

USAWC STRATEGY RESEARCH PROJECT

**EARLY TRANSFORMATION: THE EMERGENCE OF THE ARMY AIR CORPS
AND CHALLENGES FOR THE POST WAR ARMY 1919-1932.**

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ABSTRACT

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The importance of the airplane as demonstrated by its performance in World War I signaled the beginning of the Army's concept of modern warfare in the early 20th Century. Incorporating this new asset into the larger, predominantly infantry culture, as well as manpower and organizational issues, posed significant transformation challenges for the U.S. Army. The resolution of these challenges had a significant impact on the organization and readiness of U.S. military as the United States entered World War II. Ultimately, the Army Air Corps would find its place in the Army and prove its value to the military as the world steadily moved toward the next conflict. This paper analyzes the incorporation of air power as a strategic asset and addresses the changes that the Army made to take advantage of this new technology in its post-war transformation. The analysis provides insights to current transformation processes and potential obstacles and solutions.

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EARLY TRANSFORMATION: THE EMERGENCE OF THE ARMY AIR CORPS AND CHALLENGES FOR THE POST WAR ARMY 1919-1932.

A new weapon has come forth, the sky has become the new battlefield.

—Giulio Douhet, 1912 Italian Campaign in Libya.¹

Even Douhet, the Italian aviator, who made this visionary statement in 1912 was amazed by the roles and the extent of the use of the airplane in the war that enveloped all of Europe from 1914-1918. Soon after hostilities began, most of the armies locked in combat along the front were stalemated in the trench warfare that characterized the conflict in Europe for most of World War I. The Great War brought new experiences, rapid innovation, and a respect for the potential of a machine which was widely considered not much more than a novelty prior to 1914. The airplane, operating high above the confines of the trenches, offered a number of tactical and operational advantages to the ground commander. Starting with its primary role of reconnaissance, to its use in artillery spotting, to ground attack and aerial combat, and to long range bombing, the airplane changed forever the way battles would be fought. The airplane developed into a new weapons system which foreshadowed the transformation of the battlefield through its employment in support of ground forces in the trench warfare of the Western Front. During the course of the war, deliberate decisions of military leaders to use the airplane in a variety of missions were based largely on battlefield necessity and opportunity. By the innovative use of aircraft in these roles, commanders were incorporating air power into the overall battlefield equation and opening the way for its acceptance as a mainstay of military power. In the process, they transformed warfare.

Toward the latter part of the war, the German and British militaries initiated the concept of long range bombing as aircraft design evolved to extend the reach of the early bombers. The U.S. Army, for its part, quickly developed its own doctrine for this type of bombing and employed it both independently and in concert with the Allies. After the war, this concept would eventually evolve into modern strategic bombing as technology and theoretical concepts of early air power doctrine caught up with World War I practice. Acceptance of a distinct strategic mission for the airplane in the inter-war period became the basis for transforming the Army and one of the key factors in the War Department's decision to establish the Air Corps as a separate branch of the Army. The United States' late entry into World War I denied Army Aviation much of the initial experience the European air services gained in aircraft design and armament, as well as the tactical employment experience of the airplane in combat and combat support. Moreover, the United States' relative isolation from most of the conflict delayed the Army's recognition of the

strategic importance of air power and its incorporation into the military as a new, strategic asset. Early American proponents of air power, such as Henry H. "HAP" Arnold, Billy Mitchell, and Benjamin Foulois, met considerable opposition as the Army's leadership was dominated by traditional infantry-oriented leaders, many of whom believed that Army aviation had not yet sufficiently matured to be tactically efficient or strategically significant.

From 1919 to just before World War II, the U.S. Army would struggle with the issue of an Army Air Corps, particularly its strategic importance and its doctrine, and how to resolve them. The infantry-culture dominated military hierarchy, budgetary constraints, congressional involvement, and inter-service rivalry all posed significant challenges to this transformation. Nonetheless, the allied experiences of World War I, combined with the experiences of American pilots and commanders in the conflict, planted the ideas that would later evolve into America's military air component. Ultimately, the Army Air Corps would find its place in the Army and prove its value to the military as the world moved inexorably toward the next global conflict. Some of their challenges are relevant to the problems faced in today's Army Transformation.

THE AIRPLANE COMES TO THE FOREFRONT IN THE GREAT WAR

The early years of U.S. Army aviation were difficult. The slow development of military aviation during the first ten years after the invention of the airplane (1903-1914) was largely due to the fact that aviation was still in its experimental stages. For the United States, this stage would continue for several more years as Army aviation struggled with a number of technical problems, which temporarily cast a shadow over the airplane's significance to the Army. During that time, the airplane was better known for its mishaps than its utility to the service.² For many, the airplane was not much more than a novelty, which had not proven its value to the infantry-dominated Army. The Army's skepticism about the airplane was based upon its relative failure to demonstrate a significant strategic application beyond observation and reconnaissance, which was limited during these early years by outdated technology. The U.S. investment in its technology, meager by European standards at the time, did not quickly produce the results the Army leadership had desired. Though the skill and dedication of the early pilots who flew in Mexico were exemplary, the airplane's lack of importance to the U.S. Punitive Expedition into Mexico in 1916 served to reinforce the notion that it was not yet a viable military asset.³ In Mexico, the few planes that were operational served mostly as mail carriers and a means of communication with forward commanders. As early as 1914, this experimental stage in Europe was ending as aircraft became more capable and dependable. The airplane began to be recognized as more than just a surveillance platform. Though its value in providing intelligence

of the battlefield was its greatest attribute, as World War I progressed, the exigencies of the conflict, combined with the imagination and resourcefulness of its aviators and their commanders, led the military to greater and greater tactical and operational applications for the airplane. By 1915, the state of U.S. military aviation however was woefully behind the European powers. At that time, U.S. Army aviation consisted of 46 officers, 243 enlisted men, and 23 aircraft. In contrast, French aviation schools alone produced 1,484 pilots for the war effort in 1915, and nearly doubled that number to 2,698 the following year.⁴ At the end of the war, the French, British, and German armies had frontline aircraft strengths of 3700, 2600, and 2500 airframes respectively.

With the increasing use of the airplane in support of ground operations, there was a dramatic increase in aircraft and personnel losses. The casualty rate of pilots from ground fire and enemy planes was extremely high. Because of these dangers, modifications were made to increase the airplane's utility and survivability over the battlefield.⁵ By the first months of the war, the European militaries were quickly adapting to the airplane's vulnerabilities with armoring.⁶ Over the course of the war, other modifications to its design, power, and armament would make it a true weapons platform, giving the airplane greater offensive and defensive capability. Unsurprisingly then, the single most overriding consideration in the design and construction of aircraft during this period was the quest for greater performance.⁷

AIR SERVICE ORGANIZATION AND DOCTRINE

Though the airplane represented a relatively new technological advance with its invention in 1903, by 1914 it had already attracted more attention than the balloon, which had been used for decades as a static observation platform.⁸ The airplane's information gathering abilities were included in annual military maneuvers in Europe as early as 1910 and by 1912, book length treatises on airplane reconnaissance had appeared in Germany, France, and Russia. Moreover, air power in Europe was strategically important because of its early intellectual recognition both doctrinally and organizationally. During the early years of the war (1914-1916), the typical air services in Europe were accepted as having a valid mission and distinct function in warfare. The European air services had also achieved a viable organization structure that increased their importance within their respective militaries in terms of military power. Their specialized mission and functions were now transforming them from an engineer appendage, to autonomous military arms. This recognition led to the creation of the British Royal Flying Corps in 1912 (two years before World War I), the French Direction de la Aeronautique in April 1914, and the Italian Corpo Aeronautico Militare in January 1915--years before U.S.' reorganization of

its own distinct Air Corps. Upon recognizing the importance of air power and strategic bombing, the British moved to the forefront with the establishment of the Royal Air Force in 1917, a separate service.⁹

RECONNAISSANCE AND AERIAL PHOTOGRAPHY

The most significant contribution that the airplane made during World War I was providing the ground commander with information on the enemy's deployment and movement of troops through aerial reconnaissance. The airplane's success in providing this crucial information led to its initial acceptance by the military. Within that role, the importance of aerial photography to ground forces cannot be overemphasized. The Germans, for their part, had some 100 aerial cameras on hand when hostilities began in 1914, and by February 1915, the British were also using aircraft for aerial photography. Over the course of the war, battlefield photography grew tremendously, serving as a basis for highly detailed maps of the enemy's positions and for the artillery's firing plan--crucial information used in preparations for attacks. In 1916 the Italian Army was distributing aerial photography to division and brigade level. By the end of the war, these pictures were being distributed in the trenches. Aerial photography had so become an integral part of British intelligence requirements that during four years of war, it is estimated that the British took half a million pictures. A related development also came in 1915 when wireless transmitters became a fixture on observation planes flying the Western and Italian fronts.¹⁰ Pilots and observers could now report on the battlefield in real time, instead of returning to base, signaling, or dropping messages over friendly lines.

TACTICAL AND OPERATIONAL APPLICATIONS OF AIR POWER

Though the airplane's main purpose in 1914 was reconnaissance, within the first few weeks of the war, its offensive capabilities were explored. This was initiated when airmen saw targets of opportunity as they flew over the battlefield lines, pelting enemy troops below with any projectile they could find. Over time, the weapons used for these purposes increased in accuracy and lethality. Moreover, the various air services soon developed bombsights in an effort to improve the new method of delivering ordnance. Over the next two years, the warring nations would continue to expand their uses of the airplane and by the end of 1916, air power's application in a ground attack was an essential part of tactical and operational military planning. The military advantage provided by air power was considered so essential that air support for an offensive was sufficiently important for an attack to be postponed if the planes could not fly.¹¹

During World War I, artillery fire produced the greatest number of casualties—a major change from previous wars when casualties from small arms fire were predominant. A significant contribution of the airplane on the Western Front was its use in directing counter battery fire. Historically, as early as 1909, the French artillery requested airplanes for counter-battery fire, and for a time, the French Air Service was actually organized under the Artillery. In 1912, a unit of the Italian Air Service was assigned to work exclusively in developing artillery spotting techniques. During World War I, aerial artillery spotting, like other reconnaissance functions, had the effect of inhibiting movement, of keeping the armies in their earthworks and thus contributing to the defensive side of warfare. The effectiveness of the application of the airplane was so significant that by the summer of 1916, British Air Squadrons were devoting two-thirds of their resources for this purpose.¹² Toward the end of the war, the effectiveness of the airplane in attacking targets on the ground and the demoralizing effects that this had on enemy troops began to gain favor with the Army Air Service.¹³ In his final report at the end of the war, Major General Mason M. Patrick, Chief of the Air Service, declared, "...it will be well to specialize in this branch of aviation and to provide squadrons or groups with armored airplanes with machineguns and small bombs for just such work against ground objectives."¹⁴ Only strategic air power seemed to offer a real alternative to the bloody, indecisive collisions along a static front.¹⁵

ROOTS OF STRATEGIC BOMBING

In mid-1917, the Germans began to incorporate long range bombing into their air war with the deployment of large, twin-engine bombers against targets in England.¹⁶ Strategic bombardment was described at the time as, "long-range strikes against centers of military supply."¹⁷ Though the German bombers did relatively little damage, early aviators believed there were psychological advantages to the attacks and envisioned an important role for the airplane in breaking the will of the opposing nation to continue the conflict. In that regard, news accounts of the period reflected considerable public anxiety in England over the Germany's bombing campaign. The British also undertook long range bombing as a viable tactic, employing it in key sectors along the Western Front. The key Allied proponent of this type of bombardment was Major General Hugh M. Trenchard, who was given the command of an independent bombing force within the newly established Royal Air Force in 1917. This unit was charged with "...direct action against the heart of the German industrial system."¹⁸

During 1917-1918, American Army aviators developed their own strategies and plans for bombing German industrial targets. Responding to the influence of their British counterparts, as

well as the actions of the Germans against England, the U.S. military leadership recognized the utility of striking targets deep within enemy territory. By war's end, both the United States and Great Britain had coordinated a strategic bombing plan, which would include air assets in a combined allied effort.¹⁹ By the signing of the Armistice in November of 1918, U.S. aircraft were bombing the Rhine cities of Germany. General Billy Mitchell believed at the time that if the war had continued into 1919, the U.S. would have been able to bomb Essen as well as Berlin itself.²⁰

It was during this period that the U.S. Army aviators developed the foundation of an air power doctrine that included long range "strategic" bombardment. According to Colonel Edgar M. Gorrell, one of the principal authors of strategic bombing during this period, the lack of American air assets availability in 1917, and the opposition by General Headquarters to divert other air assets to this task, were the main reasons that this "strategic" bombardment was not carried out on a greater scale. These concepts would consequently lie dormant for years until technology, doctrine, and world events would make it imperative for the U.S. Army to adopt it.²¹

THE U.S. JOINS THE FIGHT

Although the Army aviation's evolution advanced at a slow pace relative to the European powers, the crisis with Germany over the submarine campaign of 1915 brought to the forefront the United States' "unpreparedness" for war. The controversy that ensued resulted in a number of studies done by the military at the behest of President Woodrow Wilson. Included among these studies was then Colonel Billy Mitchell's survey of America's military aviation needs. The unsigned report provided a critical analysis of the nation's aviation capabilities and needs and, in combination with other studies and factors, supported the passage by the U.S. Congress of the National Defense Act of 1916, which almost doubled the size of the Army over a five-year period.²² Although the Congress had voted to provide funds toward the development of U.S. military aviation, U.S. production lagged well behind expectations. Members of Congress, for their part, had rashly promised to "darken the skies of Germany" with U.S. planes. On July 24, 1917, Congress voted \$640 million in order to construct 22,625 airplanes—four times the number of allied aircraft combined.²³ The National Defense Act of 1916, however, was enacted too late to meet the immediate needs of the American Expeditionary Force. Though efforts were made to boost domestic production, the U.S. aviation industry was unable to provide sufficient aircraft and equipment during the war. The limited equipment the U.S. Air Service finally received after 1917 consisted mostly of French fighter aircraft. Moreover, early U.S. Air Service commanders were challenged with organizing the new Air Service which came into

being in 1917. General John J. Pershing, the Commander of American Expeditionary Forces in Europe, put it succinctly, "...good men running around in circles."²⁴ By the time of the Armistice however, there were 45 American squadrons assigned to the armies on the Western Front. Though almost all of the 740 planes were French, they were manned by 1200 American airmen. In terms of technology, having been denied access to research and development data by the French and British governments for nearly three years, the U.S. began its aviation program virtually from scratch.²⁵ As late as 1917, in writing about the United States un-preparedness for aerial warfare, General Pershing commented, "...the situation was that every American ought to feel mortified to hear it mentioned...with the exception of five or six officers, none of them (the current pilots) could have met the requirement for battlefield conditions."²⁶ The full force of U.S. military production was not felt on the battlefield in Europe until 1918. By that time, the U.S. was sending massive amounts of men and materiel to Europe, breathing new life into the allied effort which had borne the brunt of the conflict for three years. Toward the end of the war, U.S. produced aircraft and components began to supplement the needs of the U.S. Army as well as the Allied air services' requirements. By the end of the war, the U.S. was producing hundreds of airplanes, with planned production for thousands more had the war continued into 1919.²⁷ However the majority of the planes produced for the war effort never saw service in Europe.

Although the U.S. government had been in a rush to build up its production in support of the war effort, as soon as the armistice was signed in November 1918, the U.S. government ordered its representatives in France to drastically curtail expenditures.²⁸ With the war over, the U.S. government was interested in drastically reducing war time expenditures. The concept of maintaining the peace through a strong defense had not yet evolved or made its way into our national defense policy. Nonetheless, a small peacetime military was not consistent with America's newfound status as a world power following the Great War. Ironically for U.S. military aviation, the downsizing of the budget, and the negative effects that would have on the development of air power came at the same time the public developed a fascination with flying—an interest that would remain high for decades to come. After 1918, the U.S. military was once again faced with belt-tightening, just when investments were much needed in its various branches, including its air arm, in order to capitalize on all the modern technology and changes in doctrine resulting from the war time experience. New concepts, including strategic bombing, and the expansion of close air support, required an active air program with commensurate funding to make these capabilities a reality for the Army.

THE INTERWAR YEARS AND THE PERILS OF TRANSFORMATION

The period following World War I was a defining one for U.S. air power as the Army came to grips with a new technology and doctrine and with all the challenges that they brought. By 1918, air power had demonstrated its value to the Army in reconnaissance, artillery spotting, and ground attack. Long range bombing too had been introduced, but its true value was yet to be fully recognized. Nonetheless, air power emerged from the war as the most promising new facet of military power. In the Interwar period, the infantry-dominated Army leadership, the War Department, and the Congress all set the parameters and pace for air power evolution in the Army. However, the concepts of military power for the most part remained largely grounded in the traditional branches of the service. In fact, early U.S. Army proponents of air power initially reiterated the subordinate role of aviation to the ground effort upon their return from Europe, most likely in deference to the leadership at the time. While there had been pre-Armistice efforts to build a separate air organization, these initiatives did not meet with the success required to radically change the military structure of the Army. Moreover, despite the wide range of new applications of military aviation on the battlefield during World War I, aviation itself had not provided success: that distinction was credited to the infantry, with the support of the artillery. Air power's accomplishments did not justify a significantly more independent organization, much less one which required greater expenditures, in the minds of many Army leaders. During the early 1920's, military appropriations were cut repeatedly by Congress. Reflecting on the situation the Army faced during his term, General Pershing recalled that in 1924, the last few years had been a period of economy, "...we are down to rock bottom."²⁹ Indeed, some key Army leaders considered expenditures on aviation as detrimental to the interests of the Army. Consequently, there was considerable opposition at the top to reorganization efforts.

Overall, the conservative leadership within the Army, and the War Department in general, was not conducive to change. General Pershing was opposed to an independent air force, stating that the air service was "...incapable at that time."³⁰ The War Department leadership was equally unimpressed and blocked all moves toward greater air service autonomy. By supporting the Army Reorganization Act of 1920, it merely restated the Air Service's status during the war.³¹ The new Air Service remained a relatively small organization. In 1920, it was formally organized as a combat arm, with 1516 officers and 16,000 enlisted out of an overall Army strength of 280,000.³² The situation that the Air Service very rapidly found itself in was compounded by the general public's lack of interest in funding or maintaining a large peace time military—and by extension—any significant expansion in the size and scope of Army Aviation.

Ironically, this general public outlook belied its continuing fascination with aviation during the post war years, commonly known as the Golden Age of Aviation.

The early proponents of air power were confronted with a successful Army, an Army that had won its war and saw little need to change. Within the Army there were differing views with regard to the strategic importance of military aviation. While the role of the airplane in World War I was modest, the role of the Great War in the rise of air power was significant.³³ For those aviators who participated in the war, their vision was clear: military aviation would take the military to victory in the next war through the continued development of airplanes and the strategic application of air power. For others in Army leadership positions however, the airplane had not yet proven its strategic relevance. Secretary of War Newton Baker, in his annual report in 1919, stated that statistics on casualties inflicted on the enemy by aerial bombardment during the war showed that it had been relatively ineffective.³⁴ He went on to say that the most useful operation of airplanes had been for observation and fire control (artillery spotting), minimizing the ground attack, aerial combat, and long range bombardment roles that the airplane had assumed with considerable success. In a reflection of contemporary military thinking during that period, a tentative service manual prepared in 1919 by Col. Gorrell, by then the Assistant Chief of Staff of the Air Service, underscored the predominance of the ground force-centric thinking of the Army during the early twentieth century. However, the service manual, which was produced under the air service's direction, provided a narrow opening, giving air power credit for assisting the infantry in achieving victory by affecting the morale of the enemy "out of proportion to its material destructiveness."³⁵ Air Service leaders, in response to the prevailing attitudes at the top, nonetheless took issue with the contention that aerial bombardment had had a limited effect in the war. Major Benjamin Foulois, another aviation proponent, stated that the results of this type of bombardment had been good relative to the equipment available, and that in the future, air fleets would be locked in battle for control for the sky—a prelude to the Battle of Britain in 1940, and the strategic bombing campaign over Europe for much of the Second World War.³⁶

The subordinate role of air power to the infantry continued to be reflected in Army doctrine through the early 1920s. In Fundamental Conceptions, a manual prepared under the direction of Major General Mason M. Patrick, Director of the Army's Air Service at the time, an underlying theme was that all air action was auxiliary to the ground battle.³⁷ On the other hand, General Mitchell, buoyed by the success of the airplane in combat, continued his campaign to win greater recognition for the air corps while serving on the staff of the Chief of the Air Service from 1919 to 1925. By 1920, the magnitude of the problems facing General Mitchell was apparent. He lost his initial campaign to convince his military colleagues and civilian superiors of the

soundness of his views on strategic air power. Moreover, the military in general faced an almost violent reaction among the American people against war, and a refusal to appreciate their greater place in world affairs as a result of World War I. Mitchell subsequently changed his tactics and began hammering the idea that aviation could make a distinctive contribution to the defense of the United States. Through his continued advocacy of strategic air power, he became a one-man show, single-handedly taking on the conservative establishment. Mitchell nonetheless found wide support on this issue with his fellow officers, who regarded him as their champion against overwhelmingly infantry-oriented high command. Though eventually forced out of the Army on the grounds of insubordination in 1926, he had accomplished one major objective in his personal battle with the Army leadership: he had made the country conscious of the air power issue—an issue which remained alive many years after his departure.³⁸ Perhaps the most important role in building support for strategic air power within the Army's leadership was that played by Major General Mason M. Patrick, who was the moderate, progressive spirit within the Air Service. As the service's Chief of Staff from 1921 to 1926, he brought discipline to the organization, absorbing the outlook of the new branch, earning his wings, and becoming the champion of the Air Force cause. He defended the Air Service against powerful opposition and secured substantial gains before his retirement.³⁹

In addition to Mitchell's writings on strategic air power, several British aviators also proposed the use of a strategic air power in books and articles, which were widely distributed and reviewed by personnel within the Army Air Corps. Books by authors such as Brigadier General R. P. C. Groves and Captain Basil Liddell-Hart, who proposed the use of strategic bombing, were widely circulated and accepted by U.S. Army aviators. For his part Liddell-Hart asserted that the best way of subordinating the enemy's will was to disturb (or threaten to disturb) the normal life of a people so that they would prefer the lesser evil of surrendering. The influence on the U.S. Army aviation of this line of thinking, in contradiction to standard Army doctrine, was shown in a lecture by General Patrick at the Army War College in 1925. Gen. Patrick accepted Liddell-Hart's underlying assumptions regarding the art of war and agreed that direct action against the enemy's will (through strategic bombing), rather than the slaughter of armies, was the correct means of conducting war. In concluding his lecture, General Patrick tied the issue of the nature of war to the organization and role of the air arm. Granting that Liddell-Hart's arguments were essentially correct, General Patrick asked, how could air power best be applied against the will of the enemy? He answered that it could be achieved only by an air force centrally organized and controlled by those who understood it and what it must do. Patrick had once again turned to the basic question which had created so much dissension

between the War Department and the Army Air Service immediately after World War I, how should the air arm be organized and controlled?⁴⁰ Fitting major new capabilities into existing organizational structure is a difficult transformation undertaking.

Military aviation in World War I changed the mindsets of those who actually flew. For them flying was a new, uncharted dimension, and air power represented a seemingly unlimited potential for shaping or influencing the battlefield. Air combat against other aircraft extended further the concept of air power; air power was more than simply serving a supporting role to the infantry. Toward the end of the war, Allied aviators took military aviation to the next dimension by employing bombers in long range bombardment, a tactic which would eventually have strategic implications for the Army. It was not until after the war, and the frustrations of Army Aviation officers in getting the greater Army to allocate additional resources, that the growing pains of Army aviation would be felt. Innovations in warfare appear to have second and third order effects that cannot be immediately ascertained and evolve only through practice.

Rather than judge the role and organization of Army Aviation on its merits, many senior Army leaders at the time considered the outspokenness of the younger Army aviation leaders, such as General Mitchell, as having a detrimental effect on military discipline. In part, they didn't accept the concept of a separate service readily because the messengers of these concepts, most notably General Mitchell, did not adhere to the conservative, infantry-dominated Army culture, which up to that time had been the foundation of the service. Resistance to change also was a strong motivation in keeping Army aviation in check. Though the Army leadership perceived the advantages that Army Aviation brought to the Army in terms of new tactical and operational applications, they were not prepared or willing to make the changes implied for the existing force. Change is always difficult to make in major organization, and how it is presented can aid or hinder the larger process of change.

Another reason for the bias against a more independent Air Corps was the deleterious effect the Air Corps was having on the larger army. The War Department distribution policy for filling officer vacancies utilized at that time in manning the vacancies within the Air Corps as well as other specialized sub-elements punished the line units. In the case of the officers who transferred to the Air Corps and chose the Air Corps out of West Point, the vacancies were not filled until the next rotation cycle. This policy created significant shortages of lieutenants in troop units. Moreover, these officers were released for a period of training which lasted for a year—effectively resulting in a shortage of these officers in their basic branch for a year or more if they successfully completed aviation training. Eventually, the Army Personnel Branch moved to fix these shortages with quotas from the West Point Graduating Class to the branches

providing candidates for flight school, however the perception that the Air Corps was the reason for the shortages continued.⁴¹ Transformation costs that are borne by other units with continuing missions act as a detriment for the acceptance of the change.

Thus Army aviation became mired in an environment, which was slow or resistant to change. In 1926, after months of argument and bitterness and the court martial of General Mitchell, the Army High Command triumphed over the "crusaders" for air power. After this internal struggle, Army aviation leaders shifted to more moderate objectives. During the first half of the 1920's, there were a number of pieces of legislation in Congress, innumerable investigations, hearings and reports.⁴² Certain members of Congress recognized the importance of Army Aviation and sought to legislate changes, against the prevailing opinion of the War Department and the senior Army leadership. However, for the most part, Army aviation remained under the tight control of the traditional leadership and only the use of a new threat in the form of the Axis Powers would lead to a modern air corps.

In reviewing the sequence of events during the period in which the Army Air Service emerged from World War I, it is clear that the changes that aviators within the Army were pushing for were too rapid for the Army to absorb. In terms of timing, early advocates of air power were demanding more from the system than the system was prepared to deliver. Historically, wartime is a great incentive for the testing and acquisition of new technologies and doctrine, but it is much more difficult to effect change in peace. Air power represented a new technology and valuable alternatives to the trench warfare of World War I, but would require time for the development of its own doctrines. Sufficient time had not passed when the Germans defenses collapsed in 1918. For U.S. strategic air power, the time under which this new facet of military power flourished was too short and consequently barriers against its greater recognition were quickly erected with the coming of peace.

Though the airplane had been deployed in long-range bombing during the Great War, and early aviators referred to this type of bombing as strategic, in reality, during the immediate post war years, the technology did not yet exist in terms of airplane design or payload capacity to undertake true strategic bombing. Moreover, the infantry oriented leadership of the Army at that time was not yet convinced of the strategic importance of the airplane and consequently did not approve of its stature increasing within the Army without demonstrable evidence of its capabilities.

CONCLUSION

As stated in *Army Transformation—A Case Study*, processes develop over time. When processes are compressed by circumventing certain steps, there is a risk of passing the checks and balances imbedded in the process.⁴³ After World War I, the Army did not wish to incorporate a new doctrine and technology until its applicability and value were thoroughly tested. World War I was a success and the Army's leadership was comfortable with their success--an infantry and artillery solution. Strategic air power's incorporation and organization within the infantry-culture Army, combined with a general lack of interest in a large peacetime Army, inhibited the growth of Army aviation both qualitatively and quantitatively. The experiences gained from combat and combat support roles during the war did not quickly translate into favorable decisions by the Army leadership. The continued rapid development of airplane technology, and the emerging implications of strategic bombing eventually forced the Army leadership to face air power's considerable strategic implications. Once accepted, the Army moved aggressively to incorporate this new capability and supported its continued growth and expansion up through the beginning of World War II and beyond. This early lack of key policy decisions and senior leader support created a situation leaving the nation unprepared for a major conflict involving strategic air power.

It is debatable whether more progress could have been made even with political support from the Army leadership given the long term economic recession which the country endured from 1929-1941. Nonetheless the advent of aviation as new technology, and the greater interwar environment (including political and economic forces) within aviation that emerged serve as important learning opportunities for future decision-makers. The historical examples of problems, challenges, and solutions of the rise of airpower and the transformation of the World War I armies are relevant to today's transformation. It suggests that despite our best efforts to modernize and transform, basic prejudices, community interests, and competing priorities will slow and impede progress. It is of interest that during this period other nations' air services and corps suffered similar experiences in achieving acceptance and recognition into their existing military structures. This study offers some insights of how this occurs and provides a historical illustration of the process and impediment to transformation.

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ENDNOTES

¹ Lee Kennett, *First Air War 1914-1918* (New York: Free Press, 1991), 18.

² A. Timothy Warnock, "From Infant Technology to Obsolescence: The Wright Brothers' Airplane in the U.S. Army Signal Corps, 1905-1915" in *Air Power History*, Vol. 49 (Winter 2002): 48-56. The initial crashes of Army planes during the initial evaluation/acquisition period as well as the problems encountered during the Pershing expedition into Mexico served to diminish the airplane's importance to the Army leadership at that time. It was not until The U.S. Air Service's performance during World War I, that U.S. military aviation began to gain support. Nonetheless, the Air Service, and the Air Corps faced an uphill battle during the interwar years in gaining greater recognition.

³ John J. Pershing, *Report of the Punitive Expedition* (U.S. Army War College, Military History Institute, 1916), 45.

⁴ Kennett, 120.

⁵ Ibid., 19.

⁶ By 1914, the French had three armored models in their inventory. Kennett, 19.

⁷ Kennett, 100.

⁸ Ibid., 30.

⁹ Ibid., 8.

¹⁰ Ibid., 34.

¹¹ Ibid., 89.

¹² Ibid., 35.

¹³ Thomas Greer, *The Development of Air Doctrine into the Army Air Arm* (Washington, D.C.: Office of Air Force History, 1985), 12.

¹⁴ Kennett, 35.

¹⁵ Ibid.

¹⁶ Ibid., 59.

¹⁷ Greer, 9.

¹⁸ Ibid.

¹⁹ Ibid., 11.

²⁰ Ibid., 10.

²¹ Greer,9.

²² Alfred Hurley, *Billy Mitchell: Crusader for Air Power* (Bloomington: Indiana University Press, 1975), 19.

²³ Herbert Mason, *The Lafayette Escadrille* (New York: Random House, 1964), 231.

²⁴ Hurley, 32-33.

²⁵ Kennett, 215..

²⁶ Mason, 230.

²⁷ Kennett, 214-216.

²⁸ James Tate, *The Army and its Air Corps: Army Policy Toward Aviation 1919-1941* (Maxwell Air Force Base, AL: Air University Press, 1998), 1.

²⁹ Ibid., 28.

³⁰ Greer, 23.

³¹ Ibid., 25.

³² Hurley, 49.

³³ Kennett, 226.

³⁴ Hurley, 37. As early as 1918, Secretary Baker had warned the Air Service leadership that the U.S. would not participate in any bombardment plan that had as its objective "promiscuous bombing upon industry, commerce, or population disassociated from obvious military needs...."

³⁵ Greer,15.

³⁶ Ibid.

³⁷ Ibid.,16.

³⁸ Hurley, 55-56.

³⁹ Greer, 25.

⁴⁰ Ibid.,18-20.

⁴¹ Ibid. Harry Richard Yarger, "Army Officer Personnel Management: The Creation of the Modern American System to 1939" (Ph.D. diss., Temple University 1996), 424-425.

⁴² Greer, 25.

⁴³ Edward J. Filiberti, James R. Oman, and James H. Thomas, "The Army Transformation: A Case Study" in *Joint Processes and Land Power Development*. Vol. 3 (Carlisle Barracks PA. U.S. Army War College, 2003), 543-544.

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