can be mutually supporting" but for all air interdiction missions the JFACC is the supported commander. According to the Air Force, ground and air

commanders must cooperate in deciding which targets will be attacked, when, and in what fashion.<sup>15</sup> As mentioned, this makes it very difficult for the tactical ground commander to incorporate air power into combined arms operations on today's dynamic battlefield in a timely and responsive fashion.

In response to Martin van Crevald's discussion of combined arms in Air Power and Maneuver Warfare, the Air Force discussed its role in combined arms. First, it stated the objective of combined arms should be to create the conditions where an adversary of single arms is facing the integrated combined arms team of friendly forces. It acknowledges air power as "a powerful contributor to combined arms flexibility", further stating that air power can "do almost anything you can think of to support surface maneuver."<sup>16</sup> But true to the overriding theme that air power can be decisively employed as an independent arm, the Air Force also states "in its modern incarnation, air power is possessed of unique capability of almost being its own combined arms team."<sup>17</sup> So while it is true that the Air Force does have the capability to integrate into the Army's CAO, they do so on their own terms in the strategic realm; avoiding wherever possible, being drawn

into the combined arms fight at the tactical level in a support role.<sup>18</sup>

Whether one defines combined arms as the synchronization of supporting arms to bring overwhelming firepower upon the enemy or the selective use of one supporting arm to make the enemy more vulnerable to another, the integration of air power into CAO adds another challenging dimension. If the surface commander is given a mission leading to the accomplishment of an objective, then he must coordinate all his available supporting arms in the most efficient way to achieve maximum results at the time and place of his choosing. In a fluid and dynamic battle against a determined enemy, the commander can only do this most effectively if he controls those supporting arms. If aviation is integrated into the combined arms fight, then it is done so in direct support of surface maneuver and the ground commander's objectives. The battle may not progress as envisioned in deliberate planning. In response the commander must act quicker than the enemy to stay inside his decision cycle, utilizing all the tools of war at his disposal. But giving the ground commander the ability to effectively do this with Air Force aviation as part of the combined arms effort, puts the Army at odds with the Air Force from a doctrinal standpoint.



This doctrinal stalemate has been ongoing from the time  
the Air Force achieved independence from the Army.

## CHAPTER 2

### AIR POWER- THEORY TO DOCTRINE

Ever since the Army introduced the airplane as another weapon with which to wage war, controversy has arisen between the soldier and airman over how to best employ air power. The early airman, frustrated by the narrow minded, ground oriented soldier, struggled to free himself from the Army's grasp. Brigadier General William M. "Billy" Mitchell and other air power theorists suggested air power as a means of waging war that only they and other airmen could apparently appreciate. While other branches of service might have understood what the air power proponents were advancing, most would never be sold completely on all the promise of air power. Yet the Air Force, from its early beginnings to the present, has pursued a doctrine of warfighting that has often been in conflict with that of land warfare.

Needless to say, land warfare has clearly been affected by the development of air power much as it has been by the development of other technologies throughout history. When considering the importance of attack aviation to combined arms operations in both the deep

and close fight, one cannot help wondering where the Air Force fits in. Is not the Air Force supposed to fill that role for the Army? There is no simple yes or no answer. A brief discussion of the US Air Forces' doctrinal development on the employment of air power is necessary to understand the impact it has had on the US Army's doctrinal development of land warfare.

Current Air Force doctrine traces its roots to ideas best articulated by the Italian air power pioneer, Giulio Douhet. The key points of Douhet's theory may be summarized as follows:

1. There is no difference between soldiers and civilians in modern warfare.

2. Offensive land warfare can no longer be waged successfully.

3. Nations cannot defend against an air offensive. The first priority is to command the air. This means taking away the enemy's ability to fly while preserving one's own ability to do so without interference.

4. Nations must be prepared for first strike massive bombing against enemy population and economic and industrial centers in order to shatter the enemy's will to fight.

5. Air warfare will become the dominant form of warfare over land and sea warfare.

6. An independent air force maintained in a state of readiness and capable of operations independent from the army and navy is of primary importance.<sup>19</sup>

Mitchell, whom many consider the father of the US Air Force, espoused much of Douhet's theories. But there were some significant differences. While Douhet was focused primarily on the strategic use of air power utilizing bombers, Mitchell focused on every possible use of air power to dominate surface warfare. More important to Mitchell than strategic bombing was the "centralized coordination of air assets under the control of an autonomous air force command, freed from its dependency on the army."<sup>20</sup>

The independent air force concept was hotly debated within intellectual circles in and outside of the military up until 1947. The beginning of the end of the evolution of indivisible air power dates back to America's entry into W.W.II in Northern Africa against the Germans. When the US entered the North African campaign, its air forces were divided into an Army-controlled element and an Army Air Forces (AAF) element. By the end of the campaign however, control of all air power had been centralized under a single commander. There were two primary reasons for this: (1) The failure of Army commanders to properly employ their aviation

assets, and (2) the impact Great Britain's successful use of air power in North Africa had on the US.<sup>21</sup>

By the time the Americans entered the war in North Africa, the British had already garnered two years of combat experience. Cooperation between the Royal Air Force (RAF) and the British Army was not initially good and RAF performance was not particularly noteworthy. After the British failure to relieve Tobruk in 1941, the RAF made a serious attempt to improve cooperation with the British Army. Air Marshall Sir Arthur Coningham was brought in to command the West Desert Air Force (WDAF). He collocated his headquarters with the British Eighth Army and set up liaisons at all subordinate levels. Additionally, he employed the WDAF offensively in concentrated formations. Another principle that Coningham instituted was the centralized control of air power exercised through RAF channels in order to take advantage of the flexibility of air power and to prevent air assets from being ineffectively parceled out. The air headquarters would support the army but would not be commanded by the army. Coningham's success eventually won the admiration and support of the commander of the British Eighth Army, General Sir Bernard Law Montgomery, to the point that Montgomery completely embraced Coningham's principles.<sup>22</sup>

Coningham's successful employment of the WDAF would have a significant impact on US doctrine. In January 1943, in response to concerns over coordination of allied forces to include the effective use of air forces, Roosevelt and Churchill met in Casablanca and agreed to create a combined Mediterranean command. As a result, the allied tactical air forces were centralized under the Northwest African Tactical Air Force (NATAF) commanded by Air Marshall Coningham. Centralized control would prove to be critical due to two beliefs that significantly improved NATAF's impact in North Africa. The first was Coningham's belief in the importance of air superiority; this was a radical departure from Army Air Force (AAF) and RAF doctrine in which air forces attempted to use strategic bombing against Germany to cause her economic collapse without first attaining command of the air.<sup>23</sup> Coningham stopped defensive air umbrella operations and redirected offensive operations against Luftwaffe air fields claiming that "an air force on the offensive automatically protected the ground forces."<sup>24</sup>

Secondly, Coningham believed in massing air assets against any point target in the theater. He concentrated fighter air power, improved logistics and coordinated plans with General Doolittle's North African

Strategic Air Forces (NASAF). These actions proved to be very effective in supporting Montgomery's breakout from the Mareth Line. The concentrated use of allied air power was noted as decisive by German Field Marshall, Albert Kesselring.<sup>25</sup> Unfortunately, there was little air power for close air support operations. Army commanders protested bitterly but found no relief because Eisenhower was more concerned with keeping peace within the alliance and because both he and Churchill strongly supported Coningham's model on the use of air power.<sup>26</sup>

The AAF quickly capitalized on Coningham's success with centralized air power. In July 1943 the AAF published FM 100-20, Command and Employment of Air Power, which superseded all conflicting Army regulations particularly FM 31-35, Aviation in Support of Ground Forces, 9 April 1942, which governed tactical air support.<sup>27</sup> Interestingly, the new FM was supported by General Eisenhower, Prime Minister Churchill, and signed by General Marshall, Army Chief of Staff, but it was never coordinated through Lt. Gen. Lesley McNair and his Army Ground Forces staff in Washington.<sup>28</sup>

FM 100-20 reflected the successes of allied air forces in North Africa and became the predecessor to Air

Force Manual (AFM) 1. Its statements about command and employment of air power still ring familiar today:

1. Relationship of Forces- Land power and air power are co-equal and interdependent forces; neither is an auxiliary of the other.
2. Doctrine of Employment- The gaining of air superiority is the first requirement for the success of any major land operation.
3. Command of Air Power- The inherent flexibility of air power is its greatest asset. This flexibility makes it possible to employ the whole weight of the available air power against selected areas in turn; such concentrated use of the air striking force is a battle winning factor of the first importance. Control of available air power must be centralized and command must be exercised through the air force commander if this inherent flexibility and ability to deliver a decisive blow are to be fully exploited.<sup>29</sup>

The establishment of these basic tenets led to a statement of mission priorities:

16. Missions-a. The mission of the tactical air force consists of three phases of operations in the following order of priority:
  - (1) First priority- To gain the necessary degree of air superiority.
  - (2) Second priority- To prevent the movement of hostile troops and supplies into the theater of operations or within the theater.
  - (3) Third priority- To participate in a combined effort of the air and ground forces, in the battle area, to gain objectives on the immediate front of the ground forces.<sup>30</sup>



The Army Air Corps had finally succeeded in advancing their theory on the use of air power in written doctrine. Freeing themselves from the bonds of the "ground Army" and becoming separate but equal, the Air Corps could now aggressively pursue their own style of warfighting. Foremost, air superiority would have to be attained so that friendly ground forces could fight unimpeded from enemy air attacks. Second, the interdiction of enemy troops and supplies before they could engage friendly forces in the close fight was desirable to minimize friendly casualties and to reduce the enemy's will to fight. Third, the Air Corps would participate in a "combined effort" to defeat the enemy in the close fight. This is significant because even though support of the close fight is the third of three mission priorities, **it still infers the integration of air power with the ground scheme of maneuver.** The first two priorities of air superiority and interdiction would support and shape the close fight. Finally, to be able to do all of the above effectively and efficiently, an airman would have to centrally control and command all air assets.

Not everyone within the Air Corps was completely happy with FM 100-25. The air power zealots in particular felt that there was still too much of a

tactical focus and too little decisive strategic focus on the employment of air power. However, this would soon change. The Air Corps became an independent Air Force; and as technology improved, political and military intellectuals advanced the idea that through the use of air power, conflict could be decided decisively with little loss of life and material to friendly forces. Following improvements in technology Air Force doctrine continued to evolve, further advancing the ideas of centralized control and decentralized execution of air power, the decisiveness of strategic attack and the clear dominance of air power.

Today, the Air Force's number one priority has not changed. General Ronald Fogleman, as Chief of Staff of the Air Force, stated that air powers' top priority is "to gain control of the air- as much as we can, as fast as we can."<sup>31</sup> This is logical and any worthy ground commander would desire air superiority prior to engaging in ground combat. Indeed conceptually, air power's priorities are sound. It makes sense to gain air superiority first. Interdiction may either be conducted simultaneously with the achievement of air superiority or immediately following its attainment.

Today, interservice conflict originates in each services' doctrinal approach to warfighting.<sup>32</sup>

The United States must be capable of quickly seizing the initiative from an aggressor and decisively defeating him. The Air Force believes that air power now has "the potential to be the dominant and, at times, the decisive element of combat in modern warfare."<sup>33</sup> By maintaining a strategic perspective, the Air Force believes they are capable of quickly seizing the initiative and independently turning the halt phase of a conflict into a "decisive halt".<sup>34</sup>

One of the doctrinal functions of air and space power is the counterland function<sup>35</sup>. Interdiction and close air support fall beneath this function. Counterland operations can be conducted with or without friendly surface-forces present. "This independent or direct attack of adversary surface operations by air and space forces...is a key to success during operations to decisively halt an adversary during initial phases of a conflict." Air Force doctrine further states that "Joint force interdiction needs the direction of a single commander who can exploit and coordinate all the forces involved, whether air, space, surface, or information based."<sup>36</sup> The JFACC is the supported

commander who will accomplish this and will almost always be an Air Force officer.<sup>37</sup>

Close air support (CAS) is the second part of the counterland function that is most appreciated by the foot soldier in direct contact with the enemy. Air Force doctrine states that "CAS should be planned to prepare the conditions for success or reinforce successful attacks of surface forces. To be most effective, however, CAS should be used at decisive points in a battle..."<sup>38</sup> The Air Force maintains that CAS always has, and still is a high priority, but as General Fogleman has stated, "when you need CAS, something has gone terribly wrong with the battle plan."<sup>39</sup>

In the minds of most soldiers, whether or not the Air Force is capable of independent decisive warfare is a theoretical argument that has yet to be proved. More important to the soldier is the Air Force's willingness to integrate aviation into Army CAO once the Army is committed to the fight. Maneuver forces in the Army experience combat at its most intimate level- close combat. The traditional view is that once US ground forces are introduced to accomplish national political objectives (i.e., winning the nation's wars or conflict termination), all other weapon systems should be integrated in support of that effort. Why should

American fighting men die in close combat when airborne weapons systems are addressing targets that will make it harder for the enemy to buy milk,<sup>40</sup> or targets that simply may not now, or ever, impact him anyway?

An Army officer stands at the DMZ in Korea. He considers the carnage that will occur if the North Koreans attack again into South Korea. The officer wonders if the Air Force will be there for his troops which will be engaged in savage battle with the enemy. He contemplates that air superiority is important but if the North Koreans come pouring into South Korea should the Army stand by while the Air Force pursues its doctrine of Air Superiority? Shall they relax in their barracks while the Air Force imposes its will on the enemy thereby creating a "decisive halt" just North of Seoul? And if the Army is committed to combat, must the Corps Commander divert some of his resources for, and subordinate his plans to, the Air Forces' never ending pursuit of the validation of air power theory? That is not too much to ask of the American soldier is it? After all, he should not be in close combat anyway as long as the Air Force has been allowed to do its job and the Army leadership has not blundered and carelessly run into the enemy. Not to worry though, everyone makes mistakes and if one really needs CAS, then an Air Force

officer sitting in an air conditioned room full of computers, buttons, and candy wrappers, (and who can really empathize with that soldier in the foxhole) will decide if the request is supportable with the scarce CAS assets available.

A bit of an exaggeration? Clearly. But some perceptions are as close to reality as others are away. The difference between reality and perception is a matter of actual experience as much as to which doctrine one subscribes.

Like the Army, Air Force doctrine has evolved over the years. Yet Air Force doctrine has generally remained true to the central themes of the 1943 vintage of FM 100-25 and the early air power theorists. Today's doctrine thoroughly discusses the complimentary role air and space power can play in the joint environment.<sup>41</sup> The Air Force emphasis however, is on independent, decisive action with or without other forces. Since WW II, Air Force responsiveness to Army requirements has generally been slow. Armed with a deep commitment to the dominance of air power, improving technology, and their perceived victory and validation of air power theory in the "Mother of All Battles", the Air Force continues to pursue warfighting doctrine that is on a divergent path with its Army brethren. Current Army doctrine, based on

AirLand Battle, is a two dimensional approach to warfare developed from the ground up. Air Force doctrine, in reality, is somewhat non-supportive, and at times, in direct contravention with AirLand Battle. Air Force doctrine is a three dimensional approach to warfare, developed from the top down and when properly applied, theoretically negates the requirement for AirLand Battle.<sup>42</sup> Over the years, airmen have not done a good job of convincing the Army of the accuracy of their vision. For soldiers, some of these concepts are as much cause for concern today as they have been in the past.

## CHAPTER 3

### AIR FORCE DOCTRINE- A BURR IN THE ARMY SADDLE

Whether the Air Force perspective on warfare is valid or not, their rationale has not been lost on the Army. Since the early 1950s the Army has sought to demonstrate that the strategic perspective alone would not guarantee national security.<sup>43</sup> The struggle for service prominence and prestige aside, it is logical for the Army to attempt to maintain the capability for their field commanders to plan, execute and control the battle, as well as provide force protection within their AORs without the additional friction that is manifested by doctrinal differences to warfighting. Issues such as air defense, missile development, fire support coordination line (FSCL) placement, target selection and interdiction, the development and use of helicopters, and command and control of tactical aviation assets have been hotly debated throughout the years.<sup>44</sup>

As early as 1949 the Army Field Forces informed the Air Force's Tactical Air Command that it was no longer comfortable with the air-ground relationship as established in Field Manual 31-35, Air-Ground Operations.<sup>45</sup> The Army was concerned about the Air



Force's reluctance to deal with the close air support issue largely because the Air Force was not enthusiastic about the Strategic Air Command performing newly assigned tactical air warfare missions in support of land warfare in Europe.<sup>46</sup>

Command and control of tactical aviation was a major issue in the early years. The Army was not happy with its "coequal" status with the Air Force. General J. Lawton Collins, Army Chief of Staff in 1950, believed that Army field commanders down to the corps level should have operational control of close air support.<sup>47</sup> General Mark Clark, Chief of the Army Field Forces, wrote General Collins in 1951:

I consider that the traditional Air Force doctrine, which provides for coequal command status between ground and air at all but theater levels, constitutes a fundamental defect in command relationship. This doctrine of command by mutual cooperation is unacceptable because it reserves to the supporting arm the authority to determine whether or not a supporting task should be executed. The theory of divided command in the face of the enemy is foreign to the basic concept of warfare wherein the responsible commander exercises undisputed directive authority over all elements essential to the accomplishment of his missions.<sup>48</sup>

The Air Force maintained the position that air power was more than just close air support and insisted on the continued independent, centralized command of air power. The 1955 edition of AFM 1-2, United States Air

Force Basic Doctrine, stated that "all command arrangements must be in accord with the precept that neither air forces nor their field of activity can be segmented and partitioned among different interests."<sup>49</sup>

In early 1956, Army Chief of Staff, General Maxwell Taylor expressed his concern over the Air Force's ability to service targets and provide tactical air support based on their performance in WW II and Korea as well as their pre-occupation with strategic warfare.<sup>50</sup>

Taylor believed the Air Force was overly focused on developing weapons for general and tactical nuclear war in support of the strategy of massive retaliation. This strategy suggested that the key to success in limited war was maintaining a superior general war capability. Consequently, the Air Force designed its tactical fighters to deliver nuclear weapons and even discussed the elimination of conventional munitions.<sup>51</sup>

As a result of exercises that demonstrated the dominance of nuclear weapons on the battlefield and the rendering of maneuver as irrelevant, the Air Force ignored air-ground support in limited war- over Army objections.<sup>52</sup>

Meanwhile the Army continued with its attempts to persuade the Air Force to develop an aircraft that could be dedicated to close air support under the operational

control of Army field commanders. The Air Force balked on surrendering operational control of close air support, but they eventually did develop the A-10 specifically for the close air support role.<sup>53</sup>

While the Army continued to maintained pressure on the Air Force to provide close air support, it began to put together a visionary plan to increase the Army's ground mobility by developing its own organic aviation. General James Gavin in 1954 asserted that "the Army should develop helicopter-borne troop units that could operate in old-fashioned cavalry missions."<sup>54</sup> As director of Army aviation, Major General Howze expanded the requirements to include troop lift, resupply, MEDEVAC, reconnaissance, screening, security of open flanks, pursuit, and limited exploitation operations.<sup>55</sup>

The Air Force resisted any attempt by the Army to create a "second air force" insisting that it could meet all of the Army's aviation needs. By 1961 however, the Army received a boost from President Kennedy who felt it was important to modernize the Army and improve its "tactical mobility in any environment."<sup>56</sup>

A natural consequence of improving ground mobility through helicopter aviation was the arming of helicopters to provide fire support for Army ground units. Arming helicopters and the control of them

caused great concern for the Air Force who viewed it as both a violation of roles and missions and a costly duplication of Air Force capabilities. Lieutenant General Dwight Beach, commanding general of the Army Combat Developments Command, insisted however, that army aviation,

is part of land power. It provides us with a better means to do what armies have always had to do since time immemorial- close with and destroy the enemy, or break his will and force his surrender. Army aviation is not air power in any sense of the word, since air power involves air-to-air combat, the gaining of air superiority, air strikes deep in the enemy rear with strategic objectives, interdiction of the battle area, close air support by high speed tactical aircraft, strategic airlift of Army and other forces. Army aviation is not any of these.<sup>57</sup>

Furthermore, the Army distinguished between CAS and what it termed "direct aerial fire support". As explained by the Army, the difference was that fixed wing CAS called for penetration of a hostile environment to deliver heavy munitions on relatively stationary targets while direct aerial fire support provided by the attack helicopter was a complimentary part of ground firepower systems. The attack helicopter would operate in the front lines and flanks providing timely, all weather, highly accurate delivery of fires. The Army acknowledged the possibility of a small overlap between

CAS and direct aerial fire support, but stated "this overlap was considered necessary and desirable."<sup>58</sup>

The Air Force was not convinced by this "brilliant" explanation, but there was little they could do. Twenty years earlier the Air Force separated itself from the Army to pursue its own vision of warfighting- a vision which became doctrine founded on the theory of air power. Now through visionary leadership, aggressive campaigning and selective interpretation, the Army was compensating for an Air Force doctrine which the Army felt was inadequate in terms of its willingness and ability to adequately integrate itself into Army combined arms operations.

In 1975, the Army and Air Force agreed on the relationship of the attack helicopter and fixed wing close air support by announcing that the "attack helicopter was... an extension of organic firepower... employed with, or to the rear of, ground forces along the forward edge of the battle area (FEBA)... The Army and Air Force agree that the attack helicopter does not perform CAS."<sup>59</sup> Air Force CAS would be centrally controlled by the Air Force component commander and attack helicopters would be controlled by various ground commanders. This arrangement allowed the Army commander to control his own "firepower projected from the air" in

order to incorporate air platforms into combined arms operations in a timely and responsive manner.

The ground commander has traditionally been given the authority and responsibility to control and coordinate all the weapons of war in the execution of his assigned mission. Air power had become one of the more critical weapons of war available to the ground commander. Yet, as the Air Force and Army pursued their own approach to warfare, timely coordination and synchronization of air power into the tactical combined arms fight became much more difficult. Development of attack aviation by the Army brought the strength and flexibility of air power under the control of the ground commander. While it was a system that provided **supporting** fires to ground maneuver in the close fight, it was, moreover, a system that was flown by and for soldiers that had been trained in ground tactics and had trained as pilots with their ground counter-parts to effectively integrate into the combined arms fight. While Army attack aviation provided more flexibility to the ground commander, it did not completely replace the capabilities of Air Force tactical aviation. Technological improvements in weapons systems, sensors, targeting capabilities, command and control and the threat's doctrinal template for warfare lead the Army to

begin visualizing a much deeper battlefield extending well into the enemy's zone. Consequently, the Army, in cooperation with the Air Force, developed what became known as AirLand Battle doctrine to take advantage of these improvements in technology. "The logical end of doctrinal cooperation was a truly integrated air-land battle concept- a goal transformed into necessity by the nature of modern battle." <sup>60</sup> It would appear that the Army and Air Force had finally cooperated to bring the effects of modern combined arms to the battlefield. A closer look however, reveals that the same historical friction between the two services over their doctrinal approach to war and the command and control of all weapons systems in the combined arms fight had not abated. Indeed today, some believe this friction has been exacerbated by the current fiscal environment.

## CHAPTER 4

### AIRLAND BATTLE AND THE AIR FORCE

While the conflict between the Army and Air Force over cooperation and support of one another raged on in varying degrees, the Army continued to update its doctrine from an active defense to one that stressed integrated firepower (combined arms) and maneuver throughout the depth of the battlefield. Deep attack became paramount. "Collapsing the enemy's ability to fight by means of the wide range of Army systems and organizations on the deep battlefield" was critical to success.<sup>61</sup> Integrating combat systems of both the Army and Air Force was necessary to win. As General Don Starry, commanding general of the Army's Training and Doctrine Command stated: "... it is imperative that we completely integrate fixed and rotary wing antiarmor systems, and learn how to direct them in battle under command of a team leader, with whom they have trained extensively."<sup>62</sup>

The new doctrine was eventually termed AirLand Battle and its development implied cooperation and agreement between the Army and Air Force. From the Air Force' perspective however, AirLand Battle was



unilaterally developed by the Army. The Air Force's view is best represented by Major James Machos, an Air Force member of the AirLand Forces Application Agency, who stated "[The Air Force] does not acknowledge AirLand Battle doctrine as the sole governing principle for joint training and exercises, nor does it concede unequivocal primacy of AirLand Battle doctrine over established Air Force doctrine."<sup>63</sup>

After Desert Storm, each service felt that their doctrine validated its primacy over the other. The Air Force assessment is best articulated by Colonel Edward Mann who stated,

... air planners defined the military conflict without reference to surface operations plans but did so in such a way that the air campaign plan would eventually meld perfectly with schemes of surface maneuver to be developed later. This feat required a theater wide view (not the corps-level perspective of AirLand Battle) characteristic of people who knew how to gain leverage from the power of combat systems that can range the entire battlefield and beyond. These planners were air power people, steeped in the broad, strategic views of an independent Air Force and independent of and coequal with colleagues who worked from a two-dimensional perspective. If air power "zealots" had not inserted themselves into the planning process, the offensive air campaign plan likely would have developed in concert with the plans for ground operations during November 1990. It is also likely we would have suffered the 17,000-30,000 coalition casualties predicted by analytic simulations developed for AirLand Battle scenarios.<sup>64</sup>

Mann goes on to say that AirLand Battle is not necessarily bad doctrine when applied as intended-interactive combined-arms operations at corps-level and below. But it is a mistake to read AirLand Battle as joint doctrine for theater-level and strategic operations. In his view, AirLand Battle was developed from a two-dimensional perspective which defined air power only in terms of support for surface maneuver elements.<sup>65</sup>

Brigadier General Daniel Christman, the Army's Director of Strategy, Plans and Policy, had a different perspective. He stated that "General Schwarzkopf's employment of all elements of US military power in Desert Storm validates the AirLand Battle doctrine perfectly." Aerial bombing is not enough, "you need ground forces to seize and hold terrain."<sup>66</sup>

In addition to the CAS controversy, AirLand Battle highlighted the problem of command and control of the deep fight. The Apache helicopter, Multiple Rocket Launch System (MRLS) and Advanced Tactical Missile System (ATACM), systems that were in development when AirLand battle was first visualized, allowed the Corps Commander to significantly extend the deep battle. The normal corps area of influence became about 150 kilometers and its area of interest about 300

kilometers, both depending on METT-T.<sup>67</sup> This was considerably larger than in the past.

The Army's extension of the battlefield raises concerns within the Air Force which believes that the air component commander has the responsibility for location, identification and attack of targets beyond the FSCL. The ground component commander is the principle coordinator of all firepower inside the FSCL. According to the Air Force, the ground commander provides information on targets of interest to him, but the air component commander decides which targets to prosecute and provide battle damage assessments. Keeping the FSCL as far out as possible allows maximum flexibility and control for Army commanders but restricts the Air Force by fragmenting the theater air interdiction effort. The Air Force maintains that they must view the battle from a theater perspective and that "allowing each corps commander to 'call his own shots' would...replace the theater perspective with several narrow, possibly conflicting corps perspectives."<sup>68</sup>

For the Air Force to properly prosecute targets inside of the FSCL, they must coordinate with the ground commander. This, they say, restricts air power's inherent flexibility and infers a subordinate or supporting relationship which is in violation of their

doctrinal principles. Yet, they apparently have no problem in forcing the Army to move the FSCL in, requiring ground commanders to restrict their flexibility and control and place themselves in a subordinate or supporting role to the Air Force. In many airmen and soldier's minds this issue still has not been resolved.

Today, there still is movement within the Air Force to control all deep fires.<sup>69</sup> The Air Force would like to control all weapons beyond the 50 kilometer range including ATACMs and MRLS. The Army continues to oppose the Air Force's effort to take over deep operations.<sup>70</sup> The Army remains committed to deep operations because they do not trust the Air Force to service targets critical to them in a combined arms fight, in a timely manner.

The Army wants the Air Force to maintain the current A-10 capability for CAS. While acknowledging that CAS is a core mission, the Air force believes the Apache is capable of handling the mission more efficiently.<sup>71</sup> It is not an either/or issue. The Army believes both fixed wing and rotary wing CAS is complimentary and necessary.

The Air Force would like to end what it views as the "Army's dominate role in the joint force team and

its tradition of defining the battlefield as one continuous area."<sup>72</sup> Major General Charles Link, as Special Assistant to the Air Force Chief of Staff for Roles and Missions, represented the Air Forces' interest in "disconnecting air power from the land force commander's vision in a way that permits it to be employed not independently, but in more direct support of a joint force commander's war winning objectives. The Army's notion of jointness is: 'what is ours is ours, what is yours is joint'".<sup>73</sup>

Technology and AirLand Battle allows the Army to extend the battlefield significantly giving the ground commanders the ability to shape the battle for decisive victory. Air Power is an important part of AirLand Battle and requires extensive joint training to effectively integrate into Army CAO against a determined enemy. AirLand Battle however, puts the Army in a doctrinal struggle with the Air Force on how best to prosecute war. For the Air Force to properly support integrated CAO at the tactical level, the Air Force would have less time, if any, to focus on strategic attack; and would have to give up some control of assets to the ground commander. The Air Force would also have to concede control of much of the surface commander's deep fight to the Army. These actions are directly

counter to the Air Force's principles of decisive strategic attack, centralized control and the flexibility of air power to attack targets at will anywhere on the battlefield without the requirement of coordination with surface forces.

## CONCLUSION

On today's modern, dynamic, and fast paced battlefield, combined arms is critical to maneuver and moral dominance over the enemy. Effective combined arms allows the ground commander to create confusion and disorder by utilizing all his fire support systems, including air power, to put the enemy in a dilemma. The enemy cannot escape the combined arms effect. The ground commander stays inside the enemy's decision cycle through the effective use of combined arms, but to do this he must have control of his fire support systems to take advantage of, or to create, opportunities as they occur on the battlefield.

As long as soldiers are committed to battle in order to achieve national political objectives, there will be a need to close with and destroy the enemy. Deep strikes, or interdiction will not decisively stop a determined enemy. Integration of aviation into the combined arms close fight is the most difficult combined arms task to accomplish. It requires extensive training as part of the combined arms team in peace time. Once the battle has started and the deliberate plan thrown away, air power must be responsive to the needs of the ground commander who has "... cut to the heart of [the]

situation, recognize[d] its decisive elements and base[d] his course of action [upon it]."<sup>74</sup> The Air Force's Air Tasking Order and its 48-72 hour planning cycle is not supportive of these situations.<sup>75</sup>

The Army and Air Force have developed doctrinal differences to warfighting that are compatible only when mediated and meshed by the strong character of a joint force commander. Over the years each has developed concepts and weapons systems to support their doctrinal view of war. While there are numerous examples of cooperation between the two services, years of institutional bias and mistrust have influenced the development and employment of weapons systems, most notably Army attack aviation.

Officially, the Army views the role of its attack aviation and Air Force CAS as complimentary. But the Air Forces' continued emphasis on independent interdiction at the expense of integrated CAO and the increasing capability of the Apache has influenced Army thinking on the role and employment of that weapon system. With the broad range of capabilities the Apache possesses, the ground commander now has a weapon system which he can control that provides much of the same flexibility and firepower as Air Force tactical aviation within his Battlespace.



Each service's doctrine strictly applied in warfare is not compatible. If the Air Force is allowed to pursue war in accordance with its doctrine of air superiority, strategic attack and interdiction leading to the decisive halt, independent of AirLand Battle, then the Army is relegated to the mop up and stability operations of the Pentomic Era.<sup>76</sup> If the Army is allowed to pursue its AirLand Battle doctrine, then the Air Force is relegated to the pre-1947 era, violating its cardinal rule of centralized control and decentralized execution. However, "Doctrine [is] one thing; necessity [is] another."<sup>77</sup> History reveals that unforeseen demands upon air power may preclude airmen from prosecuting war strictly in accordance with their doctrine.<sup>78</sup>

The Air Force has not abandoned the Army but it is more strategically oriented and believes it can be decisive in the strategic realm. The Air Force believes that integration of interdiction is the JFACC's responsibility. They know that based on the performance of the attack helicopter in the close and deep fight in Desert Storm, the Army will continue to pursue the ability to operationally shape the tactical battle without restriction from the JFACC.<sup>79</sup>

And so the doctrinal battles rage on. Shrinking budgets and the uncertain geopolitical events of the

late 20th century may ultimately decide the issue,  
rather than either service's doctrine.

## ENDNOTES

- <sup>1</sup> US Army Field Manual 100-5, Operations (Washington D.C.: US Government Printing Office, 1993). The concept of maneuver and combined arms is discussed throughout the manual.
- <sup>2</sup> Robert F. Futrell, Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force, 2 vols. (Maxwell Air Force Base: Air University Press, 1989), 1:83.
- <sup>3</sup> John A. Warden III, "Employing Air Power in the Twenty-first Century," in The Future of Airpower: in the Aftermath of the Gulf War, ed. Richard H. Shultz, Jr. and Robert L. Pfaltzgraff, Jr. (Maxwell Air Force Base: Air University Press, 1992), 81.
- <sup>4</sup> A. J. Bacevich, The Pentomic Era (Washington D.C.: National Defense University Press, 1986), 39.
- <sup>5</sup> US Air Force Doctrine Document 1, Air Force Basic Doctrine (Washington D.C.: U. S. Government Printing Office, 1997) 26. Close air support in support of the ground battle is the last priority for employment of air power.
- <sup>6</sup> Ibid. 41-42.
- <sup>7</sup> Edward C. Mann III, Thunder and Lightning: Desert Storm and the Air Power Debates (Maxwell Air Force Base: Air University Press, 1995) 29.
- <sup>8</sup> Ibid.
- <sup>9</sup> Ibid. 28-29.
- <sup>10</sup> Field Manual 100-5, Operations, 1993.
- <sup>11</sup> Fleet Marine Force Manual 1, Warfighting (Washington D.C.: US Government Printing Office, 1989), 75.
- <sup>12</sup> William S. Lind, Maneuver Warfare Handbook (Boulder: Westview Press, 1985), 20-21.
- <sup>13</sup> Warden, "Employing Air Power in the Twenty-first Century," 62.
- <sup>14</sup> Ibid.
- <sup>15</sup> Air Force Doctrine Document 1, Air Force Basic Doctrine, 49.
- <sup>16</sup> Martin van Creveld, Air Power and Maneuver Warfare (Maxwell Air Force Base: Air University Press, 1994), 242-243.
- <sup>17</sup> Ibid. 242.
- <sup>18</sup> Air Force Doctrine Document 1, Air Force Basic Doctrine, 25-26. A tenet of air power is persistence which states that commanders must resist pressures to divert resources from strategic and operational missions to "other" efforts. Given enough time, air power will be decisive in the strategic/operational realm.

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- <sup>19</sup> Giulio Douhet, Command of the Air, trans. Dino Ferrari (New York: Coward-McCann, 1942), 3-69.
- <sup>20</sup> David MacIsaac, "Voices from the Central Blue: The Air Power Theorists," in Makers of Modern Strategy from Machiavelli to the Nuclear Age, ed. Peter Peret (Princeton: Princeton University Press, 1986), 631.
- <sup>21</sup> Stephen J. McNamara, Air Power's Gordian Knot: Centralized versus Organic Control (Maxwell Air Force Base: Air University Press, 1994), 7.
- <sup>22</sup> Ibid. 10.
- <sup>23</sup> Ibid. 16.
- <sup>24</sup> Albert F. Simpson, "Tactical Air Doctrine: Tunisia and Korea," Air University Quarterly Review 4 (Summer 1951): 11.
- <sup>25</sup> McNamara, Air Power's Gordian Knot, 18.
- <sup>26</sup> Ibid.
- <sup>27</sup> Ibid. 19.
- <sup>28</sup> Ibid.
- <sup>29</sup> US Army Field Manual 100-20, Command and Employment of Air Power, (Washington D.C.: US Government Printing Office, 1943), 1-2. Paragraph 2 continues: Air forces may be properly and profitably employed against enemy sea power, land power, and air power. However, land forces operating without air superiority must take such extensive measures against hostile air attack that their mobility and ability to defeat the enemy land forces are greatly reduced. Paragraph 3 continues: Therefore, air forces must be employed primarily against the enemy's air forces until air superiority is obtained. In this way only can destructive and demoralizing air attacks against land forces be minimized and the inherent mobility of modern land and air forces be exploited to the fullest. Therefore, the command of air and ground 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 command of the ground forces through the ground commander. The superior commander will not attach army air forces to units of the ground forces under his command except when such ground force units are operating independently or are isolated by distance or lack of communications.
- <sup>30</sup> Ibid. 10-11.
- <sup>31</sup> Patrecia Slayden Holis, "Making the Most of Air Power," Field Artillery, September-October 1996, 4.
- <sup>32</sup> Mann, Thunder and Lightning, 176.
- <sup>33</sup> Air Force Doctrine Document 1, Air Force Basic Doctrine, 1997, 41.

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<sup>34</sup> Ibid. 42 . The Air Force maintains that wars have traditionally been fought in three phases: halt the invading force, build up combat power and weaken the enemy, and then mount the decisive counteroffensive. Classically, the end state has been seen as the product of the counter attack. In the Air Force's "New View", the halt phase may be planned as the conflict's decisive phase, not as a precursor necessarily to a build-up of ground forces. The point of "decisive halt" is to force the enemy beyond their culminating point through the early and sustained overwhelming application of air and space power.

<sup>35</sup> Ibid. 48.

<sup>36</sup> Ibid. 49.

<sup>37</sup> US Joint Publication 3-56.1, Command and Control for Joint Air Operations (Washington D.C.: US Government Printing Office, 1994), II-2. The JFC will normally assign JFACC responsibilities to the component commander having the preponderance of air assets and the capability to plan, task, and control joint air operations. When joint operations are of the scope that require the establishment of a JFACC, the Air Force will almost always participate bringing with them robust aviation assets.

<sup>38</sup> Air Force Doctrine Document 1, Air Force Basic Doctrine, 1997, 50.

<sup>39</sup> Holis, "Making the Most of Air Power," 5.

<sup>40</sup> Warden, "Employing Air Power in the Twenty-first Century," 67. Discussing strategic attack, Warden states "It is imperative to remember that all actions are aimed against the mind of the enemy command." Attacks against enemy infrastructure or industry is done so independent of any effect they may have on surface forces. Theoretically, if the enemy economic infrastructure is so dependent upon the milk industry that attacking it will cause him to culminate, then air operations against this target is paramount.

<sup>41</sup> Air Force Doctrine Document 1, Basic Air Force Doctrine, 1997. This role is mentioned throughout the document.

<sup>42</sup> Charles D. Link, "The Role of US Air Force in the Employment of Air Power," in The Future of Air Power: in the Aftermath of the Gulf War, ed. Richard H. Shultz Jr. and Robert L. Pfaltzgraff Jr., (Maxwell Air Force Base: Air University Press, 1992) 83-87. General Link discusses the two vs. three dimensional approach to warfare and suggests that Giulio Douhet was correct in his belief that air power should be used not for protecting the Army, but rather, for winning the war. General Link believes that the war with Iraq vindicated Douhet.

<sup>43</sup> Bacevich, The Pentomic Era, 22.

<sup>44</sup> These issues have been discussed in numerous publications and articles and have been the subject of many debates at the US Army Command and General Staff College and School of Advanced Military Studies between representatives of all the services.

<sup>45</sup> Futrell, Ideas, Concepts, Doctrine, 1:307.

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- <sup>46</sup> Ibid.
- <sup>47</sup> Ibid. 1:308.
- <sup>48</sup> Ibid. 1:309-310.
- <sup>49</sup> Ibid. 1:406
- <sup>50</sup> Bacevich, The Pentomic Era, 88.
- <sup>51</sup> Futrell, Ideas, Concepts, Doctrine, 1:461-462.
- <sup>52</sup> McNamara , Air Power's Gordian Knot, 99.
- <sup>53</sup> The A-10 is considered an excellent weapon system by the Army. In fact, it is the finest specialized aircraft for antiarmor that has ever been built. It was designed largely for high-armor concentrations of the sort encountered in central Europe, although it has application elsewhere. After 1983, A-10 production was stopped. The inventory is projected to be reduced to 150 aircraft in service- all in the reserves.
- <sup>54</sup> Futrell, Ideas, Concepts, Doctrine, 2:176.
- <sup>55</sup> Ibid.
- <sup>56</sup> Ibid. 177.
- <sup>57</sup> Ibid. 190.
- <sup>58</sup> Ibid. 518.
- <sup>59</sup> Ibid. 530.
- <sup>60</sup> John L. Romjue, From Active Defense to AirLand Battle: The Development of Army Doctrine 1973-1982 (Washington D.C.: US Government Printing Office, 1984), 62.
- <sup>61</sup> Ibid. 44.
- <sup>62</sup> Futrell, Ideas, Concepts, Doctrine, 2:549.
- <sup>63</sup> Major James A. Machos, "TACAIR Support for AirLand Battle," Air University Review, (May-June 1984): 16-24.
- <sup>64</sup> Mann, Thunder and Lightning, 175-176.
- <sup>65</sup> Ibid. 176.
- <sup>66</sup> "Running War by the Book," Jane's Defence Weekly, International Edition, 6 April 1991, 537.
- <sup>67</sup> Machos, "TACAIR Support for AirLand Battle," 19.
- <sup>68</sup> Futrell, Ideas, Concepts, Doctrine, 2:554.
- <sup>69</sup> John Boatman, "US Forces Joust over Roles and Missions," Jane's Defence Weekly, International Edition, 21 January 1995, 10.

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<sup>70</sup> "The Battle for Superiority in US Roles and Missions," Jane's Defence Weekly, International Edition, 1 October 1994, 27.

<sup>71</sup> Boatman, "US Forces Joust over Roles and Missions," 27.

<sup>72</sup> "The Battle for Superiority in US Roles and Missions," Jane's Defence Weekly, 27.

<sup>73</sup> Ibid.

<sup>74</sup> Roger J. Spiller, Combined Arms in Battle Since 1939, ed. Roger J. Spiller (Ft. Leavenworth: US Army Command and General Staff College Press, 1992), xiv. Spiller is quoting George C. Marshall in his book *Infantry in Battle*.

<sup>75</sup> Douglas A. Macgregor, Breaking the Phalanx: A new Design for Land Power in the 21st Century (Westport: Praeger Publishers, 1997), 124-125.

<sup>76</sup> Bacevich, The Pentomic Era, 39.

<sup>77</sup> Michael D. Pearlman, "Close Air Support in World War II: The Roots of Tragedy in Operation Cobra," in Combined Arms in Battle Since 1939. ed. Roger J. Spiller (Ft. Leavenworth: Command and General Staff College Press, 1992), 148.

<sup>78</sup> Ibid.

<sup>79</sup> McNamara, Air Power's Gordian Knot, 134-149.

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