

UNFLINCHING ZEAL

The Air Battles Over France and Britain,
May–October 1940



ROBIN HIGHAM
*Author of *Two Roads to War**

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ROBIN HIGHAM

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ACRONYMS AND ABBREVIATIONS

AA	antiaircraft (Br.); for French, <i>see</i> DCA
AALMG	antiaircraft light machine guns (Br.)
AASF	Advanced Air Striking Force (Br.)
AC	Air Component; Army Cooperation (Br.)
ACBEF	Air Component of the British Expeditionary Force (Br.)
ACM	Air Chief Marshal (Br.)
ADGB	Air Defence of Great Britain
AHB	Air Historical Branch (Br.)
AIR	Air Ministry and RAF Records (Br.)
AOC	air officer commanding (Br.)
AOC-in- C	air officer commanding-in-chief (Br.)
AP	air publication (Br.)
ARP	air raid precautions (Br.)
A/SR	air/sea rescue service (Br.)
ASU	aircraft storage unit (Br.)
ATA	air transport auxiliary (Br.)
AVM	air vice marshal
BAFF	British Air Forces France, 1940
BCR	bombardement, combate et reconnaissance, bomber-combat-reconnaissance aircraft (Fr.)
BEF	British Expeditionary Force
BFI or	

BFW	Bayerische Flugzeugwerke; Bavarian Aircraft Works (Ger.)
BSA	Birmingham Small Arms (Br.)
C ₃	command, control, and communications (Br.)
CAB	Cabinet (Br.)
CAS	chief of the Air Staff (Br.)
CD	confidential document (Br.)
CGSAF	chef d'état majeur de l'Armée de l'Air; chief of the general staff air force (Fr.)
CIGS	chief of the Imperial General Staff (Br.)
COS	Chief of Staff (Br.); General der Stab (Ger.)
CQG	grand quartier general; army field HQ (Fr.)
CRAS	Centre de Réception des Avions de Series; Reception Center(s) for Production Aircraft (Fr.)
CRO	Civilian Repair Organization (Br.)
DAT	Défense Aérienne du Territoire; air defense of the territory (Fr.)
DCA	<i>défense contre avions</i> ; defense against aircraft (Fr.)
FAF	Armée de l'Air; French air force (Fr.)
FFAF	Forces libres français aérienne; Free-French air force (Fr.)
FLIVOS	Fliegerverbindungsoffiziere; German air force liaison officer
FTAA	Forces Terrestres Anti-Aérienne (Fr.)
GAF	Luftwaffe; German air force
GAO	Groupe Autonome d'Observation, Groupe Aérien d'Observation; air observation group (Fr.)
GB	Groupement, Bombardement bomber group (Fr.)
GC	<i>groupe chasseur</i> ; fighter group(s) (Fr.)
GOC	General Officer Commanding, Army (Br.)
GQG	Grand Quartier Général; army field HQ (Fr.)
GQGA	Grand Quartier Général Aérien; general headquarters of the Armée de l'Air in wartime (Fr.)
GSAF	état majeur de l'Armée de l'Air; general staff air force (Fr.)
HDAF	Home Defence Air Force (Br.)

HQ	headquarters
IE	initial establishment; number of aircraft Air Staff determined a unit would need (Br.)
JG	<i>Jagdegeschwader</i> ; fighter wing (Ger.)
KG	Kampfgeschwader 100; Pathfinder force (Ger.)
kph	kilometer per hour
LADA	London Air Defence Area
LOC	lines of communication
LQMG	Luftquartiermeister General; Luftwaffe quartermaster general (Ger.)
MAC	Manufacture d'Armes de Châtellerault; French air force arsenal
Met'	meteorology, meteorological
MRAF	marshal of the Royal Air Force
MT	motor transport (Br.)
NCO	noncommissioned officer (Br., Ger.); <i>sous-officier</i> (Fr.)
OCA	offensive counterair (Br.)
OKH	Oberkommando des Heeres; high command of the army (Ger.)
OKW	Oberkommando der Wehrmacht; high command of the armed forces (Ger.)
ORB	Operations Record Book (Br.)
OTU	<i>Jagdfliegerschuler</i> ; operational training unit (Ger.)
OTU	operational training unit (Br.)
POL	petrol (gasoline), oil, lubricants (Br.) (Fr.)
PRO	Public Record Office, now The National Archives (Br.)
PRU	photo-reconnaissance unit (Br.)
PTT	Postes, Télégraphes et Téléphones; Public Administration of Postal and Telecommunication Services (Fr.)
PV	private venture (Br.)
QMG	Quartermaster General (Br.)
RAE	Royal Aircraft Establishment (Br.)
RAeS	Royal Aeronautical Society (Br.)
RAF	Royal Air Force (Br.)

RAFVR	Royal Air Force Volunteer Reserve (Br.)
RLM	Reichsluftministerium; national air ministry (Ger.)
RNAF	Royal Netherlands Air Force
R&O	reconnaissance and observation (Br.)
rpg	rounds per gun
rpm	rounds per minute, revolutions per minute
RSU	repair and salvage unit (Br.)
R/T	radio telephone (Br.)
SASO	senior air staff officer (Br.)
SD	secret document [e.g., <i>SD 98</i>] (Br.)
SHAA	Service Historique de l'Armée de l'Air; air force historical service (Fr.)
Sigint	signals intelligence (Br.)
TAF [TAC]	Tactical Air Force (Br.)
T-Amt	Technisches-Amt; technical directorate (Ger.)
TO	Technisches Amt; technical office (Ger.)
UAV	unmanned air vehicle
UHF	ultrahigh frequency (Br.)
W/T	wireless/transmission
ZI	Zone Interieur; zone of the interior (Fr.)
ZOAA	Zone d'Opérations les Alpes; air zone of operations Alps (Fr.)
ZOAC	Zone d'Opérations Central; air zone of operations central (Fr.)
ZOAE	Zone d'Opérations Est; air zone of operations east (Fr.)
ZOAN	Zone d'Opérations Nord; air zone of operations north (Fr.)
ZOAS	Zone d'Opérations Sud; air zone of operations south (Fr.)
ZOAW	Zone d'Opérations Ouest; air zone of operations west (Fr.)
ZONE	Zone d'Opérations Nord-Est; air zone of operations northeast (Fr.)



PREFACE

The Battle of France opened on 10 May 1940. The Allies—France, Britain, the Netherlands, and Belgium—kept to French Army General Maurice Gamelin’s plan to fight forward and not retreat. In France, and thus they surged toward the Dyle River in Belgium. As they moved eastward out of their prepared positions, the Germans struck through the Ardennes region and seized the crossing of the Meuse at Sedan in France. The Luftwaffe (German air force) gained air superiority and let the Panzer forces loose to reach the English Channel and surround the Franco-British forces in the northeast Dunkirk pocket. The declining events led finally to the Franco-German armistice, which went into effect on 22 June, after the British had earlier evacuated from Dunkirk.

Unflinching Zeal originated as a stand-alone sequel to a previous book, *Two Roads to War: The French and British Air Arms from Versailles to Dunkirk*, a comparative study of the growth of French and British airpower up to the summer of that year. This current work evolved from my curiosity as to whether or not the Armée de l’Air (French air force) of 1940, given all the handicaps under which it had come into being and developed, was capable of destroying the 1,000 Luftwaffe aircraft it claimed to have destroyed. To unravel that query I applied knowledge of the Royal Air Force in the Battle of Britain, and also of the Luftwaffe in the campaigns of 1940, and I initially came to the conclusion that in reality the French claim could not have been far more than 232 Luftwaffe aircraft destroyed.

Then, during the months in which my manuscript sat untouched as I worked on *Two Roads*, I had obtained access to Paul Martin’s 1990 work, *Invisible Vainquers*, and Peter Cornwell’s 2008 *Battle of France Then and Now*.¹ Both authors provided carefully researched statistics that gave the Armée de l’Air credit for every aircraft brought down, and Cornwell mentioned how well the Armée de l’Air appeared to have held up. Tabulating from Martin’s count of 400 and Cornwell’s tally of 369, I used the average of 384. From that I reached two important conclusions: (1) that my own estimate of 232 was too low, and (2) that the *chasseur* more than doubled the sorties-to-kill ratio of the RAF and Luftwaffe: 36.5 compared with 15.5 of the French.

The Armée de l’Air, in spite of all the odds and in spite of ultimate defeat, did succeed in shooting down about 384 enemy aircraft in the forty-two-day Battle of France. If the sortie-to-kill ratios are valid, this then reflects the experience of my estimated average 750-hour *chasseur* (fighter pilots) versus the much fewer, 150-some hours, of newly fledged RAF fliers who joined a squadron in 1940. And yet, granting that all of the above is true—and *despite* the fact that all of the above may be true—the June 1940 Battle of France was not a success. In the final analysis the Germans won because the French Armée de Terre was defeated. Conclusions drawn out of the historical record indicate that the Armée de l’Air Haut Commandement (High Command) felt compelled to substantiate and elaborate on the role—creating perhaps a “myth”—of the Armée de l’Air in order to deflect the French armistice accusations of Armée de l’Air blame for the overall debacle. This elaboration had aimed to preserve

the morale of the Armée de l'Air, which was by then part of the Vichy regime, and shift the culpability for its defeat onto armée and civilian political shoulders.

Unflinching Zeal explores a number of themes of the two major air campaigns of 10 May–3 October 1940, the Battle of France and the Battle of Britain:

1. Research and development
2. The doctrine and tactics employed
3. The C3—Command, Control, and Communications—systems, and the personalities of the commanders and their experience
4. The logistical systems and their effectiveness, including salvage and repair
5. The training and skill, as well as the experience, of the pilots
6. The equipment the pilots had to use
7. Accident rates and causes
8. The veracity of claims
9. Conclusions and lessons to be drawn from the campaign

With regard to the air Battle of France, the intent herein is to show that despite certain statistical positives, the conflict was lost because it was chaotic, ad hoc, and ill-directed. As a consequence of lack of doctrine and poor preparations in aircraft development, production, testing, and delivery the Armée de l'Air was manned in many cases by a poorly trained insufficient coterie of professional pilots (despite those with 750 or more flight hours logged) supported by far too small numbers of quickly fatigued ground crew, with inadequate replacements available. Critical as well to the situation were the French failures post–World War I to foresee a different modern war and to establish the role of the Armée de l'Air in grand strategy, and then to obtain the funds and industrial facilities to enable the Armée de l'Air to fulfill that assignment. Post–World War I, the settled French grand strategy for a potential new war was focused on maintaining a defensive position for several years to gain time to mobilize fully France's own and French allies' resources while exhausting the enemy's. The end result was an air force that even with British aid could not meet the challenge of the German Luftwaffe. The Armée de l'Air, on the whole, was an aviation force whose claims were patently unrealistic.

The assertion that the Armée de l'Air was undefeated in the Battle of France was generated in July 1940 by the French Armée de l'Air Haut Commandement and bolstered by the creation of accounts and the propaganda that the small force of *chasseur aérienne* (fighters), the *défense contre avions* (anti-aircraft [DCA]), and the Royal Air Force together had destroyed those purported nearly one thousand German planes. In the fluid, unstable conditions of May 1940 France, victory claims were converted by Intelligence into assessments of enemy losses and strengths. It is important for the reader to remember that in air actions a rule of thumb is that if claims are divided by three or perhaps five, the result equals about what the opponent actually admits he lost. As in the case of the RAF at that time, when carefully investigated battlefield claims proved to be five times reality—only 20 percent being substantiated. General Lucien Robineau, former chef of the Service Historique de l'Armée de l'Air (air force historical service [SHAA]), has noted in a personal communication of 2 December 2008.²

The practice was, not always but often, to count one victory for every flight member who had participated in the shooting down of one enemy aircraft. As a consequence, the number of

victories could not match the actual number of aircraft shot down. This is the reason why one can find in some papers (sometimes hastily established following June 1940*) numbers ranging from 800 to over 1000.

However, General Robineau acknowledges that having met several of the French World War I aces and recorded their testimonies at the SHAA, he believes some of them were very “moderate and reliable in their memories.” The ultimate “twisting” of the figures, then, must rest with the Haute Commandement itself.

Air war is for the historian not so much the clash, success, or failure of small forces—especially in those days, as Marshal of the Royal Air Force (MRAF) Lord Tedder has noted, before the battle of Britain—battalions—as it is the discovering of forces and patterns having their roots in the past. Victory in France in 1940 could be achieved in forty-six days, in fact, in France in May in four days—or, paradoxically, a stalemate could occur within sixty-six, as in the Battle of Britain. The Germans gained air superiority in the first four days in France, 10–14 May 1940. The Armée de l’Air fought on, but the battle was lost on the ground by the Armée de Terre, which had prepared for a 1918-style trench war and was flummoxed by the German blitzkrieg. The fundamental question remains: *Why was there a French failure?* The answers to that are in *Two Roads to War*.

One of the interesting statistics that emerges from this story is that the Luftwaffe Quartermaster General issued more new aircraft during the campaign in the west than the Allies claimed to have destroyed. This discrepancy is explained by the German blitzkrieg philosophy of win now, salvage and repair later, and by the damage caused by rough French landing grounds. The German “lightning war” combined motorization of all weapons, with a close-support Luftwaffe and radio communications, but added to this is a dearth of information on Luftwaffe salvage operations. Some 22 percent of German aircraft production was in fact repaired machines. So without such a recovery service, aircraft production was insufficient.³

As this study shows, published numbers do not agree, and thus as noted I have chosen those that seem to me to be the most accurate. I hope readers will forgive me if the figures do not coincide with their beliefs or remembrances. The tables and illustrations herein are meant strongly to relate to the narrative in order to help explain the patterns of the air battles, to stress the logistics, and especially—in relationship to the Armée de l’Air—to show how it lacked the focus and the sinews for modern war. (In an attempt at consistency, I have, as noted above, chosen the figure of 384 Armée de l’Air victories. The figures presented on both the Royal Air Force and the Luftwaffe, as well as the tables herein, emphasize the need for at least five years of preparation for an industrial war with its factories, testing and refinement, depots, transportation system, a field recovery, and a repair system. But what the tables and figures cannot quantify is leadership, which historian Mark Parillo and I have called “The Management Factor.” That has to include perspicacity and the power to prod the partnership to the viable conclusion. In addition, the illustrations herein confirm that not only did wastage and consumption need to be balanced by men and matériel in order to keep the first line intact, but also that record keeping—especially of one’s own strengths—was as important as the Intelligence of the enemy’s.

Essentially, then, in the end, rather than an indictment of the French air arm, this work intends to be a comparative view of the three major European air forces of 1940—the British Royal Air Force (RAF), the German Luftwaffe (GAF), and the French Armée de l’Air (FAF)—and their national milieus. The paradox remains of the overall French defeat amidst the statistical successes of the Armée de l’Air, and perhaps it indeed can be concluded that the Armée de l’Air was as i

Commanding General Joseph Vuillemin had hoped and maintained in 1940—undefeated.

It is a matter for historians to review.

—Robin Higham

*One of them (of July), bearing the signature of Chef d'état major de l'Armée de l'Air Mendigal by Vuillemin's order, has an annex with a false addition.



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INTRODUCTION

The Armée de l’Air of the Third Republic was limited in resources after 24 June 1940 and soon became the Armée de l’Air de Vichy until November 1942 when the Allied invasion of North Africa caused the Germans to take control of Unoccupied France governed by Marshal Pétain. The saying is that there are lies, damned lies, and statistics. In this work, for a variety of reasons—date, source, and so forth—the numbers do not always agree. That is part of the point herein. The comparison of the British, French, and German air forces from 10 May to 31 October 1940 provides insights into how wars are lost and won, as well as perceptions of the human frailties and beliefs that affect the equation. All of the themes noted below applied in varying degrees to each of the three principal air forces studied here. How each managed these issues determined the outcomes. The historian’s challenge is to sift through exaggerated claims and superficial analysis to a truthful account and in the end to provide a meaningful evaluation of the “whys” and other relevant factors.

The air battles of 1940 were the first true European clashes of independent air arms and the first real test of the theories and doctrines that had evolved in the interwar years, influenced by the Technological Revolution. Factors affecting the two grand-strategic campaigns of 1940—which in reality were one—were political, diplomatic, military, economic, technical and scientific, medical, social, and ideological. Involved as well were the qualities of leadership.

The Germans and the British were critical years ahead in design, technology, testing, and manufacture, which gave them an edge that the French Armée de l’Air did not possess. Of these three principal air forces involved, the new German Luftwaffe had the advantage in maturity of thought, staffing, organization, and technology, in addition to—above all—a clear purpose, to reestablish Germany as the Great Power in Europe. The Luftwaffe of 1935 was to be the handmaiden of the Wehrmacht, though at first consideration also was given to it becoming a grand-strategic bombing force. By 1940 its role, as demonstrated in Poland in September 1939, was evident as a support for the German army’s blitzkrieg once the Luftwaffe had established air superiority. The Luftwaffe’s sole purpose was to help win a short war.¹

The British Royal Air Force, however, had perversely for internal political reasons—national, aeronautical, and economic—abandoned the lessons of the World War I, 1914–1918. The RAF had founded its Staff College at Andover in 1923 and sent some of its brighter World War I officers there. But they were derailed by the 1923 doctrine that the Home Defence Air Force (HDAF) was primarily a bomber deterrent, and this was not challenged. The Air Staff, moreover, became very set in its ways and thus except on the defensive fighter side never tested its preconceptions against realities.

A second war twenty years after a first is too soon. The senior officers of the first—at least those

above the rank of colonel—in the victorious force concluded they knew how to fight a war. And maybe some of them still did, if yet on active duty, though they perhaps suffered the deadening pomposity of experience. Yet if the two decades that passed between the wars had seen a technological revolution, the senior officers might not have been able to handle the changes unless they would have had Operational Commands during those critical twenty years.

As it was, the RAF forsook the tactical lessons of army cooperation and instead grasped the abandoned nettle of grand-strategic bombing in order to create a role for itself as the HDAF. Two thirds of the fifty-two squadrons of that force were to be bombers, which—as Prime Minister Stanley Baldwin said in 1932 of the French—would always “get through.” The carefully constructed London Air Defence Area (LADA) of 1918 was at the least a definite step down, but it did have a role to play to protect Britain against the “air menace,” and thus was incorporated in the new 1925 Air Defence of Great Britain, the ADGB Command under a single air officer commanding-in-chief (AOC-in-C). The Tactical Air Force (TAF) at Home had roles and doctrine, even if upside down, but the bomber offensive was to prove impotent until 1944. The two halves of the Air Ministry failed to see the mirror effect of defensive fighter versus attacking bomber.

The French Armée de l’Air, which following 1918 was a claimant to the title of the world’s largest air arm, drifted during the interwar years, as did the Armée de Terre. The Armée de l’Air until 1928 did not have an Air Ministry, such as the RAF had gained in 1918, and did not come into being as an independent force until 1933. Yet even then its organization was determined by Parliament and Parisian politics and not by grand strategy. From 1933 to 1940 the Armée de l’Air debated which of its potential roles should get priority—the grand-strategic air offensive of an independent force; the Défense Aérienne du Territoire (air defense of the territory [DAT]), that is, Metropolitan France; or *aviation d’assaut* (army cooperation), namely, reconnaissance and observation. The problem at that time was not so much the want of funds (credits), until 1938, as it was the inability to make political decisions regarding technical matériel and personnel demands in order to be able to man the new Armée de l’Air. All of this was held back by politics and personalities.

Britain, Germany, and France were the three principal European powers in the 1930s. Each would arrive on the battlefields of 1939 with different needs due to their geographical locations, economic requisites, and defense perspectives. Isolationist, insular, imperial Britain suffered from a stable but not very imaginative government, as well as from the losses of men and matériel during World War I and a lingering depression that deepened in the 1930s. However, it did have the fiscal sense to abandon the gold standard and to support the Royal Navy until 1934 as the first line of defense of the Empire. But after World War I Britain wanted no more “Continental involvements” and was willing to see the 1919 Peace of Versailles modified, as with the Anglo-German Naval Agreement of 1935. And although Britain had seen severe unemployment in the 1920s, the challenge had been met by the formation of the National Government and by the recovery that in 1934 was stimulated by rearmament. Moreover, the nature of British society was much more deferential to authority than that in France; it was stoic, less confrontational, and accepting of planning and implementation.

In contrast to Britain, Germany had borne the shame of defeat in 1918 and of the Weimar government until 1933. The continental Germans after 1919 did not believe that they were a Great Power, but when Hitler gained authority the country determined to manifest itself as such once again. Under Hitler, the Third Reich had revived nationalism and suppressed dissent. Hitler and the National Socialist German Workers (Nazi) Party determined to abolish the 1919 Versailles *Diktat* and reestablish the power and prestige of the Third Reich. The Treaty of Versailles was supposed to eliminate Germany as a threat to French security, but it had not, for the United States did not ratify

and the British were inclined to agree with the Germans that the *Diktat* was harsh. Thus Hitler's concern about acquiring the needed raw materials and resources and the sinews of power and control, as well as dismantling the French bloc, the Little Entente in Eastern Europe—Poland, Czechoslovakia, Rumania, and Yugoslavia. At the same time, rearmament was begun with the advantage that during the Weimar Republic the Germans had engaged in intellectual approaches to modern war, including the secret design of aircraft. In 1935 Hermann Goering unveiled the new Luftwaffe, already quickly overtaking Britain and France in first-line strength—those aircraft in Regular units that were ready to go.

Germany had the population, the administrative understanding, and the military, industrial, and social organization to manage the needed new warfare, as well as the blitzkrieg philosophy and the Technological Revolution. “Guns before butter” was a meaningful slogan, which together with the swastika symbolized purpose. The Germans were willing to finance armament rather than social needs, and they had the psychological edge and a grand strategy suiting their means to their ends. Although Britain's island air base left the nation with the vast metropolitan area of London like a vulnerable to the “air menace,” Germany had a concern as well in its penetrable land frontiers all around. And so, as Germany had done historically, it developed its Wehrmacht and with it the Luftwaffe as a secondary partner in tactical warfare. The 1918 World War I defeat had largely rid the German military mentality of that war's ideas and imbued it with a realization that for many reasons the next war had to be short and decisive—a view much appreciated by Hitler. In 1940 the Germans carried on their historical patterns of quick wars of annihilation in defense of the Third Reich, a lesson Robert Citino notes in *The German Way of War*, a lesson the French and British did not comprehend.

The Germans had the advantage for the Luftwaffe of the 1936–1939 war in Spain, and the Polish campaign of September 1939 for the whole of the Wehrmacht. Above these two experiences was the German insistence that commanders all up the line report the bad as well as the good about their units so that Headquarters could institute training programs to correct the deficiencies and provide intensive physical and mental stressing needed for war. These corrective activities continued into May 1940. Neither the French nor the British, however, made such use of the lessons of the brief 1939 Polish campaign.

At this same time, the other European powers were the isolated Soviet Union and Italy. The former had the world's most powerful air force in 1934 and once had kept close sub-rosa ties with the Germans, though that was stopped by Hitler. Italy, ruled by Mussolini who had seized power in 1922, was both a friend and rival to the French until 1935 when Mussolini's ambitions in Ethiopia and Italian North Africa became a threat. And while the USSR had held potential as a French ally, as during 1894–1917, anti-Socialist and anti-Communist ideologies in French domestic politics of the 1930s prohibited it.

It is clear that British, French, and German air forces in advance of 1940 needed to have engaged in realistic exercises, preparation for the war to come, and careful examination of what Intelligence did and did not reveal, as well as careful assessment of their assumptions regarding the courses of the next conflict. And yet, despite being a continental power having a long held concern for territorial frontiers, the Germans nevertheless were unprepared mentally as much as physically for a cross-Channel war. Moreover, their way of war, those short victorious campaigns (barring World War I), disregarded logistics and assumed that the campaign would end before supplies ran out. Though they were able to build the Luftwaffe with planes and aircrew and move it to new bases, they were not ready to fight a determined British foe that was protected by the English Channel and with sufficient air resources to outlast them. As in the 1914–1918 war, the Royal Air Force did not have to achieve

traditional victory; it only had to hold or parry.³

In contrast to the Germans, the British after centuries of conflict eschewed a fresh involvement. They remembered World War I with horror, despite having benefited from it both in terms of defense and stature. Yet they had been sufficiently alarmed by the Japanese aggression against China from 1931 to abandon Disarmament and prepare to rearm. For Britain, the greatest vulnerability was the seaborne trade upon which her life depended, but with the primary focus on the potential German air menace and London being the world's largest target, Britain's center of concern turned to air defense with the Royal Navy and sea trade secondary.

The Royal Air Force had long been sanctified by the Air Force Act of 1917 and in 1923 had been given the specific task of Home Air Defence, as compared with the Armée de l'Air and the Luftwaffe which were creations of the early 1930s. And while the Armée de l'Air focused its energy on its relationship to the Armée de Terre and the Luftwaffe upon support of the Wehrmacht, the Royal Air Force in its role of Home defense was in a singular position to conceive of grand-strategic bombing. Nevertheless the methodical Germans still were able to develop cutting-edge air weapons, though from the French emerged a less cohesive, less up-to-date, and less reliable force. The British developed the lifesaving fighters followed by the war-winning tactical and grand-strategic air force. In sum, in 1940 the contrasting three air arms proved the importance of sustainability and foresight—planning, training, production, logistics, and reserves.

As compared with the Third Reich, France lacked the population and, after 1929, the determined leaders with a viable and believable grand strategy. In addition, the French lived with the myth of Napoleonic genius for offensive war and large casualties at a time when France was no longer a Great Power nor had the means to counter a blitzkrieg. She was a continental nation. The Armée de Terre was for economic reasons made into a cadre force behind the Maginot Line then being built to protect the German (but not the Belgian) frontier on the east. Complicating as well was that French conscription had been cut to one year in 1930, political instability had led in early 1934 to the verge of another revolution, and the country had stayed on the gold standard until 1936.

The poor but valiant showing of the Armée de l'Air in the Battle of France was related to the country's social-economic-political fissures. Workers on the Left were divided between the Communists and the Socialists—mostly industrial workers, the large agricultural sector, the *petite bourgeoisie* (the conventional French lower middle class), and the *patronats* (the wealthy French industrial class), who controlled a large part of French wealth. With mobilization, the *patronats* were secure enough to be divided. Both they and the government wanted to keep business and the workers as usual, and both had their eyes on the postwar world. War brought profit and benefits to the heavy (steel, coal) industries and those with government contracts—the “sheltered.” But small businessmen were shut out of rearmament as they lacked capital and other resources.

Fierce struggles over labor and raw materials erupted in France. Poaching of workers by the better-payers, such as the aircraft industry, drew complaints. The self-interested views of many *patronats* made them hostile to the government's wartime controls, though not to the war itself. The *patronats* were reluctant to enter the war economy, much more than their equals in other countries. The French minister of Armaments in 1939–1940, Raoul Dautry, was a graduate of the École Polytechnique, but in historian Richard Vinet's opinion was too unbalanced and soft to solve the problems of mobilizing the French economy. War raised the specter of inflation, and that alarmed the *rentiers*, those on fixed incomes. Vinet concluded that heavy industry's acceptance of the devaluation of 1936 was a sign of a disintegrating social alliance.⁴

France had an empire from which she expected to draw colonial troops, but to which otherwise

she paid little attention, in spite of occasional wars therein. Most importantly, French grand strategy hinged upon the Little Entente and upon another 1918-style methodical war. France's aviation industry by 1934 was backward, and the aircraft designs behind those of her likely opponent. It was true that by 1940 the nation had the best tanks in the world, but France had neither the doctrine nor the air arm and wireless net to go with them.

Over and beyond the doctrinal weakness of an unimaginative grand strategy was the flabby rotational nature of the French political leadership, on top of the roiling social divisions. As a result, whereas Germany began to rearm in 1933 and Britain in 1934 with its shift to the Royal Air Force as the prime defender, France only began a troubled rearmament in 1936 when the arms and aircraft industries were nationalized. And whereas Germany and Britain expanded both the matériel and manpower of their air arms, the Armée de l'Air stood pat. In 1939 France was a self-styled Great Power, still a peasant economy beginning to be ruled by small-town bourgeoisie opposed by the Barons of France and dominated by the armée and the memory of World War I casualties. Perhaps, too, it can be argued that the nation began the Maginot Line from the wrong end, for France's essential industry was in the northeast, and that for centuries had been the traditional invasion route. In sum, the Armée de l'Air of 1933 was an immature military force created amidst the birth of the Technological Revolution without either sufficient credits or the expertise to manage its impact.

The Origins of Dysfunction

The root cause of the ultimate failure of the Armée de l'Air during May–June 1940 was the descent of France to its lowest point as a Great Power and the very basic nature of the French culture. There had been too much talk and too few decisions since the French leaders of 1918, such as Clemenceau, Poincaré, and Foch, had faded away. In addition, the Armée de l'Air had helped engineer its own defeat by choosing to disagree both within itself and with the armée on doctrine while at the same time hazily attempting to create an élite body. Unfortunately such a military force at the time of the Technological Revolution required a substantial infrastructure, including communications as well as equipment superior to that of any potential enemy, and the ability to outlast such enemies in war. And it required, above all, money (credits).

Regrettably—*malheureusemen*—the état majeur de l'Armée de l'Air (French General Staff Air Force [GSAF]), created an inferior product. And yet, the Armée de l'Air, as it faced defeat in June 1940, also began to have visions of resurrection. Its leaders could look back in French history to the post-Napoleonic period, to the recovery in 1871, and to examples from other countries such as Austria-Hungary and Germany in 1918. Today we now also can cite the governments in exile of World War II—the Netherlands, Belgium, Poland, Norway, Greece, Italy in 1943, and that of de Gaulle. How the French leadership of 1940 answered the institutional, doctrinal, physical, matériel, manpower, and esprit de corps questions has been noted by Mme. Dr. Claude d'Abzac-Epézy in her excellent *L'Armée de l'Air de Vichy, 1940–1944* (Vincennes: SHAA, 1997) and thus need not concern us here.

France had gone to war in 1939 for a variety of reasons, one of which was an overconfident misestimate of its grand strategy and resources, and a failure to realize that the German solution to the stalemate of 1914–1918 was not another “*sitzkrieg*”—a “sitting”/trench war—but in fact a blitzkrieg. From 10 May 1940 the French ship of state was wrapped in a *Titanic* cocoon, heading through the fog of war on a predetermined course straight into the iceberg. Over the past thirty years, French official historians have sought the truth, yet they still have not defrocked the gallant aces and their fellow

airmen and mechanics of the long-established paradoxical story that the Armée de l'Air fought hard and well against the superior German Luftwaffe, inflicted heavy losses, and emerged undefeated.

The empirical approach herein endeavors to show that the facts in the case of the Armée de l'Air are unreliable. Though not wanting to challenge the hopeless gallantry of that organization in the six weeks of early summer 1940, the search for the truth does require a close examination of the available evidence to reach a reliable conclusion. What GSAF General Joseph Vuillemin and company had engaged in from mid-1940 was a campaign of disinformation that made the Armée de l'Air appear much more successful and heroic than it actually was. In a way, this propaganda—predicated upon an undercurrent of belief that the war was, in fact, for the Armée de l'Air a “lost cause”—was symbolic of the nadir to which France had slid by 1940, due to a small coterie of influential beings in Paris, led by Army General Maurice Gamelin.

Initially this volume started out to show that the Armée de l'Air in the Battle of France did not destroy 1,000 or even 782 Luftwaffe machines, but rather a much more modest number. Those figures, however, became eclipsed by the realization that the 1,000 or 782 claimed—whichever—were part of the undefeated “myth” that General Vuillemin and others began to perpetuate as soon as the fighting stopped on 24 June 1940.⁵

Delving into the evidence of the Battle of France and of the Armée de l'Air allows a more balanced assessment of a fighting élite, primarily the *chasseur*, who apparently acquitted themselves much better than we have a right to have expected. In the critical years of 1934–1940 the civilian logistic infrastructure was equally vital, and that depended upon a viable interface between the politicians (cabinets and ministers), the airmen in the ministries and in command, and the aircraft industry. The complexity of the necessary structure is best gauged from the accompanying diagrams herein, “The Invisible Infrastructure—The Bamboo Basket, Britain 1939–1945” and “The Invisible Infrastructure—The Bamboo Basket, France 1940” (Figures 1 and 2). The top of the basket indicates that a country, state, or nation has to provide leadership and approval or acquiescence to a grand strategy or overall policy. The military then has to translate that into doctrine and, once that is in hand, into hardware and trained personnel, in addition to a viable system of bases, logistic maintenance, and salvage and repair. An important element of all these deliberations and calculations is a sense of time and urgency, and a power's perception of its place or space in the world, as well as others' conception of it. Success or victory requires various levels of authority, from dictatorship to consensus and cohesion. Input has had to go upward from the military and the technicians to the politicians, then down the civil side through industry to provide supplies and down the air side to produce the trained manpower to make a viable force.

For the whole to be effective and efficient, a start has had to be made with viable assumptions at a time of “uncertainty,” as Imlay and Toft have noted.⁶ By the end of 1930, that required a lead time of almost a decade, providing of course that money, matériel, and management were available. Moreover, among the uncertainties were factors such as the production rates, consumption, and wastage rates, the needs of training, operational serviceability, and the ability either to find and hit an enemy target or to launch fighters to defend vital points. In calculating consumption and wastage rates, salvage and repair of both accidents and combat had to be estimated and recovery or salvage and rebuild facilities organized.

The vital ingredients in this mix that make up the Bamboo Basket are a broadly focused general staff and not only Intelligence but its appreciation and dissemination. An examination then of the battles of 1940 involves much more than estimating whether or not each air force achieved its

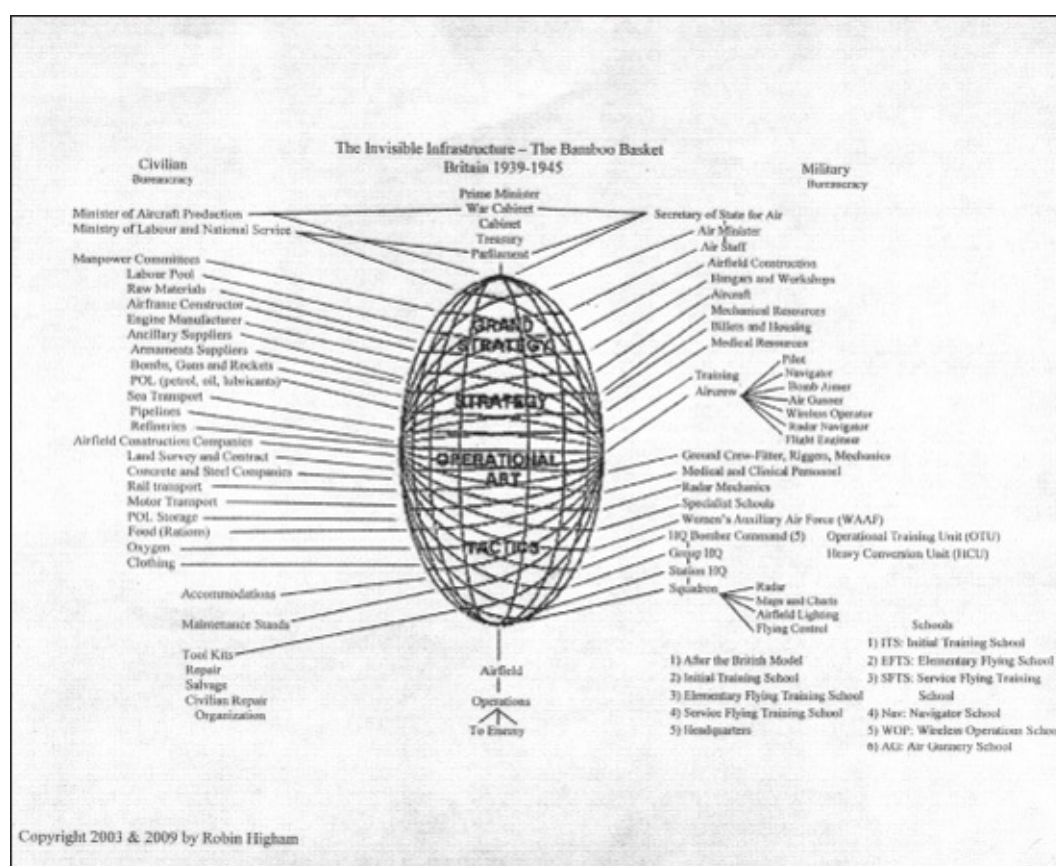
objectives, whether or not its claims were realistic, and how resilient it was in the face of battle.⁷

The Outcomes of Dysfunction

In 1937 Brigadier General Jean Hébrard stated, “The establishment of doctrine and all that stems from it—equipment programmes, manufacture, tests, use of funds, organization, industrial mobilization, tactical and strategic deployment—emerges therefore as essential and will condition future success or failures.”⁸

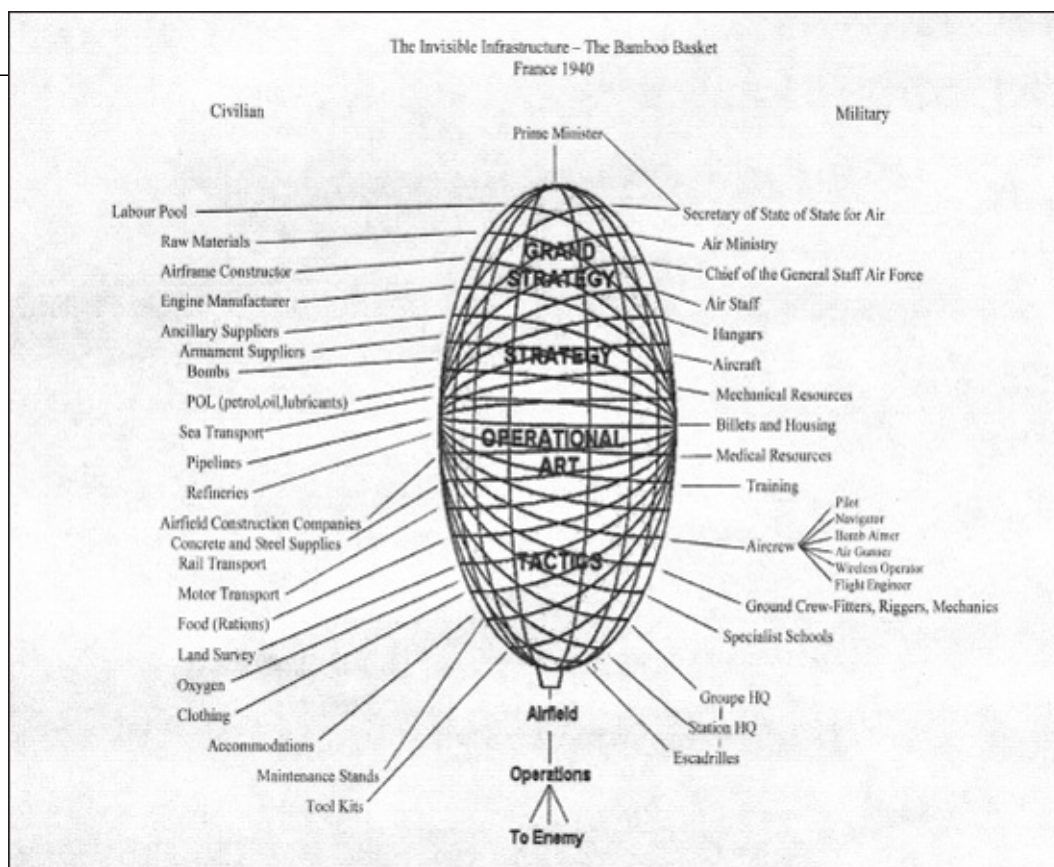
In spite of available Intelligence, the Armée de l’Air had prepared itself mentally and physically for a 1918 static war rather than a 1940 modern mobile war, a blitzkrieg.⁹ In addition, the nearly 1 million dead of the 1914–1918 war and the fear of another such slaughter had been a pall over France in the interwar years. In a sense, then, the undefeated “myth” was propagated by people who were anxious after 24 June 1940 to deflect the armée criticisms and who were not prepared to admit the culpability in part for the defeat of France, which still in the 1930s had been but an artificial great power.¹⁰

FIGURE 1. The Invisible Infrastructure—The Bamboo Basket. Britain 1939–1945



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FIGURE 2. The Invisible Infrastructure—The Bamboo Basket. France 1939–1945



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René La Chambre had been a junior minister of war before being appointed to the French Air Ministry offices on Boulevard Victor. He knew nothing about aviation and found the Ministère de l'Air (Air Ministry) in a lamentable state, but did not know enough to reorganize it. General Joseph Vuillemin, a World War I bomber pilot and noted North African explorer-flier, was a political appointment to the position of CGSAF¹¹ in order to restore morale in the Armée de l'Air. He was not a technical expert, nor was he versed in the ways of Paris. Vuillemin's July 1940 approach was more than paradoxical. While on the one hand he proclaimed the plethora of modern aircraft on charge on 24 June 1940, on the other he said that throughout the battle their serviceability (*disponible*) rate was only 30 percent.¹² Moreover he ignored the organizational and structural weaknesses of his force—the shortages of pilots and mechanics, especially of specialists, the lack of radios, and many aircraft on charge unfinished and thus not *bon de guerre* (operationally war ready). In other words, of the C3—Command, Control, and Communications—the Armée de l'Air was deficient in all three, including an established doctrine to guide procurement and deployment. The nation needed a streamlined procurement process, for as Air Vice Marshal (AVM) Peter Dye has noted, “increasing production was not matched by increasing deliveries.”¹³

Interestingly what happened in Paris in the 1930s was not a unique military/political experience. Much earlier, in 1861 in Washington, D.C., at the outset of the War Between the States, senior officers in the U.S. Navy Department had failed to use the knowledge and experience available to formulate well-considered plans for the blockade of the rebellious South—another mis-estimate of strategy and resources. Nor were comprehensive instructions to the Union Fleet drafted, which then should have been modified as reports came in.¹⁴ And the same could be said of the British Army in 1905 and the Red Army in 1939–1940. Mark Hinchcliffe notes that Colonel Richard Szafranski (USAF) has argued that the force command should be related to the objective. Centralized control and decentralized

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