

## DEVELOPMENT OF AIR DOCTRINE

1917 – 41\*

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Among its colored charts and uncolored judgments, the sober report of the *U. S. Strategic Bombing Survey* contains this figure of speech: “Air power in the last war was in its infancy.... In this war, air power may be said to have reached a stage of full adolescence.”<sup>1</sup> Whoever is curious to understand that growth in maturity in the U. S. Army air arm between Chateau-Thierry and Rouen-Sotteville No. 1 may find that there is a political, a technological and an intellectual phase to his problem. He may study the long and bitter struggle for an independent air force; or the constant search for bigger and better bombers; or the development of a new concept of war built around the air weapon. Those phases were mutually interdependent, and to determine which was the controlling factor might involve the student in some “hen-first-or-egg-first” sort of metaphysics, but either might serve as a convenient avenue of approach. American interests being what they are, we need fear no neglect of politics or technology; we may leave the independent air force with Congress and the heavy bombers with Boeing and Consolidated, and examine the growth of doctrine as if we were proper theologians. Without stretching the evidence too greatly one might suggest the thesis that it was the growth of a new

\*A paper read at the Fortieth Annual Meeting of the Mississippi Valley Historical Association, Columbus, Ohio; April 24, 1947. The author has written a fuller account of the growth of air doctrine in the first volume of a general history of the Army Air Forces which should appear soon. *Editor*.

<sup>1</sup> *The United States Strategic Bombing Survey, Over-all Report (European War)*, September 30, 1945 (Washington, 1945), p. 1.

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concept of air employment which guided the air arm in its struggle for a more suitable command structure and its efforts to develop an efficient heavy bomber. For that concept was built around a type of operation, called since 1917 “strategic bombardment,” which required for its effective use some degree of independence from the ground arm and aircraft of long range and great bomb load. In the limited space at our disposal we cannot develop this thesis, but can sketch in briefly the main lines of doctrinal development.

To trace the genesis and growth of an idea is always a hazardous venture, and here there are pitfalls of a special sort: the anonymity or composite authorship of Army documents; an Army publication code which encouraged repetition and made a virtue of plagiarism; and the difficulty of determining the reading habits, if any, of the unidentified authors. Properly we should be able to trace the evolution of air doctrines in the appropriate training manuals and directives, but the assembling and perusal of a complete file of such texts would prove a task more arduous than profitable. Composed in that classic War Department prose style, and studded with such irrefutable truths as “The mission of bombardment aviation is the bombardment of ground objectives,”<sup>2</sup> the official manuals convey a most erroneous impression of the progress of thought in the Air Corps. If air officers accepted perforce the doctrines contained therein, it was often with the sort of lip service which might be paid by a liberal clergyman to an outworn creed.

In February 1942, when the advance echelon of the VIII Bomber Command was just arriving in the United Kingdom, General Arnold informed the commander of U. S. Army forces in that area that the RAF should be impressed with the fact that “only

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<sup>2</sup> *Field Service Regulations, U. S. Army* (Washington, 1924), p. 23.



American doctrines and principles” must guide our operations.<sup>3</sup> Like the nation itself, the AAF had been nurtured in a European tradition, borrowing especially from British ideas, and this brusque statement might be interpreted as a new declaration of independence. Actually the difference between AAF and RAF doctrines lay rather in the techniques to be employed than in the ends desired. But the point of interest here is that, while Arnold’s meaning was clear to his correspondent, the contrast he referred to was not explicit in the most recent official pronouncement on air employment — War Department Training Circular No. 70.<sup>4</sup> That manual erred, as had all promulgated since 1935, in giving both sides of all controversial issues with no firm preference. This “straddling,” as a bombardment-minded officer termed it,<sup>5</sup> was indicative of divided counsel rather than of judicial impartiality, and the texts, as perhaps some of you who taught from them will remember, were but feeble instruments of indoctrination. Worse still, most of the manuals published before 1935 were actually antagonistic to the most advanced thought in the Air Corps.

**THE REASON** is not far to seek. Control over the formulation and dissemination of combat doctrines was vested in a General Staff composed of ground officers and the air manuals had to be denatured to suit their taste. The tone had been set in 1919 when returning veterans of the Air Service, AEF, had first attempted to reduce war-time lessons to peace-time training guides.<sup>6</sup> Whatever ideas of an

<sup>3</sup> CM-OUT-576 (21 Feb. 42), Arnold to Chaney, AF #2/353, 21 Feb., 42 (paraphrased). [MS materials cited in this paper are from archives of the AAF Historical Office at Washington, D. C., except those coded AAG, which are from the Air Adjutant General’s files.]

<sup>4</sup> WD TC No. 70, Army Air Forces Basic Doctrine, 16 December 1941; a mimeographed pamphlet issued pending revision of FM 1-5 and publication of FM 100-15.

<sup>5</sup> Maj. W. R. Carter, Employment of Army Air Forces, 12 April 1938; in AAG 321.9, Doctrines of Air Corps, Unclassified Files.

<sup>6</sup> Wm. Mitchell, “Our Army’s Air Service,” *American Review of Reviews*, LXII (September, 1920), pp. 281-90.

independent air mission they may have entertained were effectively scotched by official pronouncements in that year by the Dickman Board,<sup>7</sup> by General Pershing<sup>8</sup> and by Secretary of War Baker.<sup>9</sup> The theory of war endorsed in these reviews of recent experiences received its most authoritative statements in the 1923 revision of the Field Service Regulations, U. S. Army. This starts from an axiom borrowed from Clausewitz: “The ultimate objective of all military operations is the destruction of the enemy’s armed forces by battle. Decisive defeat in battle breaks the enemy’s will to resist and forces him to sue for peace.”<sup>10</sup> Victory in the offensive requires cooperation of ground and air forces: “No one arm wins battles,” but the “...coordinating principle which underlies the employment of the combined arms is that the mission of the infantry is the general mission of the entire force. The special missions of the other arms are derived from their powers to contribute to the execution of the infantry mission.”<sup>11</sup> Briefly, the chief role of aviation was close support.

For ten years the manuals of the Army air arm, while attempting modestly to enhance the importance of the role of aviation, adhered closely to the central thesis of the Field Service Regulations. Thus Training Regulation 440-15 (1926) states that the organization and training of air units should be “...based on the fundamental doctrine that their mission is to aid the ground forces to gain decisive success.”<sup>12</sup> Even at the Air Service Tactical School the handbook on bombardment published the same year dealt only

<sup>7</sup> *Hearings before the President’s Aircraft [Morrow] Board*, I (Washington, 1925), 21.

<sup>8</sup> *Ibid.*, p. 23.

<sup>9</sup> *Report of the Secretary of War for Fiscal Year Ending June 30, 1919*, in *War Department, Annual Reports, 1919*, I (Washington, 1920), *passim* and especially pp. 68 ff.

<sup>10</sup> *Field Service Regulations*, p. 77.

<sup>11</sup> *Ibid.*, p. 11.

<sup>12</sup> *T. R. No. 440-15, Fundamental Principles for the Employment of the Air Service* (Washington, 26 January, 1926), para. 4.



with “... operations in support of, or in conjunction with, large forces of ground troops ....,” deliberately omitting consideration of “... independent air force operations.”<sup>13</sup> Indeed, the authors deplore the fact that “... the strategical employment of bombardment in stabilized warfare is popularly conceived to be the true role of that class of aviation.”<sup>14</sup>

**THIS WAS** a flank attack on Billy Mitchell, forced to resign from the Army a few months before, who had popularized that view in America. But the implied criticism was not wholly candid, for Mitchell’s ideas had infected the Air Service as well as the public; they are then far more significant than the official pronouncements. Mitchell’s crusading ardor, his flair for publicity and his posthumous canonization have made familiar to all the general outlines of his concept of Air Power, so that it should here suffice to point out several important factors in the development of his thought. Perhaps the most powerful of the early influences was Sir Hugh Trenchard, who commanded the Royal Flying Corps in France when Mitchell first met him in May 1917. Entries in Mitchell’s diary indicate how profoundly he was impressed by the advanced views of the Britisher, and suggest that this was the source of two of Mitchell’s cardinal principles: that the airplane was essentially an offensive weapon and that the first mission of aviation was to gain air ascendancy through offensive action. In 1918 Trenchard was given control of the RAF’s Independent Air Force, and his design for the bombardment of Germany, originally conceived as a retaliatory measure, developed into the first articulate program of

<sup>13</sup> ASTS, Langley Field, Va., *Bombardment* (Washington, 1926), p. 54.

<sup>14</sup> *Ibid.*, p. 72.

strategic bombardment.<sup>15</sup> By Armistice Day arrangements had been made for Americans to cooperate in this program as a part of the Inter-Allied Independent Air Force,<sup>16</sup> and Mitchell was apparently in sympathy with its underlying philosophy.

But if Mitchell's ideas were originally derived from foreign sources, they were conditioned both by his own experience in France and by the American environment after his return. It was axiomatic with him that the aviation problems of each nation differed, and while his earliest publications on Air Power — magazine articles published in 1919<sup>17</sup> — were largely descriptive of Air Service combat in close support of ground armies, he soon adopted an approach more typically American in viewpoint. Traditionally we had thought of war in terms of national defense; in the reaction which followed the “great crusade” it appeared unlikely that we would again fight a continental war in Europe of the sort described in Mitchell's early articles or in the Field Service Regulations. Close support of field armies would be necessary only after an enemy had landed an expeditionary force on this continent, and whereas the Navy had always constituted the first line of defense against that contingency, Mitchell proposed to substitute for it an air force. As early as 1919 he had suggested tentatively the idea which was responsible for much of his fame (or notoriety, depending on your point of view) — that the airplane had doomed the capital ship and hence the entire surface navy, and throughout his career that thesis was to occupy in his thought a prominence justified only by national geography and national patterns of thought. Thus in his first book, published in 1921, he only hints at the pos-

<sup>15</sup> H. A. Jones, *The War in the Air*, VI (Oxford, 1937), chs. III, IV.

<sup>16</sup> *Ibid.*, Appendices No. V, VI, IX, X, and XIX (in separate volume).

<sup>17</sup> Wm. Mitchell, “The Air Service at St. Mihiel,” *World's Work*, XXXVIII (August, 1919), 360-70; “The Air Service at the Argonne-Meuse,” *Ibid.* (September, 1919), pp. 552-60.



sibilities of air attack on an enemy's economy and names the armed forces as the ultimate objective: "Our doctrine of aviation, therefore, should be to find out where the hostile air force is, to concentrate on that point with our Pursuit, Attack and Bombardment Aviation, to obtain a decision over the hostile air force, and then to attack the enemy's armies on the land or navies on the water and obtain a decision over them."<sup>18</sup>

But improvements in aircraft performance, always projected into the future by Mitchell's enthusiasm, and his concern with island bases lying along the great circle routes of the higher latitudes, suggested the possibilities of air attack against the United States. Those islands pointed away from, as well as toward, the United States and perhaps it was political acumen which led him, in the isolationist America of the 1920's, to describe his theory of strategic bombardment first in terms of what might happen to New York, not of what we might do to Berlin. You will remember that he called the books in which he laid down operational principles for his *offensive* weapon, *Our Air Force: the Keystone of National Defense* and *Winged Defense*.<sup>19</sup> But for all his circumlocution, he had by 1925 advanced a theory of war based on an air attack against the enemy's national resources rather than against his armed forces, and had suggested, in his plan for seizing island bases, a means by which the United States could conduct such a war against either Europe or Asia. Perhaps his most succinct statement of his theory appears in *Skyways*:

War is the attempt of one nation to impress its will on another nation by force after all other means .... have failed. The attempt of one

<sup>18</sup> Wm. Mitchell, *Our Air Force, The Keystone of National Defense* (New York, 1921), p. 15.

<sup>19</sup> *Winged Defense, The Development and Possibilities of Modern Air Power, Economic and Military* (New York, 1925).

combatant, therefore, is to so control the vital centers of the other that it will be powerless to defend itself.<sup>20</sup>

Armies and navies were developed as a means of preventing an enemy from getting at the strategic spots and with the advantage given the defense by modern weapons, war had become a slow and bloody affair. But

The advent of air power which can go to the vital centers and entirely neutralize or destroy them has put a completely new complexion on the old system of war. It is now realized that the hostile main army in the field is a false objective and the real objectives are the vital centers. The old theory that victory meant the destruction of the hostile main army, is untenable. Armies themselves can be disregarded by air power if a rapid strike is made against the opposing centers....<sup>21</sup>

In December 1925 a journalist wrote, apropos of the court-martial of the Air Service's stormy petrel, "Mitchellism will remain after Col. Mitchell has gone."<sup>22</sup> In the organizational dispute which had been the chief cause of his downfall, Mitchellism scored but limited gains in the Air Corps Act of 1926 and the formation of the GHQ Air Force in 1935. In the subtler realm of doctrine its influence was perhaps more important. In that respect we may discern a right wing and a left wing among the prophet's followers. The GHQ Air Force did provide in theory an instrument capable of independent operations, and the nature of those operations became an issue of cardinal importance for the Air Corps. With the growing unrest in Europe and Asia in the middle thirties the problems of national defense were studied with increasing seriousness, and there were those in the Air Corps who because of conviction or of

<sup>20</sup> *Skyways* (Philadelphia, 1930), p. 253.

<sup>21</sup> *Ibid.*, p. 255.

<sup>22</sup> *New York Evening Post*, quoted in Isaac D. Levine, *Mitchell: Pioneer of Air Power* (New York, 1943), p. 331.



expediency were willing to go along with the War Department and the Joint Army-Navy Board in limiting the role of GHQ's air striking force to quasi-independent activities. These were largely defensive in character, subordinating strategic bombardment to counter-air activities and to such over-water operations "in support of or in lieu of naval forces" as were allowed by the Joint Action of the Army and Navy of 11 September 1935.<sup>23</sup> This view is epitomized in an Air Corps memo of 1935:

National policy, geographic location of bases and the present range of planes which does not permit the air attack of the national structure of any probable enemy, dictate the role of the GHQ Air Force as one of air defense and fix its true objective.<sup>24</sup>

When in 1938-1939 "hemisphere defense" supplanted "national defense" as a slogan, this theory was extended to cover new territories, but strategically it remained much the same. Ostensibly, at least, the B-29 was designed in 1940 to prevent Axis powers from establishing bases in Latin America rather than to carry the atom bomb to Hiroshima. In June of that year an Air Corps general, anxious to secure the aid of the automobile industry's most prominent pacifist, could write in all seriousness: "It should not be difficult to convince Mr. Ford that the bomber, as far as we are concerned, is not an offensive weapon but the best means we have available to defend the United States."<sup>25</sup>

**IF THIS** group of air officers adopted only the early aspects of Mitchell's thought, the others, whom I have called the radicals,

<sup>23</sup> Para. 22, a (31).

<sup>24</sup> ACTS Study of Proposed Air Corps Doctrine Submitted by WPD on 4 December 1934, Maxwell Field, 31 January 1935; in AAG 321.9, Doctrine of Air Corps, Unclassified Files.

<sup>25</sup> Maj. Gen. B. C. Emmons, CG, GHG AF, to OCAC, Commercial Manufacturers of Aircraft, 12 June 1940; in AAG 452.1 "C" Heavy Bombers.

were willing to accept the whole of his doctrine. In the early thirties the Air Corps Tactical School came to be dominated by men of that stamp. This had not always been so. As late as 1928 the Chief of the Air Corps had rejected a paper on “The Doctrine of the Air Forces” submitted by the ACTS commandant because it subordinated the air force to the ground force.<sup>26</sup> But lectures delivered at the school from 1931 on leave no doubt as to the thoroughness of the revolution in thought. One of the instructors has later told of their difficulty in getting detailed materials for courses, and something of their reading: Clausewitz (who was “right in his time”); Frank Simon’s *The Price of Peace* (“a very good book, too”); “old” Liddell Hart; Goering; and Douhet (who “really struck the first blow”).<sup>27</sup> I believe that the first English translation of Douhet was a mimeographed edition done for the school in 1932.<sup>28</sup> For the most part, however, their lectures could have been written with Mitchell as a sole authority. They taught an offensive type of warfare, aimed at the enemy’s will and power to resist, in which the three arms cooperated but in which each arm had a special mission. The air role, they modestly suggested, was to attack the whole of the enemy national structure. Modern war with its extravagant material factors places an especial importance upon a nation’s economic structure, particularly upon its “industrial web.” A nation could be defeated by disturbing the delicate balance of this complex organization, which is vulnerable to air attack. Disturbances in this close-unit web might wreck the enemy’s will to resist, but the real target was industry itself, not national morale.

<sup>26</sup> First ind., the Commandant, ACTS to C/AC, 30 April 1928, OCAC to Commandant, ACTS, 1 September 1928; in AAG 321.9, Doctrines of Air Corps, Unclassified Files.

<sup>27</sup> Interview with Brig. Gen. H. S. Hansell at Norfolk House, England, 5 October 1943; in Eighth Air Force Files.

<sup>28</sup> Edward Warner, “Douhet, Mitchell, Seversky,” in E. M. Earle, ed., *Makers of Modern Strategy* (Princeton, 1944), p. 489.



In two important practical aspects of the air war, the lecturers went further than had Mitchell. They realized the improbability of our fighting a major war single-handed: “If we were dragged into a war which had been precipitated by other great powers among themselves, we would inevitably find allies. Those allies being themselves within the sphere of air influence, could provide operating bases for our Air Force .... [to which] it is possible, with modern aircraft, to fly direct .... from the Western Hemisphere.”<sup>29</sup> And they realized too that to disrupt an enemy’s industry by bombardment requires more than random strikes at targets of opportunity, so that “.... it is a function of peacetime strategy to weigh the war potential of possible enemies and uncover those relatively defenseless areas that can be profitably exploited by our attack.”<sup>30</sup>

Those practical considerations, as well as the general theory, were to assume more tangible form in 1941. By March of that year, Anglo-American staff conversations had assured us of advanced air bases in the United Kingdom if we entered the war.<sup>31</sup> And for some time before that the tiny Economic Analysis Branch of the Intelligence Section in the OCAC had begun on a modest scale a systematic study of profitable targets in Axis territories. When the AAF staff was created in the spring of 1941, its Plans Division (AWPD) was staffed almost entirely by former instructors of the ACTS, and the theory they had taught inspired the first of the air plans for World War II. That document, known as AWPD/1,<sup>32</sup> I should like to submit as Exhibit A for the defense in the recent

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<sup>29</sup> Much of the substance of these lectures may be found in a paper by Gen. Hansell on Development of the U. S. Air Forces Philosophy of Air Warfare Prior to our Entry into World War II. The present quotation is from a lecture by Hansell himself in 1935/6, on The Functions of Air Power in our National Economy.

<sup>30</sup> Lecture by Capt. Harold L. George, Air Force Objectives, 1934/5, quoted in the same source.

<sup>31</sup> United States-British Staff Conversations, Short Title ABC-1, 27 March 1941, Para. 47.

<sup>32</sup> Munition Requirements of the AAF for the Defeat of Our Potential Enemies, Short Title AWPD/1, 12 August 1941.

debate in *Harper's* on the “military mind.” Composed in a few days of frenzied effort by a handful of officers, including Hal George, Possum Hansell, Larry Kuter and Ken [Walker], it gave a preview of the European phase of the war which was in most important respects remarkably accurate. AWP/1, which listed the aviation requirements for the so-called “Victory Program,” was incorporated into the Joint Board Estimate of U.S. Over-all Production Requirements of 11 September 1941—the famous “secret war plan” published by the *Chicago Tribune* three days before Pearl Harbor as a scoop to greet the first dawn of the *Chicago Sun*. The air plan contemplated a long and intensive bomber offensive against Germany which would reach its climax in the spring of 1944; this alone *might* finish off Germany (note the qualification), but provision was made also for support of a landing on the continent and a subsequent land campaign.

**IN** BROADEST outline this theory of the air war was akin to that held by the RAF, though Bomber Command's Sir Arthur Harris was more openly confident that Air Power alone could defeat Germany.<sup>33</sup> But as to the means of accomplishing the desired ends, the two air forces differed sharply. Two years of war had convinced the RAF that only night bombing was regularly feasible against German defenses, and limited experiments with the B-17 inclined them to extend this judgment to the AAF. Night bombing with instruments then available meant area bombing, and because of the proximity of workers' homes to industrial concentrations, the British tended to stress more than Americans the morale effects of bombardment.

<sup>33</sup> See book review by Col. Dale O. Smith in this issue [*Air University Quarterly Review*, Winter 1947, 95–98]. Editor.





AWPD/1, on the contrary, was dedicated to the principle that the German war potential could be paralyzed by the destruction of a limited number of strategic targets, vulnerable only to daylight precision bombing — “pickle-barrel bombing” it was optimistically called. Such bombing had been taught at Air Corps schools, and under ideal training conditions had enjoyed some success. The origins of this tactical doctrine are hard to account for — in World War I practice and in Air Corps theory as late as 1926 strategic bombardment was a night operation. Possibly the American tradition of expert marksmanship had an indirect influence. Distaste for indiscriminate bombing of civilian areas, so general in that old-fashioned world which was ours before Guernica, Warsaw and Rotterdam, put a premium on accuracy. So too did the emphasis placed in our national scheme of defense on attacks against naval craft. The impressive scores of the 1920’s had been made in low to medium altitude attacks against defenseless ships at anchor. As antiaircraft weapons improved, superchargers carried bombers above the effective range of flak; improved bombsights (Norden and Sperry) and formation pattern bombing compensated partially for the increased altitude. Techniques and equipment designed for defense against naval forces could easily be adapted to offensive use against land targets and they were. Air strategists considered precision methods to be no more than a refinement of the principle of economy of force which was basic to the whole concept of strategic bombardment.

Obviously no one could object to accuracy, though the objectives in the RAF’s saturation attacks were not wholly to be accomplished by destruction of a limited number of pin-point targets. It was the question of feasibility, not desirability, of precision tactics



which distinguished RAF from AAF thinking. Precision bombing meant daylight bombing, and the RAF was convinced from its own and from the Luftwaffe's experience that such tactics were too expensive against constantly improving defenses over Europe. AAF planners were confident that daylight operations *could* be conducted profitably. They had urged, somewhat belatedly, the development of a long-range escort plane to protect the heavies against GAF fighters, but it was to be late in 1943 before such a plane was to appear. When the United States entered the European war, the AAF had to depend on the rugged construction of the B-17 and B-24; upon the firepower of tight formations of those planes, each mounting ten .50 caliber machine guns; and upon the saving grace of 25,000 feet of altitude. In their friendly debates the RAF could argue from experience, the AAF only from faith. Perhaps even that wore a little thin at times. Through circumstances of a sort not always common in war, some of the staff planners who had given the final theoretical formulation to the doctrine of high altitude, daylight, precision bombardment were in command positions when their tactics were first put to test. One of them has since written that "There were, frankly, many times when we seriously doubted the practical adherence to such a high-flown motto."<sup>34</sup> Nevertheless, they were willing, as the couplet runs in *Hudibras*, to

*Prove their doctrine orthodox  
By apostolic blows and knocks.*

What more could you ask of a staff officer?

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<sup>34</sup> Hansell to the author, 24 February 1947.





*The all-important initial crisis of any future war must be met by the Air Force we have when war starts. We cannot rely on a cadre Air Force, for during a war of hours, days or weeks, we would have no time to expend it.*

-- General Carl Spaatz,  
in *Collier's*  
(December 8, 1945)



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