

## **Name that Doctrine!**

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The United States Air Force should name its doctrine. After teaching Air Power Theory and Doctrine for three years at the United States Air Force Academy, I echo a question that I have heard from dozens of cadets: "So, what is the current doctrine of the United States Air Force?" Unfortunately, the answer to that question is not a simple, "It is Global Reach, Global Power." Air Force doctrine is much more complicated than that. A longer doctrinal phrase or statement would be an excellent tool to teach United States Air Force doctrine to air power neophytes. At the very least, a doctrinal phrase would give students an umbrella or framework from which to learn.

The editor of the Air Force Academy Journal *Soldier-Scholar*, expressed a similar theme concerning Air Force doctrine in a 1994 editorial he dubbed, "Is There a Doctrine in the House?" He quotes, former Air Force Chief of Staff, General Michael J. Dugan, who said in 1994: "We write doctrine by the pound."<sup>1</sup> "By writing epics proclaiming our air power doctrine, we take it further away from and make it less meaningful for the people it affects the most; the warfighters and those who support them. ...We should ... be able to state the basic precepts of our doctrine in terms easily understood by the average airman."<sup>2</sup>

Colonel Dennis M. Drew, primary author of Air Force Manual 1-1, Basic Aerospace Doctrine of the United States Air Force, wrote back to the *Soldier-Scholar* to defend the manual he created. Colonel Drew said that Volume I of the 328 page, two volume set is only 19 pages long and that four critical paragraphs "... outline the essence of aerospace theory (doctrine)."<sup>3</sup> Unfortunately those four paragraphs are not articulated as such. They are spread through four pages and are not well known by air power neophytes. The last of the "four critical paragraphs" cited by Colonel Drew can be found half way through the document on page 9, paragraph 3-2. It states that "there is no universal formula for the proper employment of aerospace power in a campaign."<sup>4</sup>

Colonel Drew may be tight. There shouldn't be a "universal formula" or a catchy phrase that encapsulates Air Force doctrine, because it can make the implementation of that doctrine inflexible.<sup>5</sup> History bears this out. Doctrinal statements that are too rigid do not allow the flexibility required to overcome the fog of war -- the unexpected.<sup>6</sup> On the other hand, students of air power theory and doctrine still search for a phrase they can memorize and use as an umbrella that outlines the essence of air power theory and doctrine.<sup>7</sup> Why can't Air Force doctrine writers give it to them? Why can't they write a simple statement that is all encompassing and at the same time allows the flexibility required to overcome the fog and friction of war?<sup>8</sup>

General Dugan reportedly said in exasperation: "Ask a sailor about sea power, and he'll give you a speech on maritime strategy. Ask a soldier about ground power, and he'll tell you about AirLand Battle. But ask an airman about air power, and he'll tell you what time happy hour starts at the Club."<sup>9</sup> Can you succinctly explain the doctrine of the United States Air Force? As the course director of the United States Air Force Academy's Air Power Theory and Doctrine course, this author was able to ask this question many times to fellow officers, professors, guest lecturers, and instructor candidates. Those who participate in professional military education

seemed to all answer that it was covered somewhere in Air Force Manual 1-1. Others knew that at one time they must have been taught this, but, struggled for an answer that referred to Air Force regulations, or quoted the Air Force Mission - "to defend the United States through control and exploitation of air and space." No one was able to describe the doctrine of the United States Air Force. Most could only recite that easy to remember phrase, "Fly, Fight, and Win." General Dugan was right. The average airman does not know what the doctrine of the United States Air Force is because there is no way to articulate it succinctly.

At the 1996 Air and Space Doctrine Symposium, General Ronald R. Fogleman, Air Force Chief of Staff, said that "all airmen should understand -- and be able to explain ...air power theory."<sup>10</sup> A doctrinal phrase would make this task an easier one, but would it make our doctrine inflexible? A review of over 50 years of experience shows that doctrinal phrases can be inflexible, but this does not mean that they should be eliminated. They should just be less restrictive. A doctrinal statement must be broad enough to encompass all that the Air Force can do and what it can do in the future.

The earliest efforts to develop air power doctrine in the United States date back to 1926 when the Air Corps issued Training Regulation 440-15, Fundamental Principles for the Employment of the Air Service. Not surprisingly, this document was heavily influenced by ground combat arms officers and called for the air corps "to aid the ground forces to gain decisive success."<sup>11</sup> At this point in time, our air power forefathers would have required great fortitude to get the old guard within the Army to accept anything else. Although Italian Air Marshal Giulio Douhet and our own General William (Billy) Mitchell advocated separate air services, the idea did not come to fruition in the United States until over twenty years later. Air power remained subservient to the Army, and the air doctrine reflected this structure.

During the late twenties and early thirties, the Air Corps Tactical School's (ACTS) Department of Air Tactics and Strategy worked doctrinal issues. Located first at Langley Air Field, Virginia, and then Maxwell Air Field, Alabama, strategists created a unique working doctrine. It specified that the "... mission of air power, when its equipment permits, is the attack of those vital objectives in a nation's economic structure which will tend to paralyze the nation's ability to wage war and thus contribute directly to the attainment of the ultimate objective of war, namely the disintegration of the hostile will to resist."<sup>12</sup> "Strategic bombing" was to be the doctrine of the Army Air Corps.

### **HADPB Over Europe**

The operational doctrine<sup>13</sup> that evolved from this statement was called high-altitude, daylight, precision, bombing (HADPB) and was the Air Corps' primary strategy<sup>14</sup> at the start of World War II.<sup>15</sup> The issues behind the development of this operational doctrine are worthy of discussion because they tend to reappear during the evolution of subsequent doctrines.

During this time period, the Defense budgets were small due to the depression and the downsizing that occurred after the First World War. "With an austere budget and better bomber performance, pursuit aviation lost ground." By 1937 the B-17 was the fastest bomber<sup>16</sup> and a "flying fortress." Strategists at ACTS believed that "no barrier can be interposed to shield the

civil populace against the airplane."<sup>17</sup> The flying fortress was believed to be able to defend itself with its many guns poised in defensive flying formations. Equipped with the "Norden" bomb site, the B-17 was going to be able to provide a surgical, rather than a sledgehammer approach to winning wars. The weapon of choice was unescorted heavily armed B-17s.<sup>18</sup>

Backed up by Italian Air Marshal Giulio Douhet's theory of massive surprise offensives, strategists in the United States believed in unescorted HADPB. Douhet said that "...considering the suddenness of the attack, it is unlikely that the enemy would have time enough to parry the blow effectively either in the air or from the ground. Whatever he might be able to do, in general he could oppose the attack with no more than a fraction of his air forces."<sup>19</sup> It was theorized that bombers in tight formations would have enough firepower to get through to their targets. Primarily because of a lack of money, unescorted HADPB was going to be the operational doctrine of the United States going in to World War II.

In the Summer of 1940, strategic bombing was put to the test by the German Luftwaffe as they attacked the British Isles. The Royal Air Force's historic defensive effort became known as "The Battle of Britain." If it were not for the Royal Air Force (RAF), the Luftwaffe would have gained air superiority over England and moved forward with Operation Sea Lion -- German amphibious landings on the shores of Britain. With hindsight, analysts believe the culminating point of the Battle of Britain was when Hitler decided to move away from the Luftwaffe's relentless attacks against RAF airfields and begin concentrated bombing of London.<sup>20</sup> "Whatever the reasons, all would have been to no avail if the British had not been capable of taking advantage of their stroke of good fortune."<sup>21</sup> The RAF was able to receive warning with enough time to successfully engage Luftwaffe bombers and their escorts.<sup>22</sup> The RAF's flexibility to adapt to a defensive operational doctrine and strategy prepared them for the successful defense of Britain.

Unfortunately, the RAF's success at intercepting bombers did not change the unescorted HADPB plans of the United States; nor did the RAF's lack of success in their first attempts at strategic bombardment. Like the Germans, "the RAF met the same stiff resistance and [had] the same lack of success. They turned to night operations and found that night bombing decreased both effectiveness and losses."<sup>23</sup> Undaunted, the Americans pressed on and had about as much success as the Germans and the RAF. Daylight operations proved costly both in men and material. The Americans were operating on the fundamental assumption that bombers alone could attack and return from their targets with acceptable losses.<sup>24</sup> One of the first operations for the Army Air Forces were the German U-boat construction yards. The loss rate at the U-boat pens in Kiel was 43% (26 B-17s lost out of 60).<sup>25</sup>

October 1943 became known as "Black October" with loss rates continuing at an unacceptable rate. From 8 - 14 October, 1,342 sorties over Germany resulted in 152 bombers lost for a loss rate of 11%. This figure combined with 42% major or minor <sup>26</sup>damage results in over 50% lost or damaged. The operational doctrine of the Army Air Forces had failed in practice. Unescorted HADPB was too restrictive as a doctrinal statement. Operations were suspended for four months.

The operational doctrine of unescorted HADPB was changed to escorted HADPB. Although "putting belly tanks on the Thunderbolts [P-47 Pursuit aircraft] for longer range seems simple enough ... the program was complicated by tactical considerations." Initially, 75 gallon drop

tanks were used to save the distance crossing the English Channel, but, that was not enough. It was the Fourth Group of the Eighth Fighter Command that "... took a chance and carried their tanks inland, holding them to the moment of combat. With this ... demonstrated, larger tanks were requested and became available." Escort was now possible as far as Kiel and Stuttgart, and round trip escort to Berlin became possible after the arrival of the P-51 Mustang in March 1944.<sup>27</sup>

The most significant change to occur during this hiatus, however, was the change in escort tactics. Escort aircraft had been ordered to stay with the bomber formations and defend them. This allowed the German Luftwaffe to play a cat and mouse game with our pursuit aircraft as they attacked and ran much like guerrilla war fighters. When that tactic was changed and pursuit aircraft were encouraged to leave the bomber formations, the Luftwaffe was hunted down and destroyed.<sup>28</sup> With pursuit aircraft on the offensive, well trained and experienced Luftwaffe pilots became scarce. German pilot training could not keep up with the resulting attrition and soon the skies over Europe were dominated by the allies.

In hindsight it would seem that many lives and aircraft were wasted with an operational doctrine of unescorted HADPB. We should have waited for the P-51, or attacked targets that were in range of our existing escorts. This analysis, however, is incomplete because it ignores the impact that the bombing raids did have on German morale, and more importantly on German war making capability including the Luftwaffe's new jet fighter. The fact remains, however, that unescorted HADPB was an inflexible operational doctrinal statement. In order to be effective over Europe, it had to be changed along with the tactics used by pursuit aircraft. It was the subsequent attrition of experienced Luftwaffe pilots that eventually led to allied success. Air superiority was the key to success.

### **Strategic Bombing And The Pacific Campaigns**

In the Pacific theater the results of HADPB were very similar. When HADPB was used in the Southwest Pacific campaign for example, the Japanese ships were able to outmaneuver the high altitude bombers by steering in zig zag patterns during attacks. After a change in command, the operational doctrine of HADPB was scrapped again. Major General George C. Kenney, known for his ability to motivate young airmen, let his young aviators use a little "Yankee ingenuity" to solve their problems. The Fifth Air Force soon started using several new tactics to interdict Japanese shipping. Instead of dropping bombs from high-altitude, General Kenney had his bombers flying at low altitude so that his crews could skip, like a rock on thrown on calm waters, their bombs into the side of enemy ships. To fend off ground fire, .50-caliber machine-guns were added to the nose, each side, and the top of each B-25. Enemy airfields were attacked with another new weapon -- the "parafrag." The "parafrag" was a parachute retarded fragmentation bomb that allowed bombers to come in at low altitude, release their weapons, and escape the blast.<sup>29</sup> The new 5th Air Force strategy led to the results that General Billy Mitchell envisioned 15 years earlier -- unaided by naval forces, enemy fleets could be destroyed with air power.

Meanwhile over Japan, the B-29s of the 21st Bomber Command stopped using HADPB because of poor weather and the jet stream over Japan. The combination of these two factors and the fact that incendiary weapons were able to take advantage of the light wooden construction of

Japanese homes around industrial areas, led to another key change. Major General Curtis E. LeMay directed his bombers to navigate at night via radar, and fly at low altitude to avoid medium to high altitude anti-aircraft fire. Since incendiary bombing did not require precision strikes and the Japanese did not have effective low altitude anti-aircraft weapons, the B-29s of the 21st could fly at night and in poor weather and still accomplish their mission. When the weather was good a few precision missions polished off remaining targets.<sup>30</sup>

The coup de grace came with the atomic strikes on Hiroshima and Nagasaki. The attention that these new weapons received over shadowed the inflexibility of HADPB and actually enhanced the doctrine of "strategic bombing" after World War II.<sup>31</sup> Another contributing factor favoring strategic bombing was the drawdown after the war. A cost effective way to maintain national security during a drawdown was to build up a capability that only the United States possessed and everyone else feared -- strategic "nuclear" bombing. Just like the period between the World Wars, the defense budget was small and once again it impacted air power doctrine. Furthermore, strategic nuclear bombing was not just an economical way to use air power, it "... changed all the rules. No longer did we field forces to fight wars. Our goal (doctrine) was to prevent them."<sup>32</sup>

The downside was that the United States Air Force entered the Korean War in 1950 with a doctrine that left it ill prepared for conventional (non-nuclear) conflicts. If the objective in Korea were complete annihilation of North Korea, then the United States Air Force had the right doctrine, force structure, and training. It could have delivered enough nuclear firepower to ensure that no one survived. But the United States was not prepared to implement that doctrine. The Korean War was going to be different. The objective was not the defeat of North Korea, it was to "repel attack ... to restore peace ... and to avoid the spread of the conflict."<sup>33</sup> It was a "limited war," because many thought that North Korea was backed by the Chinese and the Soviet Union. If the United States used its strategic bombing capability, it might lead to Soviet involvement and World War III. The doctrine of deterrence through strategic bombing did not work in Korea, and it was hard to support a conventional conflict with a force structure created to support strategic nuclear bombing.

Once again, a far too restrictive doctrine resulted in the loss of many lives. With a doctrine of strategic bombing and a shrinking budget, tactical air power was virtually ignored. Force structure, planning, and exercising for a conventional conflict had not been accomplished in the detail required for the Korean War, General Otto P. Weyland, the Commander of the Far East Air Forces from 1951 to 1953, summarized the state of Air Force readiness for this type of conflict when he said: "An astounding facet of the Korean War was the number of old lessons that had to be relearned."<sup>34</sup> We were not ready for a conventional conflict.

The lack of preparation for a conventional conflict caused several problems, not to mention the lack of a truly "joint" command structure. Although the commander of Far East Command, General Douglas MacArthur had been directed to implement a joint command and control structure, he ran an Army command, and the coordination of air power assets suffered as a consequence. The lack of cooperation between the Air Force and the Army, and coordination with the Navy and Marine Corps aviation units resulted in the poor execution of the air campaign. The hard lessons learned in North Africa<sup>35</sup> during World War II had been forgotten. With the geographic assignment of air power, all of these lessons had to be relearned the hard

way. Air power is more effective when there is unity of command. One "joint force"<sup>36</sup> commander can produce a synergistic effort that makes the best use of all assigned assets. One centralized commander can mass his forces when necessary and implement a persistent campaign against particularly hard sets of targets.<sup>37</sup>

Unfortunately, the hard lessons learned again in Korea were quickly forgotten after the fighting stopped in the summer of 1953. The politics of the period is best characterized by a comment made by the Secretary of the Air Force, 1950 -1953, Thomas K. Finletter, "the Korean War was a special case (an anomaly) and air power can learn little from there about its future role in United States foreign policy."<sup>38</sup> Finletter's statement is not surprising considering that President Eisenhower promised to demobilize and simultaneously contain the spread of communism with a policy called "Massive Retaliation." Once again, the most cost effective way to maintain national security during a drawdown was to depend on an inflexible doctrine of strategic "nuclear" bombing.

Subsequently, the military was trained and equipped to fight a nuclear war with the Soviet Union, not another limited war in Asia. The majority of the military budget was devoted to the "strategic" air force, and once again the tactical air forces began to deteriorate. In fact, supposedly "tactical" aircraft like the F-100 series of aircraft were essentially vehicles designed to deliver nuclear weapons. As a result, the United States Air Force was not prepared to fight a conventional conflict and had to reinvent tactical air power again in Vietnam. If President Johnson had not feared Chinese and Soviet involvement in the war, then he may have used all out conventional strategic bombing to destroy Hanoi's capacity to fight. But, much like Korea, the United States was not prepared to use its stated air power doctrine. A doctrine which had left the United States with a hollow force, and ill prepared for a conventional conflict.

The real gem that came from the rubble of the Vietnam War was the fact that the United States Air Force was forced to develop its conventional capabilities again. Vietnam became a proving ground for organic Army aviation assets, electronic warfare, and smart weapons. Strategists went back to work and did not concentrate singularly on strategic nuclear bombing doctrine but conventional doctrine as well. As a result, AirLand Battle doctrine was born. Based on nonlinear battles or deep attacks through fire and maneuver, the advent of AirLand Battle doctrine may have been one of the keys to success of Operation Desert Storm in 1991. An Army and Air Force joint endeavor, AirLand Battle worked on integrating air assets into the land battle effort.<sup>39</sup> The close cooperation between the Army and the Air Force showed during the execution of Desert Storm. Close air support and air interdiction efforts seemed to work hand in hand with Army operations during the battle.

The real key to success, however, was the attainment of air superiority at the outset of the war. The initial strike was started by a Special Forces attack on one small portion of Iraq's integrated air defense system. With one part of the system blinded, coalition assets were able to stream through into Iraq and attack key command and control centers. It wasn't long until Iraq was virtually blind to attack and unable to coordinate any serious defensive counter air attacks. Like World War II, when air superiority was achieved, strategic bombing, air interdiction, and close air support efforts could continue with near impunity.

Unlike previous wars, the United States Air Force entered into Desert Storm without strictly adhering to a doctrine of strategic bombing. The doctrine was more flexible and reflected improvements from previous conflicts. For once the United States Air Force seemed to be fully prepared. They did not have to scramble and coordinate anew, they were prepared with a force structure, plans, and the training necessary to execute those plans.

### **A Doctrinal Statement**

Today, the leadership of the United States Air Force is looking to replace current Air Force doctrine embodied in Air Force Manual 1-1, with a new doctrine document entitled Air Force Doctrine Document 1. There are a few changes, but none that will make Air Force Doctrine any easier to remember. The biggest addition, is an emphasis placed on the Air Force's "Five Core Competencies."<sup>40</sup> These competencies could easily be transformed into a doctrinal statement.

The five core competencies are the cornerstones of the Air Force's capabilities. They are the essence of what the United States Air Force must be able to do in order to support United States Joint Doctrine. They do not rely on just one aspect of air power capability (i.e. Strategic Bombing). They advocate a well-rounded Air Force that should be able to fight traditional wars as well as operations other than war.<sup>41</sup> They take "Global Reach, Global Power" one more step and describe exactly what is needed to achieve "Global Reach, Global Power, Global Readiness & Sustainment."

Articulated as a doctrinal statement, the five core competencies could make Air Force doctrine easier to remember. The five core competencies could act as an umbrella or as an infrastructure in which the rest of our doctrine could be built. Done in this fashion, young airmen might be able to not only remember what their doctrine is but understand their role in the larger picture. There is no better reason to adopt a doctrinal phrase.

A possible doctrinal statement could be "To achieve Global Reach, Global Power, Global Readiness & Sustainment, the Air Force is committed to the achievement of Air & Space Superiority, Precision Employment, Information Dominance, and Global Mobility." A bit lengthy, but something that could be memorized. After all, since modern day airmen already have the "global thing" pretty much committed to memory, what's twenty more words if you want the average airman to know the doctrine of the United States Air Force?

### **Notes**

1. Martin, Steven W., Captain, USAF, "From the Editor: Is There a Doctrine in the House?" *Soldier-Scholar*, vol.1, no. 1, (Fall 1994): p2.
2. Martin, p2. Captain Steve Martin was the Course Director of the United States Air Force Academy's Air Power Theory and Doctrine Course in 1993.
3. Drew, Dennis M., Colonel, USAF, (retired), "Air Lines-Letters to Soldier-Scholar," *Soldier-Scholar*, vol.1, no. 2, (Spring 1994): p3. Colonel Drew is a Professor and Associate Dean of the Air Command and Staff College, Maxwell Air Force Base, Alabama.

4. Air Force Manual (AFM) 1-1, Basic Aerospace Doctrine of the United States Air Force, vol. 1, March, 1992, p. 9.
5. One of the key tenets of aerospace power is flexibility. For more information see AFM 1-1, vol. 1, March 1992, P. 8, figure 2-2.
6. Clausewitz, Karl von, War, Politics and Power, edited by Collins, Edward M., Colonel, USAF (A Gateway Edition, Regnery Gateway, Chicago, Illinois, 1962): 131-135. Clausewitz concept of "fiction" in war or the "fog of war" is a lot like "Murphy's Law," no matter how good your plans are something always seems to go wrong. Also see: Heintz, Robert, Debs, Jr., Colonel, USMC (ret), Dictionary of Military and Naval Quotations, (Naval Institute Press, Annapolis, Maryland, 1966): p 121. The earliest reference so far encountered to "the fog of war" is by Chevalier Folard in "Nouvelles Decouvertes sur la Guerre," (New Discoveries about War) in 1724. "The coup d'oeuil is a gift of God and cannot be acquired; but if professional knowledge does not perfect it, one only sees things imperfectly and in a fog."
7. For more information on making doctrine easier to remember see: I.B. Holley, Jr., Major General, USAFR, (retired), "A Modest Proposal: Making Doctrine More Memorable," Air Power Journal, vol. IX, no. 4, (Winter 1995): p. 14-20. Both former Air Force Chiefs of Staff, General Michael J. Dugan, and Merrill A. McPeak advocated brief doctrinal publications so that each and every airmen could understand the doctrine that they are working under. The brief doctrine manual issued in 1992 (AFM 1-1, vol. 1) was not the first short edition of Air Force doctrine. This idea was tried over forty years ago and according to Major General Holley's article referenced above, "this approach didn't work. It resulted in a lot of unread pamphlets and a mass of wastepaper." Neither of these publications used a short umbrella type doctrinal statement.
8. Clausewitz. P 131.
9. Meilinger, Philip, S., Lieutenant Colonel, USAF, "The Problem With Our Airpower Doctrine," Air Power Journal, vol. VI, no. 1, (Spring 1992): p. 25.
10. Fogleman, Ronald R., General, USAF, Speech to the Air and Space Doctrine Symposium, "Aerospace Doctrine-More than Just A Theory," <http://www.cdsar.af.mil/doctrel.html>, 30 April 1996, Maxwell Air Force Base, Alabama.
11. Mowbray, James A., Dr., "Air Force Doctrine Problems," Air Power Journal, vol. IX, no. 4, (Winter 1995): p. 23-30.
12. Mowbray, p. 23.
13. See AFM 1-1, vol. 2, March 1992, p. 274-305, for the exact definitions of doctrine, basic doctrine, operational doctrine, and tactical doctrine. Generally the difference is in the level of detail and the scope of the operation (i.e. basic doctrine pertains to the use of aerospace forces in war, operational doctrine pertains to the use of aerospace forces in a campaign or major operation, and tactical doctrine pertains to the use of aerospace forces in engagements or battles.)



14. For more information on doctrine and strategy see: Smith, James M., Senior Editor, Air Power Theory and Doctrine (Kendall/Hunt Publishing Company, Dubuque, Iowa, 1995) p.28-37. It should be noted that there is a difference between doctrine and strategy. Doctrine is what we officially believe, say, theorize as the best way to operate. Doctrine is a departure point for operations. Whereas, strategy is what we are indeed capable of, and it is a plan of action. In this case, "operational doctrine" became a campaign "strategy" when it was determined that we had the capability to execute it.

15. Werrell, Kenneth P., "The Strategic Bombing of Germany in World War II: Costs and Accomplishments," *The Journal of American History*, vol. 73, no. 3, (December 86): p 704.

16. Jablonski, Edward, *Flying Fortress* (Doubleday & Company, Inc., Garden City, New York, 1965) p.xx-xxi. One other important fact during this time period was that bomber development had surpassed the development of pursuit aircraft. Bombers were being developed that could overtake pursuit aircraft.

17. Wolk, Herman, S., *Planning and Organizing the Postwar Air Force, 1943-1947* (Office of Air Force History, United States Air Force, Washington D.C., 1984) p. 17-20.

18. It should be mentioned that unescorted HADPB was not universally accepted. There were those who believed that bombers could be intercepted and their missions disrupted. One of those was Major Claire L. Chennault of the United States Army Air Corps, who said in 1934 that the "preparation for ... [the next war] must consist of providing an effective defense against hostile bombardment as well as the provision of a counter striking force." His paper, "The Role of Defensive Pursuit" demonstrates that a good "Air Defense Information Group," (Indications and Warning network) can be set up in order to provide enough warning time for pursuit aircraft to intercept enemy bombers. Major Chennault cites several case studies as examples. His first set of examples are from Europe, where the Germans, Italians, and the British were creating similar command and control networks. What drives Major Chennault's theme home were the exercises conducted in Fort Knox Kentucky. In May 1933, the Army Air Corps tested the Air Defense Information Group theory and found that the system worked. Chennault, Claire, L., Major, Army Air Corps, "The Role of Defensive Pursuit," 1934, p 7- 28.

19. Douhet, Giulio, *The Command of The Air* (Office of Air Force History, Washington D.C., 1983) P. 49-55.

20. For more information see: Smith, James M., Senior Editor, *Air Power Theory and Doctrine* (Kendall/Hunt Publishing Company, Dubuque, Iowa, 1995) p. 177-192. The two articles in this book are written by three Royal Air Force (RAF) pilots, one who participated in the Battle of Britain. The other two RAF pilots were instructors at the Air Force Academy and collaborated to write an analysis of the Battle of Britain. They said: "A minor RAF bombing raid on Berlin so incensed both Goering and Hitler that they ignored all counter-proposals and sought revenge on London. The Luftwaffe's intelligence network was poor; in wishing to placate Goering and Hitler's impatience, they prematurely pronounced the defeat of the RAF."

21. Smith, James M., Senior Editor, *Air Power Theory and Doctrine* (Kendall/Hunt Publishing Company, Dubuque, Iowa, 1995) p. 183. The authors are referring to the RAF's flexibility and their ability to have centralized control with decentralized execution. This was one of the keys to the success of the warning system that the British created. Both flexibility and centralized control with decentralized execution are referred to as key tenets of aerospace power in AFM 1-1, vol. I, (March 1992): p. 7.
22. Another key aspect of the defense of Britain was the RAF's use of radar. The Germans, to their chagrin, did not exploit this developing technology as well. One decision that ultimately proved very costly.
23. Werrell, p. 704.
24. Davis, Richard, G. "German Railyards and Cities, U.S. Bombing Policy 1944-45," *Air Power History*, vol. 42, no. 2, (Summer 1995): p.47.
25. Smith, Myron J., Jr., *Air War Chronology, 1939-1945, Vol. III, 1943: The Interim Year Part II, May-July*. Manhattan, KS: Aerospace Historian.
26. Emerson, William, R., 1988. *Operation Point Blank: A Tale of Bombers and Fighters*. In *The Harman Memorial Lectures in Military History, 1959-1987* ed. Lieutenant Colonel Harry R. Borowski. Washington D.C.: Office of Air Force History. P. 442 445.
27. Kepner, W.E., Major General, AAC. VIII Fighter Command, *The Long Reach: Deep Fighter Escort Tactics, VIII Fighter Command, 29 May 1944*. An official classified report from VIII Fighter Command. Declassified 27 Sep 1958. Held in the United States Air Force Academy Library under call number UGK25 I U59.
28. Emerson, p. 467.
29. For more information see: Jablonski, Edward, "Kenney's Kids," *Airwar*, (Doubleday and Co., New York, NY, 1981) p. 3-50.
30. For more information see: LeMay, Curtis E., *Mission With LeMay,- My Story*, with Mackinley Kantor, (Doubleday, Garden City, NY, 1965).
31. Another contributing factor to the rise of "strategic bombing" after World War II was the push for the Army Air Corps to become a completely independent service. As long the Air Force was seen as just another arm of the Army, providing close air support when needed, they would never become a separate service. By advocating the strengths of strategic bombing, the Air Force could become a separate service.
32. Fogleman, Ronald R., General, USAF, *Speech*. p 1-2.

33. Armitage, M. J., and Mason, R. A., *Air Power in the Nuclear Age*, (University of Illinois Press: 1985) p 33. For more information see: Futrell, R.F., *The United States Air Force In Korea*, (Dueil, Sloan, and Pearce, New York, NY: 1961).
34. Armitage and Mason, p 23.
35. At the start of the North African Air Campaign, air assets were divided up to support individual ground commanders. After they were brought together under one "air" commander, they could, as a team, attempt to gain air superiority. For more information on lessons learned in North Africa Air Campaign see: Smith, James M., Senior Editor, *Air Power Theory and Doctrine* (Kendall/Hunt Publishing Company, Dubuque, Iowa, 1995) p 163-165.
36. This lesson was not lost come Operation Desert Storm. Joint Doctrine now mandates the implementation of a Joint Force Air Component Commander (JFACC). For more information see: Deputy Chief of Staff, Plans and Operations, JFACC Primer, (Headquarters, United States Air Force, Washington, D.C., August 1992).
37. One of the key tenets of aerospace power is centralized control and decentralized execution. For more information see AFM 1-1, vol. 1, March 1992, p. 8, figure 2-2.
38. Armitage and Mason, p 44.
39. For more information see US. Army Field Manual 100-5, Operations, Headquarters Department of the Army, 1982.
40. For more information see: Linhard, Robert, Major General, USAF, A brief given to the Air and Space Doctrine Symposium, "Doctrine Update," <http://www.cdsar.afmil/presentation/linhart/index.htm>, 30 April 1996, Maxwell Air Force Base, Alabama.
41. For more information on Operations Other Than War see: Thomas, William. Captain, USAF, "Range of Military Operations: Defining the Military's Role in the Spectrum of Conflict" *Military Art and Science Quarterly*, vol. 3, no. 2, (Spring 1994): 5-7.

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