



Brigadier General Billy Mitchell  
(U.S. Army Air Service)

# Learning and Adapting

## Billy Mitchell in World War I

By Bert Frandsen

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Dr. Bert Frandsen is an Associate Professor in the Department of Leadership and Warfighting at the Air War College, Maxwell Air Force Base, AL.

The 2012 Joint Staff *Decade of War* study concluded that U.S. military operations in the first half of the decade were “often marked by numerous missteps and challenges.” The second half, however, “featured successful adaptations to overcome these challenges.”<sup>1</sup> Reflecting on these conclusions, General Martin Dempsey has emphasized, “We need to put a premium on those who seek and embrace adaptability as an imperative.”<sup>2</sup> The Chairman’s emphasis on adaptability echoes similar comments made by the well-regarded British military historian Sir Michael Howard, who wrote that the capacity to adapt oneself to the “utterly unpredictable, the entirely unknown” is “an aspect of military science which needs to be studied above all others in the Armed Forces.”<sup>3</sup> In this regard, William “Billy” Mitchell’s experience in World War I provides an excellent case study in adapting to the unknown. Mitchell played a leading role in helping the American military adapt to an entirely new domain of war—the air.

Sometimes referred to as the father of the U.S. Air Force, Mitchell is one of the most famous and controversial characters in American airpower history. He is the subject of at least six published biographies and numerous articles. He was even the topic of a full-length Hollywood movie titled *The Court-Martial of Billy Mitchell*, starring another iconic American, Gary Cooper.<sup>4</sup> Unfortunately, most of the attention about Mitchell goes to his court-martial and his stormy relationship with the Army and Navy brass. Yet one of the most fascinating aspects of his career was that he was a newcomer to aviation at the outset of World War I. Despite that, he rapidly surpassed more experienced officers and became the Army’s senior operational air commander. More than any other American of the time, he mastered the operational art from the airman’s perspective, which he exemplified in his leadership during the Saint-Mihiel campaign. How did Mitchell do this? He was a well-educated and gifted officer, but at least as important and often overlooked was his ability

to learn after personal setbacks that ironically worked to his advantage.

## A Bitter Rivalry

In 1913, America's future airpower prophet and martyr for an independent air force testified in congressional hearings *against* aviation's independence from the Signal Corps. At this point in his career, Captain Mitchell was one of the rising stars of the Signal Corps, and at age 32 the youngest officer on the Army's new General Staff.<sup>5</sup> Instead of creating aviation as a separate branch of the Army, as proponents of independence hoped, Congress established the Aviation Section of the Signal Corps in 1914.<sup>6</sup> Accordingly, airpower advocates viewed Mitchell as antagonistic to their goals.<sup>7</sup>

Interestingly, a scandal at the Army's flying school in San Diego resulted in Mitchell's transfer from the General Staff in 1916 to the Aviation Section. As historian Juliette A. Hennessy noted, "A basic cause of the trouble was . . . that young flying officers wanted an air organization separate from the Signal Corps."<sup>8</sup> Because of his stellar reputation, Mitchell was selected to temporarily head the Aviation Section after its chief was relieved. Mitchell's job was to restore "old-fashioned military discipline among the so-called prima-donna pilots," opined Benjamin Foulois, one of the leaders of those prima donnas.<sup>9</sup> Later, Mitchell stayed on to become the deputy to the new aviation chief, Lieutenant Colonel George Squier, who returned from Europe where he had been observing aviation developments in the war.

It was during this period that a bitter rivalry developed between Mitchell and the pioneer Army aviator (and prima donna) Benjamin Foulois. Although Mitchell may be America's premier airpower prophet and martyr, Foulois rightly deserves to be called the father of American airpower. He flew with Orville Wright in 1909 on the Army's acceptance tests for its first airplane. He took Army No. 1 to Fort Sam Houston and, as ordered, taught himself to fly it. He helped form the Army's first Provisional Aero Company and commanded 1<sup>st</sup>

Aero Squadron during General John J. Pershing's Punitive Expedition against Pancho Villa. Foulois's command represented America's first employment of airpower on a major expedition. Although the squadron was incapable of adequately accomplishing its reconnaissance mission due to the inferiority of its airplanes, valuable lessons were learned that would be useful when Foulois helped build an American air force for World War I.<sup>10</sup>

Mitchell, from his comfortable perch at aviation headquarters in Washington, DC, harassed Foulois in the Mexican desert during the Punitive Expedition about such details as unauthorized purchases of gasoline. Later, as the United States mobilized for war in Europe, Mitchell's plans for the expansion of the Air Service overlooked establishing bases in the U.S. South and Southwest with their superior weather. Instead he focused on basing in the North and East, which was politically astute but revealed his ignorance on such practical matters as good flying conditions.<sup>11</sup>

Foulois referred to Mitchell's tour of duty in the Aviation Section as "a supreme irony which almost wrecked military aviation in this country."<sup>12</sup> Foulois continued, "Billy must have known that his days were numbered insofar as his usefulness as Squier's deputy was concerned. In March [1917] Mitchell asked for orders detailing him for duty as an observer of military aviation in Europe. As soon as Mitchell left, I was ordered to Washington to take his place."<sup>13</sup>

Mitchell was actually well suited for the job as an official observer because he spoke French, and the assignment provided an ideal stepping-stone to combat command. He toured the front, took detailed notes, and learned about air strategy, tactics, and organization through repetitive visits with the French and British air commanders and their units.<sup>14</sup> Most important, Mitchell's job required him to systematically record, reflect on, and analyze what he saw. "I was a different breed of cat from any of the others they had seen," he wrote in his hotel room at Chalons after visiting French pursuit commander Victor Menard. "Deep into the night they could

hear my typewriter clicking as I wrote up my notes."<sup>15</sup>

Mitchell kept up this habit of writing about daily experiences in his journal throughout the war as he moved from one position to another.<sup>16</sup> The modern reader cannot help but be impressed with his observations and analysis. Thus, it was not only being one of the first American aviation officers on the scene, but also his systematic and disciplined approach to learning that helped Mitchell develop a superior understanding of air warfare. By reviewing, writing, and processing his daily observations, he developed the insights that would help him learn the operational art from the airman's perspective. Keeping a journal helped him learn.

## The Air Service Expands

As the American Expeditionary Force (AEF) and its Air Service expanded in France during 1917, officers moved from position to position, as did Mitchell. He quickly advanced to colonel, becoming the air commander of the Zone of Advance. During this period, however, Mitchell commanded no aviation units because none had yet arrived in the Zone of Advance. He functioned mainly as a planner, all the while anticipating, studying, and laying the groundwork for the future employment of American airpower.<sup>17</sup>

The main effort for the Air Service at this time was not Mitchell's responsibility but rather that of his counterpart, Colonel Raynal Bolling, who commanded the Zone of the Interior and focused on the larger job of aircraft procurement, training, and reception of deploying units that were beginning to arrive in France. Pershing had decided to conduct the final organization, training, and equipping of the Air Service in France because the Americans were so far behind the Europeans in military aviation. It was a key strategic decision perfectly suited to the strategy of the French and British, who needed to build American partnership capacity to help them win the war.

This so-called Dual Monarchy of Bolling and Mitchell ended with the



General Mitchell standing by Vought VE-7 Bluebird (U.S. Air Force)

arrival of Benjamin Foulois in November 1917.<sup>18</sup> Foulois was the obvious choice to lead the Air Service because of his command of 1<sup>st</sup> Aero Squadron on Pershing's Punitive Expedition. He had quickly advanced from major to brigadier general back in Washington where he had finished laying the groundwork for the mobilization of American airpower.

Foulois brought his own staff and reassigned both Bolling and Mitchell to new jobs, removing them from key positions in the headquarters and replacing them with officers who had accompanied him across the Atlantic. Mitchell was greatly embittered with this treatment: "A more incompetent lot of air warriors had never arrived in the zone of active military operations since the war began. . . . The competent men, who had learned their duties in the face of the enemy, were displaced and their positions taken by these carpetbaggers."<sup>19</sup>

Foulois's dismissal of Bolling and Mitchell was a colossal error. The veteran from the Punitive Expedition failed to transition from tactical to senior leadership, where building consensus with other senior leaders and peers is so important. In effect, his reassignment of Mitchell and Bolling decapitated the Air Service at a time when recently acquired institutional knowledge was more important than ever. The growth rate of the Air

Service was just then rapidly accelerating as the effect of American mobilization began to make itself felt.

Foulois assigned Mitchell to be the chief of Air Service, I Corps.<sup>20</sup> Though a personal setback, this "demotion" removed Mitchell just as a tsunami of administrative and logistical issues arrived at the doorstep of his successor. American aero squadrons were beginning to reach the Zone of Advance at various organization and training centers (pursuit, bombardment, observation), where they received their aircraft and equipment and were made combat ready before being assigned to the front.<sup>21</sup> In contrast, when Mitchell arrived at the recently organized I Corps headquarters, it did not yet have operational control of any American combat units. As before, he did not command much of anything. He joined a headquarters whose staff was itself undergoing organization and training.

Like the other members of the staff, Mitchell conducted a study of his area of responsibility undistracted by the daily grind of command. This time he focused on the enemy: the organization, aircraft, and operations of the German air force.<sup>22</sup> Thus, by the spring of 1918, Mitchell had spent a year in France, developed plans for the tactical organization of the Air Service, and conducted in-depth studies of both the friendly and opposing

air forces. He knew more about these subjects than any other senior American officer.

Subsequently, the first observation and pursuit squadrons arrived in the I Corps area, known as the Toul sector. This was a quiet part of the front where American units gained initial combat experience under the control of the French Eighth Army. It was a peculiar command arrangement that provided Mitchell with maximum flexibility. He was not responsible for the orchestration of flying operations, nor did he issue daily operations orders because the French army performed this function, but he did have administrative jurisdiction. Captain Philip Roosevelt, the operations officer of 1<sup>st</sup> Pursuit Group, wrote, "God knows what his authority was, but as usual we decided that if it came to a question of getting along . . . we would do all the getting along."<sup>23</sup> These early operations provided Mitchell the opportunity to begin taking the measure of his men and machines in their first combats.

Mitchell also polished his flying skills. He arrived in France without the wings of an aviator, but the limited responsibilities of successive jobs enabled him to build on the flying lessons he began in the States. By then he had become an accomplished pilot, even learning to fly America's first fighter, the French-made Nieuport 28, which was a difficult plane to handle because of the gyroscopic effect created by its rotary engine. In May 1918 he led a six-plane exhibition flight of 94<sup>th</sup> Aero Squadron's Nieuport 28s during an awards ceremony in which the commanding general of the French Eighth Army presented the *Croix de guerre* to several officers of the 94<sup>th</sup>, including Eddie Rickenbacker, in recognition of their first victories against the Germans.<sup>24</sup>

In contrast, many of the experienced prewar Army aviators, such as Foulois and Colonel Robert Van Horn, who had replaced Mitchell as commander of the Zone of Advance, were so overwhelmed with the workload of building the Air Service that they simply could not devote time to learning to fly the latest combat aircraft. They could never lead by example as Mitchell did.



While at Toul, Mitchell anticipated the establishment of an Army headquarters that would be needed to control multiple corps as American doughboys poured into France. He established a provisional air headquarters for First Army. As happened before to Mitchell in the Zone of Advance, however, he was removed from this position just as First Army was nearing activation.

The deteriorating state of affairs in the Air Service, exacerbated by the earlier decapitation of its senior leadership, resulted in Pershing dismissing Foulois. His replacement, engineer officer Major General Mason Patrick, remembered Pershing describing the Foulois regime as “good men running around in circles.”<sup>25</sup> As the dominoes fell, Foulois arrived at the provisional air headquarters for First Army and told Mitchell, “There’s no use beating around the bush, Billy, I’m here to take over your office, your files, and your job. You are relieved as of this moment.”<sup>26</sup>

More than mortified, this time Mitchell was insubordinate. In response to Foulois’s request to stay on a few days to help with transition, Mitchell responded, “Not on your life, General. . . . [Y]ou couldn’t possibly acquire the knowledge to run this office in a few days and I’ll be damned if I’m going to make it easy for you.”<sup>27</sup> He refused to hand over officer furniture, maps, and even the telephone. It was a low point for Mitchell. Word spread throughout the upper echelons of the AEF that he was not a team player. Foulois asked Pershing to send Mitchell back to the United States, but Pershing instead counseled Mitchell and required Foulois to make the best of it.

Yet again this setback would ironically provide Mitchell the opportunity to further his study of air warfare, gain experience in a major coalition air operation, and surpass Foulois as the most important American air leader to emerge from World War I. By the end of May, Germany’s last great offensive, launched in March, had reached Château-Thierry only 40 miles from Paris. The resulting panic led to the piecemeal commitment of Soldiers and Marines to reinforce

Sixth French Army, which was reeling back from the German onslaught. The Marines fought one of their most famous battles at Belleau Wood, and the Army’s 3<sup>rd</sup> Infantry Division won the moniker “Rock of the Marne” for its stalwart defense along that river.

After observing these initial battles, one of Pershing’s scouts sent a strongly worded report back to AEF headquarters: “I recommend that an observation and a pursuit squadron of aero planes be sent here to work with this division at [the] first opportunity. The Germans have control of the air and embarrass our movements and dispositions.”<sup>28</sup> Consequently, Pershing ordered American aviation to the Marne sector along with the 1<sup>st</sup> Corps headquarters, which provided overall command for additional American units reinforcing the French.

Despite their previous falling out (but also getting Mitchell away from the First Army sector), Foulois put Mitchell in command of 1<sup>st</sup> Air Brigade, a new organization created to accompany U.S. reinforcements to the beleaguered Sixth French Army. Mitchell’s command consisted of 1<sup>st</sup> Pursuit Group and 1<sup>st</sup> Observation Group. Again, the lines of authority were unclear. First Pursuit Group received its operations orders from the chief of the Air Service of Sixth Army, which was in overall command of the sector. That was logical because the American Pursuit Group replaced Sixth Army’s former Pursuit Group, which had been practically shot out of the sky. First Observation Group, which directly supported 1<sup>st</sup> Corps with reconnaissance and artillery adjustment, took its orders from the corps.<sup>29</sup>

These unclear command relationships created a difficult conundrum for Mitchell’s subordinates, who sometimes received orders from multiple headquarters. Roosevelt explained, “I had to spend a lot of time seeming to obey their orders while really making my own dispositions. . . . All our orders really came from the French—which [Mitchell] approved.”<sup>30</sup> To be sure, the Army was still working out the nuances of command relationships between the pursuit

and observation groups and the armies and corps they supported. This was made all the more difficult while fighting under French command. Today, we would call Mitchell a COMAFFOR (commander of Air Force forces) who had OPCON (operational control) of U.S. 1<sup>st</sup> Pursuit and 1<sup>st</sup> Observation groups. He was supporting a French CFACC (combined force air component commander) who had TACON (tactical control) of the U.S. air forces of 1<sup>st</sup> Air Brigade. But these sorts of command relationships had not yet been created.<sup>31</sup>

Nevertheless, Mitchell’s presence enabled him to organize a tactical headquarters, which he located adjacent to the air headquarters of Sixth French Army just as it was preparing to conduct the largest combined air operation of the war up to that time. The Marne campaign served as his postgraduate education in aerial warfare.

## The Initiative Shifts

Anticipating a renewal of the German offensive, Allied Commander in Chief General Ferdinand Foch assembled a large air force as a strategic reserve. It consisted of the French Air Division, the Royal Air Force 9<sup>th</sup> Brigade, and U.S. 1<sup>st</sup> Pursuit Group. The French Air Division was the largest single aviation unit of the war. Its two brigades represented some 370 fighters and 230 bombers. Ninth Brigade provided an additional nine squadrons of offensive airpower. Added to that were the four squadrons of 1<sup>st</sup> Pursuit Group.

With his brigade headquarters collocated with the French Sixth Army air headquarters, Mitchell learned how to integrate multinational airpower in a large operation. Once the battle began on July 15, 1918, the combined forces established air superiority and attacked German crossing sites along the Marne. This operation helped defeat the German army in the most decisive battle of the war, known as the Second Battle of the Marne. After that, the Allies seized the initiative and never lost it. Germany would be defeated a few months later.

Meanwhile, Pershing finally activated First Army and was preparing for the



German Hannover CL IIIa brought down in Argonne by American machinegunners on October 4, 1918 (U.S. Army/NARA/J.E. Gibbon)

Saint-Mihiel offensive. The stakes were high because the United States had yet to demonstrate the ability to campaign on the European battlefield. Realizing that Mitchell was his best and most experienced air commander, Pershing returned him to the position of chief of Air Service of First Army, replacing Foulois who, to his credit, supported the decision and took a new job that focused on training and logistics.

First Army's mission was to reduce the Saint-Mihiel salient, a large bulge in Allied lines that had existed since the early days of the war. Foch was eager for Pershing to finish this attack quickly because he wanted the Americans to concentrate their main effort in the Meuse-Argonne sector, joining the French and British for the final offensives.

Accordingly, he reinforced Pershing with troops and enablers, especially artillery and aviation.

The French, British, and even Italians provided air units to reinforce the American Air Service's 28 squadrons. The total force numbered 701 pursuit planes, 366 observation planes, 323 day bombers, and 91 night bombers adding up to 1,481 aircraft for the largest air operation of the war.<sup>32</sup> In contrast to the Allied defensive battle on the Marne, Mitchell's plan supported an offensive operation and therefore took an entirely different approach. While American combat aviation operated within 3 miles of the front, Mitchell ordered the French Air Division to attack 12 to 20 miles behind enemy lines. By pressing the attack, he kept his enemy off balance and on the defensive,

unable to interfere with the First Army offensive.<sup>33</sup>

Saint-Mihiel occupies a special place in airpower history not only because it was the largest single air operation of the war. The concentration of coalition air forces did its part in helping Pershing to wipe out the salient and achieve a successful inauguration of American arms in continental warfare. Mitchell's example provided a vision for unity of command that would inspire airmen long after he passed from the scene. His continued command for the upcoming Meuse-Argonne offensive was a foregone conclusion. Just prior to the end of the war, Pershing made Mitchell chief of the Air Service for an Army group that would command First and Second U.S. Armies.<sup>34</sup>

## Conclusion

Billy Mitchell's experience in World War I is an ironic story of learning and adapting. Each setback he experienced could have been, and probably was, perceived as a failure. He commanded the Zone of Advance but was removed from that prestigious position just as it was becoming active. Although bitter about his relief, he showed initiative in establishing the office of the provisional air chief of First Army. Removed yet again, one sees this tendency for him to be "demoted" to positions where his authority and responsibility were reduced. The irony is that without these setbacks, he would not have had such ideal opportunities to learn. By the time the AEF was ready to conduct its first major offensive, even Foulois, who had asked Pershing to send Mitchell back to the States, admitted that Mitchell was the best man to command air operations in the AEF's final offensives.

Did Mitchell see it so optimistically at the time? His memoir suggests he was filled with resentment in each instance. He may have even feared he had been sidelined permanently. But as we have seen, setbacks can be learning opportunities. Indeed, it is the point of Tim Hartford's recent book *Adapt: Why Success Always Starts with Failure*.<sup>35</sup> In spite of setbacks, Mitchell persisted with an intensity that was undergirded by the self-confidence born of an inner light. He derived this *coup d'oeil* by developing a degree of competence in aerial warfare that far exceeded his American peers. His study of this new type of warfare was supercharged by the fact that throughout the war, whatever his position, he regularly made time to systematically process his experience by writing down his daily observations and analyzing what they meant. This practice helped him gain understanding.

One of the ironies of life is that setbacks can have silver linings, but to exploit this irony, we must learn, adapt, and more often than not persist in the face of adversity. Not everyone succeeds. To borrow from Carl von Clausewitz, the chaos and uncertainty that characterized the AEF's Air Service provided the

environment for Mitchell's creative and adaptive spirit to soar. Through a combination of persistence and a systematic approach to learning, Billy Mitchell adapted and learned the operational art from the airman's perspective. JFQ

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## Notes

<sup>1</sup> Joint and Coalition Operational Analysis Division, *Decade of War, Volume 1: Enduring Lessons from the Past Decade of Operations* (Suffolk, VA: The Joint Staff, June 15, 2012), 1.

<sup>2</sup> Martin E. Dempsey, "Building Tomorrow's Leaders," *Joint Force Quarterly* 67 (4<sup>th</sup> Quarter 2012), 2.

<sup>3</sup> Michael Howard, "Military Science in the Age of Peace," *RUSI Journal* 119 (March, 1974), 7.

<sup>4</sup> Phillip S. Meilinger, *American Air Power Biography: A Survey of the Field* (Maxwell Air Force Base, AL: Air University Press, 1995). Biographies include Paul H. Jeffers, *Billy Mitchell: The Life, Times, and Battles of America's Prophet of Air Power* (St. Paul, MN: Zenith Press, 2005); Roger G. Miller, *Billy Mitchell: Stormy Petrel of the Air* (Washington, DC: Office of Air Force History, 2004); James J. Cooke, *Billy Mitchell* (Boulder, CO: Lynne Rienner Publishers, 2002); Roger Burlingame, *General Billy Mitchell: Champion of Air Defense* (Westport, CT: Greenwood Press, 1978); Alfred F. Hurley, *Billy Mitchell: Crusader for Air Power* (Bloomington: Indiana University Press, 1975); Emile H. Gauvreau and Lester Cohen, *Billy Mitchell: Founder of Air Force and Prophet without Honor* (New York: E.P. Dutton, 1942). Otto Preminger directed the film *The Court-Martial of Billy Mitchell*, released in 1955.

<sup>5</sup> Mark A. Clodfelter, "Molding Airpower Convictions: Development and Legacy of William Mitchell's Strategic Thought," in *The Paths of Heaven: The Evolution of Airpower Theory*, ed. Phillip S. Meilinger, 82 (Maxwell Air Force Base, AL: Air University Press, 1997).

<sup>6</sup> Alfred F. Hurley and William C. Heimdahl, "The Roots of U.S. Military Aviation," in *Winged Shield, Winged Sword: A History of the United States Air Force*, ed. Bernard C. Nalty, I-28 (Washington, DC: Air Force History and Museums Program, 1997).

<sup>7</sup> Cooke, 50.

<sup>8</sup> Juliette A. Hennessy, *The United States Army Air Arm: April 1861 to April 1917* (Washington, DC: Office of Air Force History, 1985), 145.

<sup>9</sup> Benjamin Foulois with Colonel C.V. Glines, *From the Wright Brothers to the Astronauts: The Memoirs of Major General Benjamin D. Foulois* (New York: McGraw-Hill, 1968), 125.

<sup>10</sup> *Ibid.*, 60–65, 70, 87; Hennessy, 175.

<sup>11</sup> Foulois, 139, 141.

<sup>12</sup> *Ibid.*, 125.

<sup>13</sup> *Ibid.*, 141.

<sup>14</sup> Cooke, 51.

<sup>15</sup> William Mitchell, *Memoirs of World War I: From Start to Finish of Our Greatest War* (New York: Random House, 1928), 26.

<sup>16</sup> Mitchell's published memoir "probably represents the diary to a remarkable degree." *Ibid.*, vi.

<sup>17</sup> Bert Frandsen, *Hat in the Ring: The Birth of American Air Power in the Great War* (Washington, DC: Smithsonian Books, 2003), 86.

<sup>18</sup> Bolling and Mitchell were loosely supervised for a few months by non-flyer Brigadier General William Kenley.

<sup>19</sup> Mitchell, 165–166.

<sup>20</sup> *Ibid.*, 178.

<sup>21</sup> The Air Expeditionary Force Air Service established organization and training centers where pursuit, observation, bombardment, and balloon squadrons and groups were formed and made combat ready before being assigned to the front. See Frandsen, 8.

<sup>22</sup> Mitchell, 179.

<sup>23</sup> Philip Roosevelt was a favorite cousin of President Theodore Roosevelt and an ardent supporter of the President's "Preparedness Movement" for the war in Europe. See Philip J. Roosevelt to Captain [Arthur R.] Brooks, February 14, 1921, U.S. Air Force Historical Research Center, Maxwell Air Force Base, AL, file GP-HI (FTR), 5–6.

<sup>24</sup> Ninety-fourth Aero Squadron Alert Log, National Air and Space Museum Archives, file 1247, 216.

<sup>25</sup> Mason Patrick, *The United States in the Air* (New York: Doubleday, Doran and Co., 1928), 16.

<sup>26</sup> Foulois, 172.

<sup>27</sup> *Ibid.*

<sup>28</sup> Col. Walter S. Grant to [Col. Fox] Connor, June 15, 1918, in *United States Army in the World War* (Washington, DC: U.S. Army Center of Military History, 1988), IV-490.

<sup>29</sup> Frandsen, 150.

<sup>30</sup> Roosevelt to Father, July 8, 1918, Philip J. Roosevelt papers, family collection of Philip J. Roosevelt II, Chappaqua, New York.

<sup>31</sup> Thanks to Lieutenant Colonel Jim Burlingame, USAF (Ret.), for clarification on this point; Joint Publication 3-30, *Command and Control for Joint Operations* (Washington, DC: The Joint Staff, January 12, 2010), chapter 3; Air Force Doctrine Document 1, *Air Force Basic Doctrine* (Washington, DC: Headquarters Department of the Air Force, October 14, 2011), 105.

<sup>32</sup> Patrick, 27.

<sup>33</sup> First Army Air Service, Operations Order 1, September 11, 1918, in *United States Army in the World War*, VIII-216.

<sup>34</sup> Cooke, 100.

<sup>35</sup> Tim Hartford, *Adapt: Why Success Always Starts with Failure* (New York: Farrar, Straus and Giroux, 2011).