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THE LUFTWAFFE OF 1940 AND THE UNITED STATES AIR FORCE OF 1991:  
CASE STUDIES OF THE STRATEGIC/OPERATIONAL CONNECTIONS  
IN AIR WARFARE

by

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Lieutenant Colonel, USAF

A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations.

The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy or the Department of the Air Force.

Signature: John L. Hudson

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The Luftwaffe of 1940 is analyzed by examining the strategic and operational connection in the Battle of Britain. The United States Air Force (USAF) of 1991 is analyzed by examining the strategic and operational connection indicated by the composite wing organizational initiative and the shrinking force structure. The Luftwaffe had to secure air superiority from Britain to make an invasion of Britain possible. The Luftwaffe lost the Battle of Britain because it was organized, trained, and equipped to fight an operational war of Blitzkrieg and not the type of air warfare required to gain and maintain air superiority over Britain. The composite wing organization of the USAF may produce better close air support operational capability by tying USAF units closely to US Army units. It may sacrifice the theater commander's ability to attain his strategic goals by employing air assets in mass to gain air superiority at the start of a conflict. The shrinking USAF force structure may limit the ability of the USAF to drop large conventional bomb loads on area targets. USAF leaders should review USAF plans and programs in light of these case studies to insure the USAF retains and improves its ability to fight operationally for achieving strategic goals and not just to fight operationally.

## PREFACE

Current issues within the United States Air Force (USAF) are sensitive due to Congressional funding constraints. Initiatives such as the composite wing are meant to increase operational capability but will not be fully understood until experience is accumulated. The US Navy and US Marine Corps do have a wealth of experience with composite wings but their operational requirements are different. Force structure decisions are often not left in the hands of the Air Force. Congressional procurement decisions often are done for political rather than strategic reasons. The case study opportunity provided by the Luftwaffe in 1940 is a fine one. Unfortunately a relatively short paper such as this cannot do justice to the wealth of material available on the subject. An expansion on this case study might explore further the situation in 1940 or perhaps examine the time period 1941-1945. Another good case study would be a comparison of USAF and Luftwaffe doctrinal and technical development in the 1930s.



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## TABLE OF CONTENTS

CHAPTER	PAGE
ABSTRACT . . . . .	ii
PREFACE . . . . .	iii
I    INTRODUCTION . . . . .	1
II   THE LUFTWAFFE DEVELOPS AND TRIUMPHS . . . . .	3
Growth in the 1930s . . . . .	3
Force Structure Decisions . . . . .	3
Character of Leadership . . . . .	4
Organization . . . . .	5
Blitzkrieg . . . . .	5
III  THE BATTLE OF BRITAIN . . . . .	7
Strategic Situation . . . . .	7
Study Results . . . . .	7
Operational Considerations . . . . .	8
Possible Courses of Action . . . . .	9
The Course of Battle . . . . .	10
Why the RAF Won (or Why the Luftwaffe Lost) . . . . .	12
Operational Alternatives . . . . .	14
IV   THE UNITED STATES AIR FORCE IN TRANSITION . . . . .	16
Case Study Connection . . . . .	16
Strategy and Doctrine . . . . .	16
Air Warfare at the Operational Level . . . . .	17
Reorganization . . . . .	17
Force Structure Changes . . . . .	18
V    CONCLUSIONS AND RECOMMENDATIONS . . . . .	19
NOTES . . . . .	22
BIBLIOGRAPHY . . . . .	25

**THE LUFTWAFFE OF 1940 AND THE UNITED STATES AIR FORCE OF 1991:  
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**CHAPTER I**

**INTRODUCTION**

In the United States Air Force (USAF), the operational level of air warfare has not been easy to understand. Although many have written about it, most miss the main issues and never get to the heart of the matter. Concepts of air warfare at the operational level must come directly from military strategy which in turn originates from national policy and objectives. In broad terms, airpower at the operational level of war is employed in conjunction with other forces (probably in joint or combined operations) to achieve strategic goals. Conduct of air warfare at the operational level may be better understood by attempting to answer the basic questions suggested in the Operations Department's Syllabus/Study Guide for Joint Military Operations: (a) What military condition must be produced in the theater of war or operations to achieve the strategic goal? (b) What sequence of actions is most likely to produce that condition? (c) How should the resources of the forces available be applied to accomplish that sequence of actions?

In this time of declining budgets and shrinking force structure, the USAF is trying to be more efficient and retain effectiveness. Organizational changes such as the composite

wing and force structure reductions are designed to improve efficiency and effectiveness but may degrade the ability of the USAF to conduct air warfare at the operational level in support of strategic objectives.

In World War II, the Luftwaffe enjoyed both victory and defeat. Early in the war it was victorious in Poland (1939) and France (1940). In the Battle of Britain (1940), the Luftwaffe was unable to gain air superiority, the critical first step in Germany's plan, and was defeated. From some perspectives, the defeat indicated problems the Luftwaffe would have with a war of attrition. The Luftwaffe in the Battle of Britain presents an opportunity for a case study of the ability (or perhaps the inability) of an air force to fight at the operational level of war. The relationship between Hitler's policy and strategy and Luftwaffe operations was disconnected and contributed to the Luftwaffe's defeat. Apportionment and allocation decisions, which match air assets with missions and targets, are the heart of air warfare at the operational level. The German operational decisions in the Battle of Britain were faulty.

In this paper, the Luftwaffe's relationship between strategy and operations will be examined and related to the USAF of 1991, the second case study. The Luftwaffe case study provides lessons learned and perhaps more appropriately questions to be asked and answered by the USAF in the hope that mistakes made by the Luftwaffe would not be repeated.

## CHAPTER II

### THE LUFTWAFFE DEVELOPS AND TRIUMPHS

#### Growth in the 1930s.

To control the great Eurasian land mass, which was his aim, armies and navies were not enough; an air force was essential, not only to safeguard the armies at the front and the industries at home from aerial attack, but also to destroy the enemy in pre-emptive strikes, to paralyze his war-effort. To Hitler, the importance of having a strong air force was axiomatic, a necessary precondition for a strong Germany.<sup>1</sup>

On 1 March 1935 the Luftwaffe officially became a separate German military service, equal in status to the German Army and Navy.<sup>2</sup> Less than a month later, Hitler stated Germany was rearming against the Versailles restrictions.<sup>3</sup> The Luftwaffe grew quickly since Luftwaffe leaders based their plans on war no later than 1943.<sup>4</sup> In particular, the development of fighters, ground attack dive bombers, bombers, and reconnaissance aircraft was rapid. By April of 1940, the Luftwaffe possessed approximately 1,600 fighters, 400 ground attack dive bombers, 1,700 bombers, and 400 reconnaissance aircraft.<sup>5</sup>

Force Structure Decisions. "Economic reality can prove far stronger in influencing the final outcome of strategy than either military theory or political aims. . . ." <sup>6</sup> German leaders believed the first mission of the Luftwaffe would be to support the Army; this mission always required air superiority first.<sup>7</sup> In 1936, German leaders decided to concentrate on the Me 109 and the Me 110 as the first-line

fighters. The Me 109 was a fine aircraft but short on range. The Me 110, a two-engine heavy fighter, was too slow and not maneuverable enough to be a survivable day fighter or bomber escort. In the late 1930s, development of a four-engine bomber was canceled. The high cost of a four-engine bomber compared to a two-engine bomber and a shortage of aviation fuel meant the four-engine bomber was not affordable.<sup>8</sup> The primary mission of the Luftwaffe was to support the German Army, so close air support type aircraft such as the Ju 87 were built. Even though the force structure in 1940 was much less than what was hoped for, the lack of trained personnel was the limiting factor in building up the Luftwaffe.<sup>9</sup>

Character of Leadership. The Luftwaffe was chronically short of leaders with the vision to connect strategy and operational art. Hermann Goering was a pilot and an ace in World War I, was the sole commander of the Luftwaffe, and possessed great influence with Hitler. His command decisions indicated he had trouble thinking at strategic and operational levels. For example, in 1940, Goering stopped all development work on projects such as jet and rocket research which would not yield an operational system in less than one year.<sup>10</sup> At Dunkirk, Goering (out of "vanity and an overweening pride in his air forces.") convinced Hitler the Luftwaffe could destroy allied forces.<sup>11</sup>

Some Luftwaffe officers were transferred from the German Army General Staff to the Luftwaffe.<sup>12</sup> General Walther Wever,

the first Chief of the Luftwaffe General Staff, was a long-range thinker but was killed in an accident in 1936. The next three chiefs were Kesselring, Stumpff, and Jeschonnek (who was Chief of the General Staff during the Battle of Britain). The lack of continuity in the Luftwaffe General Staff leadership hindered Luftwaffe strategic and operational thought. Murray wrote "most of those occupying top positions were incapable of thinking for the long pull."<sup>13</sup>

Organization. The Luftwaffe was organized for Blitzkrieg warfare and not for attrition warfare. The Luftwaffe used an area-based mixed-function command arrangement rather than a vertical command arrangement since its primary mission was close air support (CAS) for the army.<sup>14</sup> In a vertical command arrangement, separate mission areas have separate commanders (e.g. Royal Air Force (RAF) Fighter Command and Bomber Command; USAF Tactical Air Command and Strategic Air Command). In the Luftwaffe, area-based mixed-function commands were used "so that they could be adapted to the activities of the army groups or armies to whose support they were assigned."<sup>15</sup> The Luftwaffe command structure had flexibility, mobility, and "identity with Army operational commands."<sup>16</sup>

Blitzkrieg. Operations to the west were initiated on 10 May 1940. The Luftwaffe and the army had planned operations jointly to achieve strategic goals.<sup>17</sup> The Luftwaffe flew sorties to first achieve air superiority, then to isolate the battlefield, and finally to support the army.<sup>18</sup> The

apportionment decisions made by the Germans were good for attaining air superiority to allow the army freedom of action. The Germans were highly successful against the French, the British Expeditionary Force (BEF), the Dutch, and the Belgians (although only the British really had a capable air force and the Germans did not feel the full weight of the RAF until the air battles over Dunkirk). The Blitzkrieg style was a perfect match for the Luftwaffe. Except for the gross mistake at Dunkirk, the operation went well although this success obscures Luftwaffe losses. In May and June of 1940, the Luftwaffe lost 1,345 aircraft to enemy action and accidental losses.<sup>19</sup>

## CHAPTER III

### THE BATTLE OF BRITAIN

Strategic Situation. In the summer of 1940 Hitler controlled continental Europe up to the Russian border but had a two-front problem with Britain and Russia. He was fighting Britain and was obsessed with the idea of conquering Russia. Hitler wished Britain would sue for peace or sign a neutrality agreement rather than engage in a prolonged conflict with Britain. Murray wrote "Until mid-July 1940, Hitler believed that England would sue for a peace that he would have happily extended to her."<sup>1</sup> This situation is similar to the situation Germany faced from the late 1890s through approximately 1910 when Germany built the naval "risk fleet." The Kaiser and Admiral Tirpitz hoped Britain would react to the "risk fleet" by signing a neutrality agreement with Germany. If Britain would do this, Germany only had to fight France on the Western front in the next continental war. However, German leaders miscalculated British resolve. Rather than signing a neutrality agreement, the British increased their warship construction program and reorganized by bringing more capital ships back to home waters. The Luftwaffe was the air "risk fleet" of 1940; again Germany would find Britain would not submit to German pressure and would fight.

Study Results. In 1939, German studies revealed some interesting conclusions regarding war with Britain. First was

that "any air war against Britain could have nuisance value only, and under no circumstances would it exercise any decisive effect."<sup>2</sup> The Luftwaffe did not have bombers with sufficient payload, accuracy, or range to perform effective strategic bombing against Britain. Targets west and northwest of London were effectively out of range of German air attack. A separate study done within the Luftwaffe concluded even the Luftwaffe operating jointly with the German navy could not bring decisive victory over Britain.<sup>3</sup> Therefore the German army would have to secure victory. The Luftwaffe would contribute by securing air superiority for freedom of action for the German Army.<sup>4</sup> Additional study by the operations staff concluded terror bombing of London would only harden British national will and not bring them to sue for peace.<sup>5</sup> Furthermore, in 1939, the Luftwaffe's Chief of Intelligence told Hermann Goering that to defeat Britain, an air campaign of unknown length of time would be required prior to the necessary invasion and occupation of Britain.<sup>6</sup>

Operational Requirements. Hitler faced not only the "elephant versus the whale" problem of how a land power defeats a sea power but also an "elephant versus the eagle and the whale" problem. The Royal Air Force and Navy were strong and the Luftwaffe would be initially at a disadvantage, having to takeoff from continental bases, fly across the channel, bomb and fight over Britain, and return home. From the most forward Luftwaffe fighter bases near Calais, France, London

was almost 100 miles away. The Me 109 had a combat radius of only 125 nautical miles and could at best operate for five or ten minutes over London.

From analysis of British resolve, one might conclude in order to secure the policy objective of removing Britain from the war a military defeat was necessary. Neither the Luftwaffe "risk fleet" nor the threat of invasion nor the bombing of London would likely be sufficient to force Britain to sue for peace. The military defeat would probably have to take the form of an invasion by ground troops and would require a military condition of air superiority first and then local maritime superiority to move troops, reinforcements, and supplies across the channel. Once ground was occupied, air forces could be moved to Britain and additional territory could be seized in a "leap-frog" manner (similar to the island-hopping campaign in the Pacific) due to the limited range of Luftwaffe fighters and close air support (CAS) aircraft. To achieve air superiority, a reasonable sequence of actions might include attacking the fighter bases, engaging in aerial combat to wear down Fighter Command, and attacking British radar warning stations to degrade command and control and warning time. The forces required to achieve this sequence of actions would probably include long-range fighters and long-range, high-payload, accurate bombers.

Possible Courses of Action. In order to mount a direct attack on Britain, Murray describes three possible scenarios

written by General Jodl of the German High Command: (a) a combined air and naval offensive against industrial targets and shipping (b) terror bombing cities (c) cross-channel invasion.<sup>7</sup> In each case, Jodl argued, air superiority was required.<sup>8</sup> Alternative A required a strong naval effort which Germany could not provide. As previously mentioned, many targets were out of range of German aircraft. In 1940, British aircraft production significantly exceeded German aircraft production; Britain produced 500 fighters per month while Germany produced 230 fighter per month.<sup>9</sup> The Germans understood the advantages of superior production rates in a war of attrition. The difference in production capacity may have been an incentive for the Germans to attack Britain as soon as possible. Alternative B did not provide a direct military solution although by terror bombing British cities the Germans might draw the RAF into the fight. With enough civilian casualties Britain might give sue for peace. However, Alternative B underestimated the moral strength of the British people. Alternative C provided the most direct option but required naval support for cross-channel transportation of landing troops, reinforcements, and supplies. The navy was not strong enough for this.

The Course of Battle. The plan for air attack of Britain was designed for two parts. Part one, to annihilate fighter defenses and organizations in Southern England, was to last four days. Part two, to bomb British aircraft industry, was

to last four weeks after which an invasion of Britain was to take place. On 30 June 1940, Goering issued an operations order for the air war against Britain. He directed the priorities to be "the RAF, its ground support echelons, and its aircraft industry."<sup>10</sup> On 11 July 1940, Hitler issued his Direction 16 which ordered invasion preparations "Since England in spite of her hopeless military situation shows no sign of being ready to come to an understanding. . . ."<sup>11</sup> Luftflotte 2 (Air Fleet 2) was given the mission of strategic bombing of British aircraft industry, port, and harbor installations, and oil storage facilities.<sup>12</sup> (Strategic bombing was thought to be the most favorable action.) On 2 August 1940, Luftflottens 2 and 3 were ordered to attack British airplanes, aerodromes, radar stations, and ground organization.<sup>13</sup> Goering believed air superiority would be attained by destroying the RAF and the aircraft industry. He believed sending the medium bombers with escort fighters would draw the RAF into the fight.

Keegan described the battle as occurring in "five phases of German improvisation. . . ."<sup>14</sup> The first phase was from 10 July to 7 August with an approximately even exchange rate in fighters. The second phase went from 8 August to 23 August and was dominated by intense air-to-air combat. For example, for the week starting on 13 August, the Germans lost 284 aircraft from all causes.<sup>15</sup> During this time Goering stopped attacks on British radar sites.<sup>16</sup> The third phase, from 24

August to 6 September, was dominated by Luftwaffe attacks on airfields and supporting structures and became a contest of attrition. According to Keegan, "The Luftwaffe had begun to win the battle -- but not fast enough for Hitler's and Goering's patience."<sup>17</sup> The fourth phase, from 7 September to 30 September, consisted of bombing attacks on London; German leaders decided the British center of gravity was London. The final phase was mostly night bombing after the outcome of the battle was apparent.

Why the RAF Won (or Why the Luftwaffe Lost). An air commander is likely to attain air superiority first then isolate the battlefield using interdiction then perform close support for the land forces. The Luftwaffe was unable to attain the first step in this sequence of actions. The leadership failed to use the operational art of air warfare to support strategic goals. The Luftwaffe was operationally suited for Blitzkrieg style warfare in support of the army and was not able to win a war of attrition.

The Germans made apportionment mistakes. The assignment of air assets to attacks on targets such as port facilities which did not contribute directly to attaining air superiority was an error. Dispersing the air offensive meant all missions would be weakened. The Germans targeted the entire RAF not just Fighter Command.<sup>18</sup> When they concentrated on Fighter Command they did well. But, attacking the entire RAF meant the effort against Fighter Command was weak.

Resource decisions in the 1930s meant that the Luftwaffe did not have a heavy bomber fleet to accomplish effective strategic bombing against Britain. German fighter range limitations meant German medium bombers were often unprotected. Drop tanks had been experimented with for the Me 109 but came too late to be of much value; the Luftwaffe did not aggressively seek to use them. (There is a remarkable parallel here to US fighter operations over Germany in 1943 and 1944. US bombers suffered severely when US escort fighters had to turn back due to fuel limits. Using drop tanks meant fighters had much longer escort distances and bombers had better protection).

The German decision to bomb London rather than continue with the counter air mission was a misjudgment of the British center of gravity and indicated an inability of the leadership to apply operational art toward strategic goals. Churchill believed the diversion of bombing attacks to London was a serious mistake: "Goering should certainly have persevered against the airfields, on whose organization and combination the whole fighting power of our airforce depended."<sup>19</sup> The Germans decided to use Luftwaffe bombers over London as bait for British fighters. They assumed British fighters would challenge German bombers and they be destroyed by German fighters. But, the British believed their center of gravity was Fighter Command. Only by denying the Germans air superiority could the British defeat an invasion force as it

crossed the channel. Churchill wrote "Far more important to us than the protection of London from terror bombing was the functioning and articulation of these airfields and the squadrons working from them."<sup>20</sup> He understood the importance of air superiority as the first action in the sequence: "We never thought of the struggle in terms of the defence of London or any other place, but only who won in the air."<sup>21</sup>

Even with these problems, the Luftwaffe did not miss by much the opportunity to win. During August and September, Fighter Command lost 832 fighters while the Germans lost 668 fighters.<sup>22</sup> For a time, Fighter Command losses exceeded production. But, the Germans also lost almost 600 bombers as well.<sup>23</sup> And, their aircrew losses were higher due to fighting mostly over Britain.

Operational Alternatives. Nothing in the Luftwaffe or the German High Command made the defeat in the Battle of Britain inevitable. Operational alternatives existed which would have supported German strategy. For example, German aircraft production was below full capacity and was not mobilized until much later in the war. If production had been increased earlier, the Luftwaffe may have been able to sustain losses in the Battle of Britain and possibly win a war of attrition. The Germans could have concentrated their bombing efforts on the front-line capacity of Fighter Command such as fighter airfields, support facilities, parked aircraft, gasoline storage tanks, and coastal radar sites. Airpower could have

been used in a narrower, more focused, and more effective manner. German lines of organization could have been modified to remove training facilities from the operational commanders to preserve the training pipeline. Drop tanks could have been used to increase the range of the Me 109.

Even with the incorporation of these alternative operational considerations, the first step in the necessary sequence of actions for direct military attack on Britain (the attainment of air superiority) might not have been realized. The RAF could have withdrawn its fighters even further inland. Any invasion plans still required naval strength which would have been difficult to generate. Quite possibly a successful war of attrition against the RAF could have lasted into 1941. Then Operation SEALION could not have been executed until May or June 1941 at the earliest due to weather. By then Hitler may have ordered Operation BARBAROSSA anyway even though the air war against Britain was going well.

A second alternative was (providing German leadership possessed the patience to conduct a war of attrition against Britain) a combined submarine and fighter offensive against Britain. Churchill wrote "The only thing that really ever frightened me during the war was the U-Boat peril."<sup>24</sup>

## CHAPTER IV

### THE UNITED STATES AIR FORCE IN TRANSITION

Case Study Connection. From 1940 to 1991 a time span of 51 years exists. While there are many differences in the respective situations, parallels exist between the Luftwaffe and the USAF so that the results of the Luftwaffe case study can be applied to the USAF of 1991.

Strategy and Doctrine. Although there is no formal document which describes current USAF Aerospace Strategy (corresponding to the Maritime Strategy or AirLand Battle), the June 1990 Global Reach--Global Power written by Secretary of the Air Force Donald Rice comes closest. Presumably this document flows directly from national political and military objectives as written by President Bush and Secretary Cheney. Secretary Rice said speed, range, flexibility, precision, and lethality are what sets airpower apart from attack forces in other mediums and allows airpower to "contribute to underwriting U.S. national security needs in the evolving world order."<sup>1</sup> Secretary Rice wrote the USAF has missions of deterrence (nuclear and conventional), provides a versatile combat force, is involved in theater operations and power projection (emphasizing joint and combined operations), global mobility, space, and security assistance.<sup>2</sup> USAF concepts of war at the operational level should flow from the need to attain strategic goals.

Air Warfare at the Operational Level. Air warfare at the operational level focuses on the apportionment, allocation, and allotment of aerospace forces (although apportionment and allocation are the major roles). The apportionment process determines which mix of missions to assign to the air forces. For example, it decides how much counter air, air interdiction, close air support, etc. are flown on a particular day. The allocation process determines how a particular type of aircraft is used to fill the apportionment decisions. For example, specific groups of airplanes (F-16s, F-15s, A-10s, etc.) are assigned to various missions dictated by apportionment. Finally, the allotment process (which the USAF does not normally use) details air forces to ground elements. For example, the CINC could allot a wing of A-10s to an army division; those aircraft would only be flown in support of that division.

Reorganization. One USAF initiative is to create some composite wings of mixed types of aircraft. This composite wing would be more closely tied to a particular ground force and should be more responsive to that force. For example, the ground support composite wing might contain A-10s, F-16s, tankers, and F-15s. The composite wing concept begs the question of whether USAF concepts of war at the operational level support the attainment of strategic goals. More specifically, the question is whether can a composite wing can contribute better to the attainment of strategic goals than

the current wing structure. The composite wing structure might be better operationally but might not support US strategic goals as well thus producing a strategic/operational disconnect.

Force Structure Changes. Planned reductions in force (e.g. the reduction in the number of tactical fighter wings to approximately 26) may affect the relationship between strategy and operations in air warfare. As the tactical force structure shrinks, the USAF will probably procure more multi-role aircraft to preserve as much operational flexibility as possible. But, budget restrictions may limit multi-role aircraft procurement, and single-role aircraft will remain.

The USAF heavy bomber force is shrinking. As B-52s retire, the USAF gradually loses the capability to carry large conventional bomb loads over intercontinental distances since for the near term the strategic nuclear triad will probably remain intact and the bombers will be assigned to nuclear commitments. Some of the quickly written lessons learned from the Gulf War discuss the utility of precision guided weapons but there will always be a role for big bombers filled with unguided bombs to carpet bomb area targets (e.g. Republican Guards divisions) since precision bombs cannot always be substituted for quantity. If the B-2 is canceled the USAF will have just a small fleet of aging B-52s and approximately 95 B-1s for the nuclear and conventional commitments.

## CHAPTER V

### CONCLUSIONS AND RECOMMENDATIONS

The most precious thing aerospace forces can provide for an army or navy is control of the aerospace environment, since this enables surface forces to carry out their own plan of action without interference from an enemy's aerospace forces.<sup>1</sup>

The ability of a military force to accomplish a strategic goal depends on analysis of military conditions, sequence of actions, and forces required (i.e. the commander's ability to fight at the operational level of war). The Luftwaffe was successful against Poland and France (although they were arguably third-rate and second-rate military powers respectively). It was then tasked to defeat the RAF, a first-rate force. Germany required air superiority to threaten Britain with invasion. Local sea control would be required for logistics and reinforcement pipelines. The Luftwaffe lost the Battle of Britain because it was organized, trained, and equipped to fight Blitzkrieg warfare, a type of operational air warfare that did not support German strategic goals in the Battle of Britain. The Luftwaffe was unable to adapt operationally to provide the military condition of air superiority. It did not have the forces available to accomplish the first step in the sequence of actions chosen by German leaders. It did not have a long-range, high-payload, accurate bomber. Luftwaffe fighters had short range and low endurance. Thorough attacks were not made on critical radar

warning stations. Cities and ports rather than British airfields were bombed. Diverting airpower from the British center of gravity, Fighter Command, degraded the air effort.

The USAF's shrinking force structure indicates the USAF may improve support of the US Army but degrade the strategic/operational connection. Certain initiatives resemble the traps into which the Luftwaffe fell. As B-52s retire, the USAF gradually loses the capability to strike conventionally over intercontinental distances. The problem will become greater if the B-2 is canceled. This situation resembles the German situation after the decision to stop the four-engine bomber programs.

The composite wing structure may tie USAF assets too closely to US Army units, similar to what happened to the Luftwaffe. The inherent flexibility of airpower to be used theater-wide as the CINC requires in mass for shock and firepower may be dissipated by tying composite wings too closely to particular army units. The CINC may lose some ability to follow an operational sequence of action of securing air superiority, isolating the battlefield with interdiction, and then performing CAS. Aircrews in the composite wing may not have the desired capability to provide air superiority at the onset so as to later enjoy freedom of action for CAS. The composite wing structure may generate better operational concepts for CAS but poorer operational concepts for the attainment of air superiority

In addition, the composite wing structure may degrade the USAF's ability to provide support to the US Navy for the attainment and retention of sea control. Air superiority is recognized by the US Navy as an essential element of sea control. USAF assets are critical for sea control in many operational scenarios. If USAF units are tied too tightly to the army, they may be unable on a timely basis to provide the operational commander with required support for sea control.

Arguably the problems the Luftwaffe faced 51 years ago occurred in an environment much different than today. However, the emerging philosophy, organization, and force structure of the USAF contain problem areas and disadvantages not unlike those faced by the Luftwaffe. It is vitally important for attaining strategic military goals in US joint operations that the USAF have full ability to secure and maintain air superiority at the start of any war. USAF leaders should review USAF plans and programs in light of these case studies to insure the USAF retains and improves its ability to fight operationally for achieving strategic goals and not just to fight operationally.

## NOTES

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