IDEAS, CONCEPTS, DOCTRINE:
A HISTORY OF BASIC THINKING IN THE UNITED STATES AIR FORCE
1907 – 1964

VOLUME I

AEROSPACE STUDIES INSTITUTE
AIR UNIVERSITY

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by

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Volume I

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This publication has been reviewed and approved by competent personnel of the preparing command in accordance with current directives on doctrine, policy, essentiality, propriety, and quality.

To the memory of

BRIGADIER GENERAL KENNETH N. WALKER, 1898-1943

who taught the credo

"A WELL ORGANIZED, WELL PLANNED, AND WELL FLOWN AIR FORCE ATTACK WILL CONSTITUTE AN OFFENSIVE THAT CANNOT BE STOPPED."

F O R E W O R D

This history seeks to discover and to record the main stream of thought within the United States Air Force (and its predecessors) concerning the role to be played by air and aerospace power in a deadly struggle for national survival. It seeks to develop a theme of institutional thought as well as to describe the organizational framework in which the thinking took place but also identifies individual thinkers and their ideas. In great measure it becomes the story of dedicated professional men who were attempting to discover the capabilities and limitations of new forms of air and aerospace power and to relate these new characteristics of military power to the defense of the United States and its national interests. The story begins with the first heavier-than-air flight in 1903 and arbitrarily closes at the end of 1964. Acceptance of this terminal date prevents a coverage of Air Force thinking about counterinsurgency warfare and the military operations in Southeast Asia, which were not yet fully developed by the close of 1964.

The existing state of professional historical art does not provide much guidance as to the way a history of military ideas ought to be approached. Edward Mead Earle's, Makers of Modern Strategy, Military Thought from Machiavelli to Hitler,* is a monumental study of military thinking that is worthy of emulation, but Earle's volume is a series of case studies of the ideas of the "Great Captains," drawn from their formal writings. The authors of Earle's book focus attention upon a relatively few individuals and assess their specific contributions to the art and science of warfare. A study of Air Force thought, on the other hand, involves a consideration of the views of a substantially large number of men, most of whom accomplished little formal writing. While air officers have not been prolific writers, they have expressed their beliefs freely, especially before Congressional committees and commissions. In fact, one may almost say that the Air Force has developed with an oral rather than a written tradition. Speeches, lectures, and testimony of Air Force leaders have provided the richest source of data for this study of the ideas, concepts, and doctrine of the Air Force. It should be noted that each quotation from or citation to a National War College, Army War College, and Air War College lecture has been appropriately cleared with the lecturer, since such lectures are considered privileged, even though they may have been unclassified as to military security. To a man, these lecturers have been generous and enthusiastic in granting approval to quote or cite their work.

*Edward Mead Earle, ed., Makers of Modern Strategy, Military Thought from Machiavelli to Hitler (Princeton: Princeton University Press, 1944).

In developing the narrative the author has been constantly concerned with the problem of how the matters under consideration could be presented in the most meaningful manner. Since ideas and concepts are frequently interpretations of facts and not facts themselves, a thinker may predict meanings before events transpire, or, even more likely, continue over a period of years to draw interpretative meanings from the factual happenings of the past. Fundamentally, ideas often lack a temporal quality, and a history of ideas lacks the neatness of a history of past events. It is possible that this history of air ideas, concepts, and doctrine should have been presented as an anthology of pertinent discourse, with accompanying commentary. This technique, however, would have obscured a proper recognition of the circumstance wherein the developing Air Force was itself an excellent manifestation of air ideas. The notion of an anthology was nevertheless so persuasive that the author has as often as possible allowed the thinkers to speak for themselves and to work their dialogue into the narrative. This practice frequently makes for tedious progress when citations are lengthy, and short quotations run the danger of lifting thoughts out of context. Still, summarization of a man's words in contemporary language can easily distort original meanings. The record will show, for example, that "Air Superiority" had different meanings to different thinkers during the course of Air Force history. As a matter of practice, the author has sought to present the story of the way things were and what men were thinking in a developing time frame, without attempting a high-gloss interpretation of either the events or the thoughts.

In the course of the unfolding story, the reader will perceive that Air Force thinkers have seldom addressed themselves to purely theoretical matters but have usually tended to respond to specific situations. Since the United States has always been a defense-minded nation, the nature of the hostile threat has been the greatest stimulant to military thinking. Air Force thinking has also been reactive to the activities and ideas of other defense services, and it is frequently necessary that Department of Defense, Army, and Navy positions and actions be noted in order that Air Force thinking may be better understood. The Air Force focus of the narrative dictated that the views of others be presented in shorter compass. Since this procedure inevitably oversimplified the views of the Office of Secretary of Defense and the other Services, an informed reader ought to consult the works of such military thinkers as Generals Ridgway, Taylor, and Gavin, and, certainly, Robert S. McNamara's, The Essence of Security, Reflections in Office (New York: Harper & Row, 1968). The informed reader will also wish to see the books by Air Force Generals Twining, LeMay, and Power, which were published after the text of this historical study was put in final form.

Many persons have assisted in the preparation of this history by providing support, helpful criticism, and pertinent suggestions.

The author is especially indebted to the sixty eminent authorities who are cited in the text and who not only permitted quotations from their War College lectures but often provided additional information and words of encouragement. Maj. Gen. Haywood S. Hansell, Jr., Brig. Gen. Don Z. Zimmerman, and Brig. Gen. Noel F. Parrish have read the narrative and provided a wealth of background knowledge which has prevented some errors of fact and interpretation. In the Secretary of Air Force Office of Information between 1966 and 1969, Maj. Gen. William C. Garland, Mr. Flint O. DuPre, and Mr. Francis W. Jennings shepherded the manuscript through a very intensive three-year-long review conducted by the Directorate of Security Review, Office of the Assistant Secretary of Defense, Public Affairs. In this same period, Maj. Gen. Richard A. Yudkin, Director of Doctrine, Concepts and Objectives, Hqs. USAF, also gave continuing assistance in the task of securing the OSD clearance for open publication of the manuscript. The Commander, Aerospace Studies Institute, Maj. Gen. Robert N. Ginsburgh not only secured the ultimate OSD clearance but has provided for the publication of the manuscript. As USAF Historian, Dr. Albert F. Simpson extended personal guidance to the author in every step of the undertaking. Miss Marguerite K. Kennedy, Chief, Archives Branch, Historical Research Division, greatly facilitated research. The following deserve special thanks for their part in preparing the final manuscript for publication: Mr. R. E. Vaughn for his technical assistance; Mr. Herbert L. Sparrow for handling the administrative details; Mrs. Mary F. Hanlin for coordinating and supervising the project; Mrs. Alice T. Sikes, Mrs. Lillian M. Osburn, Mrs. Bettye Maynard, and Mrs. Frances Dupree for typing the final draft; and Capt. Donald M. Bishop and Mr. Robert Mueller for proofreading the final copy.

Where many persons have provided information and assistance toward the writing of this history, the author assumes the responsibility for the errors of fact or interpretation that doubtless have escaped into print. Like other Air Force historical studies, this history is subject to revision, and additional information or suggestions for correction will be welcomed.

C O N T E N T S

VOLUME I

CHAPTER 1

SOME PATTERNS OF AIR FORCE THOUGHT

"A very knowledgeable reporter stated recently," said General Curtis E. LeMay, Chief of Staff United States Air Force, on 21 September 1961, "that in the early 1950's he felt he knew what the Air Force stood for, but today he doesn't." LeMay continued: "His statement puzzled me. It also alarmed me because understanding our doctrine and concepts is basic and important to our very existence."[1] In these words, General LeMay called attention to a matter which had concerned Air Force officers for many years. In December 1957, General Thomas D. White, who was then USAF Chief of Staff, had stated: "The Air Force has so recently achieved its full stature as to be something of a doctrinal mystery in comparison with the older, more familiar services."[2]

Unlike the United States Navy--which appeared to operate in accordance with a seemingly complete set of seapower principles recorded by Admiral Alfred Thayer Mahan--or the United States Army--which drew its principles from generations of American and foreign military scholars--an Air Force officer speaking in 1955 could only conclude that "the Air Force as a service does not have a set of ideas against which it is operating, at least not a complete set of ideas."[3] "The Air Force," stated an Air University staff study in 1948, "has never maintained a complete and current compilation of those concepts, principles, policies, tactics, techniques, practices, and procedures which are essential to efficiency in organizing, training, equipping, and employing its tactical and service units."[4] Provoked by an Army officer's magazine article entitled " Air Power Needs Its Mahan," Maj. Gen. John DeForest Barker, Deputy Commander of the Air University, observed in 1953: "We definitely need a body of air principles backed by the historical evidence of air employment."[5]

Such testimony by qualified Air Force officers clearly indicated that Air Force thinking about its fundamental ideas and beliefs had not been systematically recorded. These and other Air Force authorities, however, believed that the Air Force required a recording of its fundamental beliefs. In the midst of World War II, an Army Air Forces staff officer pointed out: "In any field of endeavor, private or public, the first essential is a body of working principles and the next is a clear concept of the manner of following those principles with the means at hand. Without such principles and concepts being clearly expressed, at least in the minds of the users, it is not at all possible to attain coordination and efficiency, and it is not reasonable to expect, as is desirable, that all workers to the common end will have in mind the same possibilities and objectives. In military matters, especially those of the magnitude of the operations of the present war, where mistakes and inconsistencies cost thousands of lives and millions of man-hours, it is all the more important that there be clearly

expressed guiding principles which are clearly understood by all planners, as well as by all who are charged with the handling of forces in the field."[6]

A study conducted by an Air War College seminar in 1951 concluded that the United States Air Force had a vital requirement for a codification of its doctrine. Prior to World War II virtually all of the senior Air Corps officers and many of the lesser ranking officers had been able to pass through the Office of the Chief of Air Corps, exchange views with the division heads, and draw from their conversations "the essence of air doctrine." During and after World War II, however, the Army Air Forces and the United States Air Force had grown into a large and very complicated organization, with many thousands of officers. Still, if an officer in the field were to point his efforts along constructive lines he had to know "the over-all policies and objectives of the Air Force." "Without a well-established doctrine," the seminar concluded, "the efforts of all but a few key personnel, who can remain sensitive to the changes as they occur, are to a very considerable extent negated."[7]

The reasons why the Air Force has been hesitant to engross its fundamental beliefs demand some explanation. "Air activities have most often attracted men of active rather than literary leanings. . . . The Air Force has never boasted a high percentage of scholars," pointed out Colonel Noel F. Parrish in 1947.[8] So far as writings by senior commanders were concerned, Professor W. Barton Leach described the Air Force as "The Silent Service."[9] "As you know," wrote General Barker in reference to the provocative article regarding the Air Force's need to develop a Mahan, "the scholarly life is not particularly respected in the profession of arms." "I don't believe, however," Barker continued, "that we can ever detail an officer to do a work of this sort. Mahan, as with all great thinkers, was inspired. Of course he had to spring from an environment which allowed him to study long and deeply the problems of sea power. His many years on shipboard were devoted to these exhaustive studies--but he would have been playing poker . . . and reading fiction if he hadn't been inspired to learn all he could of naval history and give it pattern and meaning."[10]

Other factors also hampered the expression of fundamental Air Force beliefs. Prior to World War II the subordinate position of the Air Force to the Army is said to have hampered air publications, as did the fact that the Army's manuals system was unsuited to the needs of the Air Force. Because of the lessons of this war, Maj. Gen. Follett Bradley urged that there was no need for a Mahan of air power. "We do not need a Mahan of air power," Bradley wrote, "so much as an oracle of combined operations--triphibious, if you like. The true expositor of military things to come must . . . know thoroughly the changes in sea power as taught by Mahan, and in land warfare as taught by Clausewitz, which have been wrought not only by new weapons but by air power itself. He must evaluate correctly the effect of air power in combination with land and sea power on a battle, a campaign and a war, and he must know something of the technique by which that effect is produced."[11] An Air

University study in 1948, however, stated that the "outstanding obstacle to writing air force doctrine in the past was the rapidity of the development of air power . . . from a limited supporting role to its present position of pre-eminence in warfare."[12] In some cases, senior Air Force officers were said to have discouraged the preparation of air doctrine because they felt that air doctrines were too short-lived to warrant publication. Word of mouth generally sufficed to keep senior air commanders well abreast of Air Force policy, and it was much easier "to scrap the worn out doctrine that remains unpublished than it is to drop a doctrine that has been published." But the basic shortcoming of "verbal doctrine" was that it remained vague. "It is this reluctance to publish as official anything imperfect," stated an Air War College study, "that restrains our commanders from the dissemination of current doctrine. Until we accept the fact that all doctrine is imperfect . . . and that it is highly changeable we cannot hope for the issuance of doctrine." This same study noted that in 1951, "The air leaders of today are not so old that they can easily forget the punishment meted out to the doctrinaires of the past."[13]

Air Force thinkers have not only found it difficult to face the task of codifying the Air Force's fundamental beliefs, but as the foregoing quotations reveal they have employed a diversity of discourse to categorize these fundamental beliefs. "There appears to be a fine line of demarcation between concepts and doctrine on the one hand, and doctrines and principles on the other hand," concluded the Air War College study in 1951. "It is difficult to differentiate between concepts which existed in the minds of some far-sighted individuals in the Air Force and the doctrine which was accepted as official by the War Department. Also doctrine is easily confused with strategy."[14] Adding additional complexity to any attempt to analyze basic Air Force thought patterns is the fact that the terms used to categorize fundamental Air Force beliefs apparently varied with the persons using them and certainly varied with the time period in which the terms were employed.

It is not too hard to imagine why early Air Force thinkers began to refer to their fundamental ideas as "doctrines." The term "doctrine" had an old meaning in military establishments as a teaching, or, in a collective sense, a body of teachings. In teaching the art of war, however, Marshal Ferdinand Foch laid great emphasis upon doctrine, and the writings of the hero of the Marne and the Yser strongly impacted upon the post World War I U.S. Army. Where commanders in the past had preferred to remain mysterious--to handle armies like pawns on a chess board--Foch had taught at the Ecole de Guerre that commanders should instead make their intentions known to their subordinates. "We have, then, a <u>doctrine</u>;" he explained, "all the brains have been limbered up and regard all questions from an identical point of view. The fundamental idea of the problem being known, each one will solve the problem in his own fashion, and these thousand fashions, we may be very sure, will act to direct all their efforts to a common objective."[15] In the introduction to his study entitled <u>The Principles of War</u>, Foch promised: "In the course of

the practical applications our strategical studies will lead us to, you will also arrive at what we call the doctrine or mental discipline, which consists first in a common way of objectively approaching the subject; second, in a common way of handling it, by adapting without reserve the means to the goal aimed at, to the object." Teachings derived from history, Foch emphasized, would come "out in the shape of a theory of war which can be taught . . . and in the shape of a doctrine, which you will be taught to practice."[16]

When he published his first book in 1921, Brig. Gen. William Mitchell referred to "our doctrine of aviation."[17] In the draft of what could well be called the Air Force's first doctrinal manual, prepared for instructional purposes at the Air Service Field Officers' School in 1921, Major William C. Sherman wrote: " In deriving the doctrine that must underlie all principles of employment of the air force, we must not be guided by conditions surrounding the use of ground troops, but must seek out our doctrine . . . in the element in which the air force operates."[18] Although the Air Service and Air Corps were unable to make much of an impact upon the War Department's official Field Service Regulations and Training Regulations, the Chief of the Army's Air Arm, in common with the other chiefs of Army arms and services, enjoyed certain liberties in issuing the doctrinal literature for the Air Service and its successor Air Corps. The War Department General Staff emphasized, however, that doctrine should be formulated only by the chief of an Army arm or service.[19] "Doctrinal literature originates with the highest authority," said an Army Air Forces staff officer in 1944, "and states in general the over-all policy to be followed."[20]

Given agreement on the proposition that air doctrine derived from the highest authority in the Air Force, there was less agreement as to its precise nature. In 1938 the Air Corps Board stated: "Principles change not at all, or but slightly, over considerable periods. Doctrines generally change slowly, but will change as different applications of principles bring forth different beliefs and teachings. Methods are influenced both by doctrine and technical improvement and will change more rapidly than doctrines. The most satisfactory Field Service Regulation would be one dealing only with principles and expressed in terms that would never change. However, air warfare is relatively new and there is much difference of opinion as regards principles of employment."[21] In 1943, however, an AAF staff officer defined doctrine as "a body of fundamental principles expressing the logical possibilities and objectives of air warfare, as well as its general limitations. Like any other doctrine, especially one for a weapon so new as the air arm still is, it is only natural that the AAF doctrine should include speculative as well as proven truths, but they are all necessary to provide a basis for initial decisions in the design of airplanes and in the training of personnel to accomplish the desired end." This same officer defined "policies" as "derivatives of doctrine and the expressions of decisions based upon doctrine."[22]

By 1948 the growth of the Air Force during World War II and the achievement of separate status by the United States Air Force

led Air University thinkers to suggest that the time was opportune to undertake that part of their mission which charged the institution to prepare, review, and revise all USAF publications pertaining to "basic doctrine."[23] As this work progressed, the Air University acknowledged the definition of doctrine provided by the Joint Chiefs of Staff: "A compilation of principles and policies, applicable to a subject, which have been developed through experience or by theory, that represent the best available thought, and indicate and guide but do not bind in practice. Its purpose is to provide that understanding within a force which generates mutual confidence between the commander and his subordinates in order that timely and effective action will be taken by all concerned in the absence of instruction." [24] Looking backward at Air Force experience, the Air University students of doctrine noted that there had been an implication that doctrine represented an official view and that once stated some general efforts had been made to follow it. These students recognized, however, that the Air Corps and Army Air Forces had not always been guided by "prevailing existing doctrines" which had been influenced by the War Department General Staff. They accordingly undertook to find Air Force doctrine through "a logical analysis of historical fact" rather than through official statements, organizational designs, or other apparent factors that might appear to contradict the actual doctrine which was practiced.[25]

The vigorous efforts of the Air University to define USAF basic doctrine in the early 1950's did much to clarify the semantic thought patterns of the Air Force. "In this attempt to strike out on our own," said Colonel William W. Momyer, Air War College Deputy Commandant for Evaluation, "we have encountered many obstacles that were certainly anticipated, and others that could not be foreseen. Of course, we have encountered . . . prejudice in respect to what constitutes doctrine."[26] In the foreword to the final product, published as Air Force Manual 1-2, United States Air Force Basic Doctrine, on 1 April 1953, General Hoyt S. Vandenberg, USAF Chief of Staff, noted: "Basic air doctrine evolves from experience gained in war and from analysis of the continuing impact of new weapons systems on warfare." The purpose of the basic doctrine manual was to provide and impart to all Air Force personnel a basis for understanding the use of air forces, in peace and in war, and to serve as a background for the preparation of succeeding operational doctrine manuals that would cover the tactics and techniques of employing air forces.[27] In preparing the contents of the basic doctrinal manual, the Air University evaluators found that they had to relate doctrine to the hoary principles of war, to the roles and missions of the U.S. armed forces, to tactics and strategy, and to a relatively new Air Force term called "concept."

As a part of its Army heritage, the United States Air Force received the age-old principles of war that were derived from the writings of Napoleon, Clausewitz, and Jomini and had been best summarized in modern times by Great Britain's Maj. Gen. J. F. C. Fuller. The American version of the principles of war had first

appeared in War Department Training Regulation 10-5 of 1921. When he published his personal opinions on aviation in a book entitled Air Warfare in 1926, Major Sherman included a chapter which applied the principles of war to air warfare. The principles were also discussed in the Air Corps Tactical School text on "Air Warfare" dated 1 March 1936. In September 1943, Colonel Ralph F. Stearley wrote a paper on the applicability of the principles of war to air power which was published as AAF Memorandum 200-7, October 1943. Colonel Stearley stated that the nine fundamental principles of war (which applied to all forms of military power) were the principles of co-operation, objective, offensive, mass, movement, economy of force, surprise, security, and simplicity. Colonel Stearley also stated that the application of principles of war to the preparation for war and the direction of war constituted "strategy," whereas their application to specific operations comprised "tactics." In an article on "Air Power and Principles of War," published in 1948, Colonel Frederick E. Calhoun of the Air University suggested that air power had strengthened the validity of the first eight principles but he argued that air warfare could not be simple and that the ninth principle should be replaced by "capacity," or "constant combat readiness."[28]

In the early 1950's, the principles of war were accepted by the Army and were taught by the Air Force. The Navy's attitude, however, was that the principles were permissible as maxims, precepts, factors, guides, or even basic considerations, but it questioned whether they could be accepted as principles. The Navy did not list the principles in its U.S. Fleet publications, but the basic thoughts of the principles were taken cognizance of in these doctrinal publications.[29] The Royal Air Force distinguished between the principles of war, which it considered not to be principles but guides or "aides-memoir," and doctrines which were derived from them.[30] Possibly in line with the Navy and RAF thought, the Air University did not include a specific discussion of the principles or war in its proposed manual on USAF Basic Doctrine which was printed in October 1951.[31] In Washington, however, a USAF committee which revised the draft manual and published it as AFM 1-2 on 1 April 1953 nevertheless inserted a section on "Air Forces and the Principles of War."[32] An Air War College officer protested that the consideration of the principles of war was a "dissertation" which was hardly doctrinal, but General Otto P. Weyland, the commander of the Far East Air Forces, stated that this section was too brief and ought to be developed and elaborated.[33] Later editions of AFM 1-2 prepared at the Air University did not include specific discussions of the principles of war, but there was a continuing recognition that these principles applied to air power as well as to the other forms of military power.[34]

In drawing up the statement of USAF basic doctrine, the Air University preferred to relate the role of the Air Force to the national objectives and policies of the United States rather than to what was thought to be a possibly transitory statement of Armed Forces organization and roles and missions which emanated from the

National Security Act of 1947. Lt. Gen. Idwal H. Edwards, the Commander Air University, insisted in June 1952 that "current decisions on matters of organization and roles and missions . . . are not basic doctrine."[35] On the other hand, the Air University included a list of national objectives and policies that was much too precise to be acceptable to the Air Staff in Washington: accordingly, the basic air doctrine manual published on 1 April 1953 accepted the broad proposition that the Air Force supported the nation's objectives and policies, without attempting to say what they were.[36] As a matter of fact, the Air University believed that the nature of modern war and the national objectives and policies worked closely together to determine the correct use of military aviation.[37] In a speech on 4 December 1957, however, General Thomas D. White strongly asserted a contrary view, when he said: "Air Force doctrine is not a thing apart nor a code sufficient unto itself. The Air Force is a national instrument and evolves no doctrine, makes no preparation other than those clearly and unmistakably called for or anticipated by the national policy."[38] The requirement that USAF doctrine must support national objectives and policies necessarily marked it as distinct from pure air power doctrine, which would enunciate through theory and logic immutable principles which characterize air power as different from land power and sea power.[39]

An Air War College study in 1951 noted that doctrine was easily confused with strategy on the one hand and with tactics and techniques on the other hand. The Air University found little difficulty in distinguishing doctrine from tactics and technique, for the latter depended quite manifestly upon specific equipment and special situations and were designed to implement specific actions within the broad framework of basic doctrine. Strategy was also judged to be concerned with specific situations, although on a tremendously broader scale than tactics. Brig. Gen. Alfred R. Maxwell, an Air Force author on the subject, stated that the tools of strategy were a sound plan, adequate forces, appropriate execution, and guidance by proper principles. "Strategy," wrote Maxwell, "is the act of infusing into a plan and/or applying a central idea, design, or timing which will give the greatest possible advantage in a campaign or situation. The strategy is the specific design used."[40]

Prior to World War II, the Air Corps Tactical School's teachings had frequently gone beyond the somewhat narrow confines of officially-approved doctrine,[41] but, probably because it held that the principal characteristics of doctrine were that it would be "reasonable" and "progressive,"[42] the Air Corps Tactical School did not differentiate between the doctrinal and the non-doctrinal in its teachings. As early as March 1943, however, AAF officers were referring to ideas which did not have the proven validity of doctrine as "concepts." "No concept, particularly one pertaining to a new weapon," wrote Colonel Charles G. Williamson on 3 March 1943, "can reasonably be stated as a fixed and permamently inviolable rule, but must be accepted as a guide until actualities justify, in the mind of the proper authority, a change in concept."[43] Writing in the winter of 1948, Maj. Gen. Robert W. Harper, Deputy Commander of

the Air University, described General Billy Mitchell as being among the "visionaries and missionaries" of the Air Force. "For atomic warfare," Harper wrote, "new concepts of Air Power will have to be formulated."[44] Early in 1951, USAF regulations charged the Air University with the responsibility for developing doctrine, but the Air University specified that the Air War College's mission consisted of "the conduct of special studies and evaluation which will provide sound air power concepts" and "the preparation . . . of doctrinal manuals." The first objective of Air War College evaluation was: "To develop doctrines and concepts for the employment of air power."[45] In September 1951, General Edwards stated that the Air War College had the mission of "promoting sound concepts on the broad aspects of air power in order to assure the most effective development and employment of the air arm."[46]

By the autumn of 1951, Air Force usage already suggested that "concept" was more visionary, more dynamic, and more comprehensive than "doctrine," but an Air War College study of Air Force ideas proposed to establish "concept" at an orderly position in Air Force thought. "In the field of ideas," stated this study, "there is evidently a degree of general acceptance ranging from the first nebulous ideas of an individual, up successively through concepts, doctrines, and principles. The point at which an idea becomes a concept, a concept a doctrine, and a doctrine a principle is not always clear. Thus at any one time our Air Force doctrine may be said to be partly concept, partly doctrine, and partly principle."[47] In his pioneer book on U.S. Military Doctrine, Brig. Gen. Dale O. Smith, who had worked with the Air War College students in the preparation of their study, accepted the proposition that Air Force thought progressed from ideas, to concepts, to doctrines, the last having gained enough official support to be taught at service schools or to be accepted at the highest military staff levels. General Smith additionally proposed that a service doctrine which was accepted by the President, the Congress, or the people of the United States became an executive, a legislative, or a national "policy."[48]

General usage thus accepted the proposition that a concept was a hypothesis which had not received the acceptance required by doctrine,[49] but there was less agreement as to whether doctrine was confined to the service level of the Armed Forces. In 1957, for example, Colonel Wendell E. Carter contemplated a "national doctrine" which would grow out of the deliberations of the Joint Chiefs of Staff and would dictate how the wars would be fought.[50] In this same year, Professor Henry A. Kissinger visualized that "strategic doctrine" enabled society "to act purposefully as a unit . . . by reducing most problems to a standard of average performance which enables the other members of the group to take certain patterns of behavior for granted and to plan their actions accordingly." "By explaining the significance of events in advance of their occurrence," Kissinger asserted, strategic doctrine "enables society to deal with most problems as a matter of routine and reserves creative thought for unusual or unexpected situations." Kissinger thought that this strategic doctrine should desirably issue from the

Joint Chiefs of Staff and the National Security Council.[51] Apparently willing to broaden the definition of doctrine, an Air War College study completed in 1958 identified a need for a U.S. military doctrine which would represent "some substantial consensus of the whole body politic, and particularly among all military personnel, as to objects of military enterprise."[52]

Early in the 1950's the Air University maintained the proposition that "USAF doctrine, developed within the parameters of the more valid concepts of air power, is intended for practical purposes to be used as a guide for organization, development, equipment, and employment of the United States Air Force."[53] Some Air Force officers, however, were more skeptical of the role of doctrine in Air Force development. "The Air Force," General Nathan F. Twining, Acting USAF Chief of Staff, stated in 1952, "is not bound to any fixed doctrine or concept. It grew out of scientific achievement."[54] When he approved AFM 1-2 on 1 April 1953, General Vandenberg thought it necessary to warn that: "The dynamic and constant changes in new weapons make periodic review of this doctrine necessary."[55] Looking backward at past events, General Laurence S. Kuter admitted that he could not suggest that doctrine had ever been the controlling factor in setting the rate of development of air power. Instead, he recognized a "mutual interdependence of doctrinal, technological, political, and other elements."[56] While there was general agreement that Air Force doctrine ought to be forward looking, Maj. Gen. Lloyd P. Hopwood, a former Commandant of the Air Command and Staff College, expressed dismay at the idea that doctrine could not be anything more than descriptive of an existing state of the military art. "We try to make our doctrine and strategy conform to glamorous hardware," Hopwood wrote, "instead of studying modern conflict to find acceptable solutions from which to establish the hardware requirements we need."[57]

According to an observer of the times, men of the Air Corps in the 1920's and 1930's "talked and lived airplanes and air power." "All the way from the hangar line to the old Air Corps Tactical School," recalled Maj. Gen. Robert F. Tate, "you heard talk about air power."[58] In the late and early 1950's the men of the new Air University also pledged themselves to search for the fundamental ideas of air power. This effort yielded the first edition of AFM 1-2, which was subsequently revised and issued in final form as AFM 1-2, United States Air Force Basic Doctrine, on 1 April 1955.[59] Based heavily on the demonstrated capabilities of air power in World War II and in the Korean war, the 1955 edition of AFM 1-2 might have continued to be current for many years, except for the ironic fact that it appeared at the very moment when technological developments were taking shape that would render it obsolete.

Somewhere, somehow in the late 1950's, the quest for Air Force doctrine began to go stale in the very years in which dynamic studies were needed to integrate new aerospace ideas into the main body of Air Force thinking. One school of thought assumed

that Air Force doctrine already written into the AFM 1- series was immutable, inflexible, and so fundamentally sound as to require neither justification nor further analysis. Another school of thought assumed the fatalistic idea that technology was developing so fast that doctrine obviously could not keep pace with the new capabilities. Following the Department of Defense reorganization of 1958, not a few Air Force leaders rationalized that the Air Force might as well not have any doctrine that was not enunciated by the Secretary of Defense: these people urged that a "unified doctrine" would flow down from above and direct the activities of the three armed services.[60] In 1958 the Air University forwarded a proposed revision of AFM 1-2 which was designed to reflect the impact of new weapons and organizational changes, but the revision proved unacceptable within the Air Staff because of a divergency of opinion as to whether the manual should reflect basic proven doctrine or should attempt to project into the future.[61] Holding to the time-proven definition of doctrine, Colonel Orin H. Moore, a long-experienced student of Air Force doctrine, asserted that in a future local war the Air Force would employ its proven doctrine of the past but that it would wage a general nuclear war according to concepts of aerospace power.[62] Maj. Gen. Dale O. Smith now agreed that Air Force doctrinal manuals apparently could not keep pace with technological advances; but he nevertheless urged that true Air Force doctrine--which was definable as military thought on how to conduct war--might well be the often unspoken and sometimes unconscious beliefs which truly guided Air Force actions. "Actions, not pronouncements," Smith said, "are the real indicators of doctrine."[63]

Spurred into action by the protest of Lt. Gen. W. E. Todd, Commander Air University, that the 1955 edition of AFM 1-2 was "so far out of date that it has practically become archaic," the Air Staff approved and published on 1 December 1959 a new edition of the basic doctrine manual which included some changes in wording to incorporate ideas of aerospace weapons.[64] In explanation of the significance of the new edition of the manual, General White stated that: "Military doctrine must provide distinct guidelines, drawn from both foresight and experience, for the conduct of current and future operations." Despite the impact of new weapons, White asserted: "The predominant characteristics of air forces (now aerospace forces) have changed only in degree. Range, mobility, flexibility, speed, penetrative capability and firepower delivery--the characteristics that continue to make aerospace forces unique among military forces--must be developed to the maximum to guarantee national security."[65] In 1961 the Air Force additionally provided that bi-monthly Air Force Information Policy Letters for Commanders and monthly Supplements to the Information Policy Letter for Commanders--both of which included excerpts or full texts of statements by national leaders on matters of special interest and value to Air Force members--would provide "concepts, doctrine, facts, references, and suggestions for all Air Force commanders and their staffs in meeting their responsibility to advance understanding inside and outside the Air Force."[66]

Based upon the belief that written doctrine had failed to provide useful guidelines for the future development of the Air Force, there was a sentiment among research and development officers in the late 1950's that the Air Force should abandon the old predilection toward doctrine and seek a broader field of continuing investigation which might be termed "militology" or "military science." Such a field of investigation would examine the basic tenets of military success and would weld together the bits and pieces of military thought which had been described as objectives, policies, principles, strategy, tactics and techniques, long range plans, general operational requirements, doctrines, and concepts. The objective of such an intensive study of military science would be to produce "models" or theoretical projections of military concepts and principles of military influence.[67] The Air Force, however, was unwilling to give up efforts to define basic doctrine: on 14 August 1964 it would issue a completely new AFM 1-1, United States Air Force Basic Doctrine. In the forword to this manual, General LeMay noted: "Basic doctrine evolves through the continuing analysis and testing of military operations in the light of national objectives and the changing military environment. . . . It is probable that new interpretations will continue to be needed if Air Force doctrine is to be responsive to changing national policy requirements, the potential military threat, and developments in military technology."[68]

As this introduction indicates, the Air Force from its beginning has been engated in a never-ending quest for Air Force doctrine. In essence, this doctrine--as defined by General Smith--comprises "the fundamental beliefs held by Air Force people which underlie the development, deployment, and employment of aerospace power in peace or war." General Smith has also suggested that Air Force doctrinal changes have been caused by shifting circumstances arising from analyses of: (1) the principles and aims of American society and government; (2) the threats to the American system and way of life, internal and external; (3) advances in technology and weaponry; (4) the impact of many levels of leadership, both friendly and enemy; (5) assessments of proper courses for Americans to pursue; and (6) the place of aerospace power in these systems of values and predictions.[69]

At the same time that it is possible to see that the Air Force has developed in accordance with a closed-circle relationship between developments in the national policies of the United States, the nature of the enemy threat, the state of technological developments, and the dicta of Air Force doctrine, it is nevertheless true that the Air Force never perfected semantic thought patterns that encompassed the totality of its rationale. While no history can capture the totality of Air Force rationale, an investigation of the manner in which the Air Force has attempted to manage research in the broad field of ideas, the thoughts of Air Force leaders as to the nature of international conflict and military power, the characteristics of air power and aerospace power, and the major functions of air and space endeavor can serve to provide better understanding of the main currents in Air Force ideas, concepts, and doctrine.

CHAPTER 2

EARLY DAYS THROUGH WORLD WAR I, 1907-1926

1. The Beginning of Army Aviation

In reminiscences about their epic controlled-power flight at Kitty Hawk, North Carolina, on 17 December 1903, Orville and Wilbur Wright always contended that they meant the airplane to be a contribution to international communications, trade, and good will. When they made their first efforts to sell a plane, however, the Wright brothers looked to the U.S. War Department. "The series of aeronautical experiments upon which we have been engaged for the past five years," Orville Wright wrote on 18 January 1905, "have ended in the production of a flying machine of a type fitted for practical use. . . . The numerous flights. . . have made it quite certain that flying has been brought to a point where it can be made of great practical use in various ways, one of which is that of scouting and carrying messages in time of war."[1] Writing directly to the Secretary of War on 9 October 1905, Orville Wright renewed this earlier informal offer "to furnish to the War Department practical flying machines suitable for scouting purposes."[2] Still again, on 15 June 1907, he wrote: "We believe that the principal use of a flyer at present is for military purposes; that the demand in commerce will not be great for some time."[3]

Without military expenditures for its development, it is quite likely that the airplane would not have become a safe and usable vehicle. "Had it not been for the support of the military for military purposes," Dr. C. C. Furnas, Chancellor of the University of Buffalo and a knowledgeable scientist, would conclude in April 1958, "we would even now I am sure not have safe commercial aviation."[4] In 1898, while the Spanish-American War was in progress and well before the Wrights' first flight, the War Department's Board of Ordnance and Fortification had secretly allocated $50,000 to Dr. Samuel P. Langley, who had been subsequently unable to produce a promised flying machine. When this information became generally known, both Congress and the press had been extremely critical of this so-called wastage of public funds.[5] Possibly as a result of this experience, the Board of Ordnance and Fortification declined to enter into negotiations with the Wrights in October 1905 "until a machine is produced which by actual operation is shown to be able to produce horizontal flight and to carry an operator."[6]

Because of interest expressed by President Theodore Roosevelt, aviation matters received added emphasis in the War Department in 1907. On 1 August, Brig. Gen. James Allen, the Army's Chief Signal Officer, established an Aeronautical Division within the Signal Corps, and the Board of Ordnance and Fortification reopened negotiations with the Wright brothers. In a letter to the Board on 10 October, Allen was skeptical of the value of the Wright plane. "The military

uses of a flying machine of any type," he thought, "will be only for purposes of observation and reconnaissance, or, as an offensive weapon, to drop explosives on the enemy." For either purpose, he believed that the airplane would be less efficient than the dirigible balloons which were already being used by France, Germany, and England. "For the purpose of dropping explosives on an enemy," he asserted, "a high speed aeroplane is hardly suitable. . . . In passing over the enemy's works a flying machine should travel at least 4000 feet above the earth. . . . Traveling at the rate of thirty miles an hour at this altitude, even after considerable practice it is not thought a projectile could be dropped nearer than half a mile from the target."[7] Even though the airplane lacked range, load-carrying capability, and came out second-best in an effectiveness comparison with the dirigible, the Board of Ordnance and Fortification nevertheless instructed General Allen on 5 December 1907 to solicit bids for the delivery of a heavier-than-air flying machine designed to carry two persons, with sufficient fuel for a flight of 125 miles, and with a speed of at least 40 miles an hour.[8]

The Signal Corps specifications for its first airplane did not include an operational requirement which it would be expected to satisfy. As a result, when the first Wright plane was eventually accepted on 2 August 1909, the Army had a new item of experimental equipment which needed a mission. In his student thesis at the Fort Leavenworth Army Service School in 1907, Lt. Benjamin D. Foulois had predicted that large fleets in the air would operate well in advance of ground troops and that these opposing air fleets would be the first military forces to engage at the outbreak of a war.[9] In 1911, Lt. Thomas DeWitt Milling tested an experimental aircraft bombsight, and in the following year Milling and Captain Charles DeForest Chandler first fired a Lewis machine gun from an airplane. Even these early aviation enthusiasts, however, recognized that "the very limited flight performance of aircraft in 1912 had not demonstrated any military value other than reconnaissance."[10] U.S. Army Field Service Regulations of 1910 merely noted that for purposes of reconnaissance: "The dirigible balloon or flying machine is used as the commander directs."[11]

During hearings in the spring of 1913 held by the House Military Affairs Committee on a bill to create a separate Air Corps as one of the line components of the Army, Assistant Secretary of War Henry S. Breckinridge explained the War Department position that military aviation was "merely an added means of communication, observation and reconnaissance" which "ought to be coordinated with and subordinated to the general service of information and not erected into an independent and uncoordinated service." Significantly enough, Lieutenant Foulois agreed that it was too early for a separate Air Corps; Lt. Henry H. Arnold was sure that the Signal Corps was doing all it could to advance aviation; Lieutenant Milling considered the proposed change premature. "The offensive value of this thing has yet to be proved," argued Captain William Mitchell. "It is being experimented with--bomb dropping and machines carrying guns. . . but there is nothing to it so far except in an experimental way."[12]

During a period of strained relations with Mexico, Army aviators were ordered to Texas City, Texas, in February 1913 to work with the 2d Division. Early in March, this detachment was provisionally organized as the 1st Aero Squadron.[13] Issued on 19 March 1914, a new edition of U.S. Army Field Service Regulations addressed the subject of the use of combined arms and of aviation. These regulations, which would continue to be in effect when the United States entered World War I, assigned the predominant combat role to the infantry: "The infantry is the principal and most important arm, which is charged with the main work on the field of battle and decides the final issue of combat. The role of the infantry, whether offensive of defensive, is the role of the entire force, and the utilization of that arm gives the entire battle its character. The success of the infantry is essential to the success of the combined arms." Aircraft--captive balloons, dirigible balloons, and aeroplanes--served to provide information. For strategical reconnaissance, the dirigible had the greatest practical value, but aeroplanes were said to be more dependable for field service with a mobile army since dirigibles required substantial shelter from winds while they were on the ground. "In forces of the strength of a division, or larger," the regulations stated, "the aero squadron will operate in advance of the independent cavalry in order to locate the enemy and to keep track of his movements."[14]

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Feeling the threat of hostile neighbors, European nations accelerated the development of aeronautics during the early 1900's. At the Hague Conference in 1899 the European nations had been willing to accept an American proposal and impose a five year prohibition against "the discharge of projectiles or explosives from balloons or by other new methods of similar nature." The American delegate had rationalized: "The balloon. . .can carry but little; it is capable of hurling . . . indecisive quantities of explosives, which would fall, like useless hailstones, on both combatants and noncombatants alike."[15] But in 1907, when the Second Hague Conference declaration extended this moratorium on aerial bombing, no major powers except the United States and Great Britain proved willing to ratify it. While there were ominous predictions that a future war would begin with air bombardments of belligerent capitals, the opposing powers, for the most part, hurriedly developed aviation as an added means of reconnaissance. As the war approached, however, a new strategic concept began to take hold: military commanders in Germany, France, and Russia began to discount the prospect that any means of reconnaissance could dispel the fog of war in an all-out modern conflict. First Germany and then France and Russia accepted the strategic concept of offense a l'outrance--a headlong offensive that would attain victory before an enemy could maneuver or react and before battlefield reconnaissance would be worthwhile.[16]

Reflecting popular fears of aerial bombing, the first days of World War I were marked by many false alarms of hostile air raids. Apparently in a sincere error, the German declaration of war handed to France on 3 August 1914 alleged that French aircraft had bombed the railroad near the German city of Nurnberg on the day before. As hostilities began on the western front the air orders of battle were faily evenly matched: each side had about 180 airplanes; the Germans had 12 Zeppelins, where France and Britain together had 13 of these dirigibles. The much-feared Zeppelin did not perform well in early fighting: the Germans lost one Zeppelin when it was attempting to bomb the forts at Liege on 6 August and two others were shot down on 21 August when they attempted to reconnoiter under low clouds in the Belfort area. In the confusion of the active field campaign, neither the attacking German armies nor the Anglo-French defense forces made effective use of reconnaissance aircraft.[17]

The employment of reconnaissance aircraft became more effective as the German attack continued, and when the exhausted opposing armies entrenched late in 1914 aerial vehicles became virtually the sole source of intelligence. In some measure, aircraft reconnaissance added to the stalemate of trench warfare since neither opposing army could make large local build-ups of munitions and reserves without being detected and countered. Both the Allies and the Central Powers exploited fixed-balloons for front-line observation and aircraft for deeper-in reconnaissance. Success of local campaigns depended upon blinding the opposing intelligence service: thus both sides developed fighter aircraft and employed them over active sectors in barrage patrols designed to sweep enemy aircraft from the skies. The appearance of a technologically superior Fokker fighter aircraft over the front lines in June 1915 gave a working air superiority to the Central Powers and demanded extreme efforts on the part of the Allies to develop higher performance pursuit aircraft and better tactics. By 1917 the Germans also developed an armed Junkers strafing aircraft which was especially designed for attacks against troops and equipment. As the ground war stalemated German Zeppelins began psychological bombing attacks against England in January 1915. On the Allied side in 1916, the Italian aircraft manufacturer, Count Caproni di Taliedo, prepared a memorandum for Allied Headquarters which proposed to destroy German and Austrian naval vessels by bomber attack against fleet bases. In January 1917, Count Caproni argued that his large triplane bombers, if built in sufficient numbers, could destroy Austria's factories, thus ending the war with Italy's main opponent.[18]

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Recognizing that the United States was lagging in aeronautics, Congress, in a measure approved on 3 March 1915, established the National Advisory Committee for Aeronautics (NACA) as an independent agency for the "scientific study of the problems of flight with a

view to their practical solution." This action was hardly taken, however, before the new evidence emerged to show the low state of readiness of Army aviation. On the Mexican border in March and April 1916, the 1st Aero Squadron valiantly attempted to support Brig. Gen. John J. Pershing's punitive expedition against the Mexican outlaw Pancho Villa, but a combination of poor flying machines and severe operational weather made it impossible for the squadron to provide desired observation to the ground forces.[19] As the United States reluctantly began to arm itself, the National Defense Act of June 1916 included a modest expansion of the personnel of the Signal Corps Aviation Section, and large appropriations for Army aviation were included in the fiscal year 1917 appropriation. Looking toward industrial mobilization, Congress authorized establishment of the Council of National Defense on 29 August 1916, and one of the groups comprising the Council of National Defense would serve as the nucleus for the creation of the Aircraft Production Board on 16 May 1917. The Aircraft Production Board would work in conjunction with the Joint Army-Navy Technical Board in the selection and procurement of the aircraft chosen for large-scale production.[20]

2. The American Air Service in World War I

When the United States entered World War I on 6 April 1917, the American Army did not possess a single modern combat aircraft but the beginnings had been made for an industrial mobilization. As a non-belligerent, the United States had not shared Allied war secrets, and it badly needed information upon which to base its war plans. In the first place, the hard-pressed Allies wanted rapid support from American industry. In a cable to President Woodrow Wilson on 26 May, Premier Alexandre Ribot of France asked that an American "flying corps" of 4,500 planes, 5,000 pilots, and 50,000 mechanics be sent to France during 1918 in order to "enable the Allies to win the supremacy of the air." If it were to meet this requirement, the United States would have to produce 16,000 planes and 30,000 engines by 1 July 1918. Congress immediately appropriated funds for the requisite production, but, for some reason, Ribot had not specified what type planes ought to be produced.[21]

In order to determine specific American aircraft requirements and to coordinate Allied patent problems, Secretary of War Newton D. Baker sent an Aeronautical Commission, headed by Major Raynal C. Bolling, a newly-commissioned leader in civil aeronautics, to Europe in June 1917. In the federal service earlier in 1917, Bolling had worked closely with Major Foulois in providing justifications for the $640 million Congressional appropriation for the production of aircraft and expansion of the Air Service, and Secretary Baker apparently believed that his background in business would enable him to deal with Allied war producers.[22] The report of the Aeronautical Commission filed by Bolling on 15 August 1917 provided the doctrinal and technical bases for building the Air Service, American Expeditionary Forces. Bolling reported general agreement that the United

States would immediately require aircraft for use in training, aircraft for use strictly in connection with the operation of American ground forces in the field, and, after these immediate requirements were met, "fighting airplanes" and bombers which would be "in excess of the tactical requirements of its Army in France." Since he did not know how large the U.S. Army field force would be, Bolling was unable to suggest the extent of the air force component of the field force, but he recommended that the air force which could be used "independently of United States military forces" should be about 37.5 percent fighting airplanes, about 25 percent day bombers, and about 37.5 percent night bombers. The composition of the bomber force would actually vary according to the number of fast fighting machines which the enemy operated on a given portion of the front at a given time. In extended discussion of the bomber force which he desired to put into action in 1918, Bolling explained that day bombardment required faster aircraft which would desirably be employed freely "if it should be possible to drive from the air practically all the enemy fighting machines." By bombing at night, however, large and slow airplanes could carry large numbers of bombs. "Could night bombing be conducted on a sufficiently great scale and kept up continuously for a sufficient time," Bolling stated, "there seems good reason to believe that it might determine the whole outcome of military operations. Up until the present time, the trouble seems to have been that all bombing has been carried on intermittently and sporadically because of a lack of attention to the subject and provision for large enough numbers of the right kinds of airplanes."[23]

While American aviation pioneers had thought of aviation as a combat arm, the idea of a massive independent bombing force which was so readily accepted by the Aeronautical Commission was relatively new, even in Europe. Shortly after arriving in Europe, Bolling had conversations with General Sir David Henderson of the British Air Board, who divided aviation into three categories: service aviation allocated to ground forces, fighter aviation in requisite quantities (preferably a three-to-one numerical superiority) to drive the enemy out of the air, and bomber aviation in maximum amounts that a country was able to produce "to use against the enemy in bombarding him out of his position and cutting off his communications and destroying his sources of supply."[24] As a result of a visit to Italy, the Bolling commission was evidently favorably impressed with Italian bombing raids against Austria, and the commission recommended that the United States should purchase Caproni biplanes and the license to manufacture Caproni triplanes.[25] The strongest influence upon the Bolling commission, however, was undoubtedly Lt. Col. William Mitchell. While serving on the War Department General Staff in 1915, Mitchell had made a directed survey of America's aviation needs. While assigned to the Signal Corps Aviation Section in 1916, Mitchell had taken flight instruction at his own expense and had become an aviation enthusiast. Sent to Europe

as an observer, Mitchell arrived in Paris four days after the United States entered the war. In May 1917, Mitchell spent a number of days in a visit at the headquarters of Maj. Gen. Hugh Trenchard, the Royal Air Force commander in France. Mitchell learned that Trenchard's policy was to unify all aviation under one commander, to place the minimum number of airplanes necessary for the use of ground troops in action with each army, and to concentrate the bulk of bombardment and pursuit so that he could "hurl a mass of aviation at any one locality needing attack." When General Pershing arrived in Paris to take command of the American Expeditionary Forces on 13 June, Mitchell assumed the duty of Chief of Air Service, American Expeditionary Forces. In this position, Mitchell worked intimately with the Bolling commission while it was preparing its recommendations to Washington.[26]

Back in Washington, the Joint Army-Navy Technical Board accepted the Bolling commission recommendations as being essentially sound, and the idea of conducting an air war against the Germans apparently caught the fancy of the American people. Unfortunately, fanciful statements made by Secretary Baker and other people in authority as to the tremendous numbers of American planes that would deluge the Western Front caused the Germans to redouble their air production effort in what they called their Amerikaprogramm but did very little to mobilize the American productive effort.[27] According to the War Department organization, the Signal Corps Aviation Section (which was variously redesignated as the Aeronautical Division, the Airplane Division, the Air Division, and the Air Service Division) was responsible for the recruitment and training of aviators and aviation personnel. Separately responsible to the Secretary of War, the Aircraft Production Board (which was enlarged and redesignated as the Aircraft Board by Congressional authority in October 1917) was in charge of aircraft requirements and of the placing of contracts for aircraft and air materiel production. The Joint Army-Navy Technical Board was responsible for making final decisions as to the types of aircraft to be procured, but in August 1917 General Pershing demanded and received final authority to determine aircraft types. After this, the position of the Joint Army-Navy Technical Board speedily deteriorated.[28] When it was evident early in 1918 that extravagant fighting-plane programs could not be met, the Aircraft Board and the Aviation Section of the Signal Corps became the targets of bitter public criticism and Congressional investigation. After preliminary War Department steps had been taken during April, President Wilson on 21 May 1918 transferred aviation matters from the Signal Corps to the Division of Military Aeronautics, which was to be headed by Brig. Gen. William L. Kenly, and to the Bureau of Aircraft Production, headed by Mr. John D. Ryan who additionally continued to be chairman of the Aircraft Board.[29]

In Europe much of the same confusion as was occurring in Washington marked the organization of the Air Service, American Expeditionary Forces. Promoted to colonel, Mitchell served as Air

Officer AEF until 3 September 1917, when Pershing installed General Kenly as Chief of Air Service AEF and made Mitchell Air Service Commander, Zone of Advance. On 27 November, Brigadier General Foulois, accompanied by a headquarters staff, arrived in Paris with orders to relieve General Kenly, who returned to the United States. Mitchell had respected General Kenly, but he referred to the Foulois staff as "carpetbaggers." General Pershing described the officers who came to France with Foulois as "good men running around in circles." In an effort to restore order, Pershing on 29 May 1918 finally installed an engineer officer and West Point classmate, Brig. Gen. Mason M. Patrick, as Chief of Air Service AEF. At this time, Foulois was appointed Chief of Air Service, First Army, but he instead asked to serve as assistant to Patrick and recommended Mitchell for the combat position, to which Mitchell was assigned on 27 July 1918. Thereafter, new combat air posts were formed as new Army organizations reached France. In October 1918, Colonel Frank P. Lahm became Chief of Air Service, Second Army. Relieved by Colonel Thomas D. Milling at First Army in October, Mitchell was promoted to brigadier general and appointed Chief of Air Service, Army Group.[30]

The priority task of the Air Service AEF was to provide the trained air units which were assigned to American divisions, corps, and armies as they arrived in France. Considered to be an integral combat arm of the ground forces, the air units assigned to the front were commanded in the full sense of the word by the commanding generals of armies, corps, and divisions to which they were assigned. "The Air Service," stated General Patrick, "originates and suggests employment for its units but final decision is vested in the commanding general of the larger units, of which the Air Service forms a part." In most instances, however, Patrick acknowledged that ground commanders lacked experience with aviation and depended heavily upon their Air Service officers.[31] In order to guide the air effort in the autumn of 1917, Colonel Mitchell drew up what was probably the Air Service's first formal statement of doctrine when he issued a paper entitled "General Principles Underlying the Use of the Air Service in the Zone of Advance A.E.F." In a preface, Mitchell stated that the outcome of war depended primarily upon the destruction of an enemy's military forces in the field. No one of the Army's offensive arms could bring about complete victory: the mission of the Air Service was to help other arms in their appointed missions. Mitchell divided aviation into two general classes: "tactical" aviation, which operated in the immediate vicinity of troops of all arms, and "strategical" aviation, which acted far in advance of troops of other arms and had an independent mission. According to Mitchell, tactical aviation consisted of observation, pursuit, and tactical bombardment. Observation squadrons performed visual and photographic reconnaissance, adjusted artillery fire, and provided liaison services. Pursuit aviation attained "mastery of the air" in air battles, and, when necessary, created diversions by

attacking enemy personnel on the ground. Tactical bombardment operated within 25,000 yards of the front lines. Its objectives were to assist in the destruction of enemy materiel, to undermine the morale of enemy personnel, and to force hostile aircraft to arise and accept combat by attacking enemy airdromes. Mitchell considered that strategical aviation included pursuit, day-bombardment, and night-bombardment squadrons. The radius of action of strategical aviation units was usually more than 25,000 yards in advance of friendly troops, and the object of strategical aviation was "to destroy the means of supply of an enemy army, thereby preventing it from employing all of its means in combat." Such would be accomplished, Mitchell stated, by destroying enemy aircraft, air depots, and defensive air organization, as well as enemy depots, factories, lines of communications, and personnel.[32]

The issuance of Mitchell's "General Principles" apparently coincided both his assumption of duty as Air Service Commander, Zone of Advance, and with the first arrivals of U.S. Air Service squadrons in France. The 1st Aero Squadron arrived overseas on 3 September 1917, where it was equipped with Salmson aircraft and trained as a corps observation squadron before it was assigned to the front on 8 April 1918. By the time of the Armistice on 11 November 1918, the American Air Service in France would comprise 45 squadrons, including 6 army observation, 12 corps observation, 20 pursuit, 6 day-bombardment, and 1 night-bombardment squadron. Twelve of these squadrons were ultimately equipped with American-built DH-4 aircraft; the other squadrons flew Salmson, Spad, Breguet, or Sopwith Camel planes purchased from the French and British. After training in the inactive Toul sector of the Western Front, American Air Service units were employed in support of the U.S. I Corps at the Marne and Vesel Rivers in July and August 1918. The greatest American air action, however, came in support of the U.S. First Army in the St. Mihiel and Argonne-Meuse offensives beginning in September 1918. For the St. Mihiel offensive, Mitchell had the services of British and French as well as American squadrons: altogether he had the use of 701 pursuit, 323 day bomber, 91 night bomber, and 366 observation aircraft, a total of 1,481 planes of which about one third were American. The air action in these battles illustrated the value of concentrated air forces, but the employment of aviation continued to be planned in terms of the ground mission. Thus Air Service officers spoke of the desirability of attaining "aerial supremacy," but they considered that this was possible only in certain selected sectors for limited periods of time. The major mission of pursuit aviation was described as being "to keep clear of enemy airplanes an area about 10,000 yards deep in front of the line of battle." This was the area in which corps and division observation aircraft worked, and thus the objective of pursuit aviation was defined as "the destruction of the enemy air service and the protection of our own observation aircraft." The primary object of day-bombing attacks was said to be "the destruction of the enemy's morale, materiel, and personnel." In this effort it was found that "the ratio of the

effect of lowering the enemy's morale over that of destruction. . . estimated as about 20 to 1." Bombing and strafing of ground targets proved advisable only when air supremacy was attained: this lesson was learned by hard experience. According to Colonel Milling, the American Air Service's day-bombing force sustained about 60 percent losses during the Battle of St. Mihiel when it was closely escorted by pursuit aircraft. Being tied to the bombardment planes, the pursuit aircraft always had to fight on the defensive. The solution, which cut losses to 8 percent, was a double offensive wherein the bombardment planes carried out their attacks against ground targets and the pursuit aircraft aimed their attacks against enemy fighters which always arose to meet the bombardment planes. Even bombardment missions were thought of in terms of the high priority observation function, since these missions "invariably drew enemy pursuit from the rest of the front, rendering it safe for our corps observation."[33]

In the battles of France the employment of tactical aviation by the Air Service officers was generally in accordance with the plan of the ground battle. At the end of World War I, General Patrick believed that experience had "clearly demonstrated the fact that the work of the observer and observation pilot is the most important and far-reaching which an Air Service operating with an Army is called upon to perform."[34] Colonel Lahm agreed that "the main function of aviation is observation and that all hinges on that program," and Colonel Milling emphasized that: "The Air Service is of value to the military establishment only insofar as it is correlated to the other arms."[35] Prepared under the direction of Colonel Edgar S. Gorrell in the spring of 1919, a "Tentative Manual for the Employment of Air Service" stated that "in the future, as in the past, the final decision in war must be made by men on the ground, willing to come hand to hand with the enemy. When the Infantry loses the Army loses. It is therefore the role of the Air Service, as well as that of the other arms, to aid the chief combatant, the Infantry." This manual also noted that "the greatest value of the Air Service to date has been in gathering information of the enemy and of our own troops." As a final basic consideration relative to air attack, the manual observed that "the morale effect on ground troops is out of all proportion to the material destruction wrought."[36]

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In the summer of 1917 the members of the Bolling Aeronautical Commission had enthusiastically supported a plan whereby American "strategical" bombers and fighters would be employed against Germany. When the Bolling mission broke up on 15 August 1917, Bolling was promoted to the rank of colonel and given the title of Assistant Chief of Air Service, Line of Communication. Major Edgar S. Gorrell, a young aeronautical engineer who had come to France

with Bolling, was detailed in charge of the Air Service Technical Section in Paris. In this position, Gorrell was in charge of initiating purchases of air materiel in Europe, and his studies led him to believe that the United States should purchase or build a sufficiently large number of night-bombers to carry out a "systematic bombardment" of Germany. Gorrell believed that a force of from 3,000 to 6,000 bombers would be adequate for this purpose. What the influence of Count Caproni had been on the original Bolling mission report may only be speculative, but in October 1917 both Bolling and Gorrell were in active correspondence with the Italian aircraft manufacturer. Sometime during October, Caproni collaborated with his friend Captain Giulio Douhet in the preparation of a "Memorandum on the 'Air War' for the U.S. Air Service" which urged that mass attacks made at night by long-range Allied bombers against industrial targets deep within Germany and Austria could definitely overwhelm the enemy by substantially reducing his war production at the same time that Allied production was increasing. That same month, Caproni gave Gorrell a little book signed by Nino Salveneschi and entitled Let Us Kill the War; Let Us Aim At the Heart of the Enemy. Evidently written by a journalist to represent Caproni's views, this small English-text book was a further exposition of the concept of strategic bombardment. In November 1917, Bolling personally advised Howard Coffin, the Chairman of the Aircraft Production Board in Washington, that the United States ought to give a higher priority to the production and procurement of bomber aircraft than to observation and fighter aircraft.[37]

When General Foulois arrived in Paris in November 1917, he divided the Air Service, Zone of Advance, into Tactical Aviation and Strategical Aviation and placed Lieutenant Colonel Gorrell in charge of the latter organization, which was to be a planning staff pending the arrival of bombardment squadrons. For staff support, Gorrell obtained Majors Harold Fowler and Millard F. Harmon and borrowed Wing Commander Spencer Gray, a British Royal Navy Air Service officer. These men drew up a proposal for a bombing campaign which they submitted to Foulois on 28 November 1917. This paper pointed out that the Germans were reported to be building great numbers of large Gotha bombers in preparation for a bombing campaign. The Gorrell plan therefore stated that it was "of paramount importance that we adopt at once a bombing project. . . at the quickest possible moment, in order that we may not only wreck Germany's manufacturing centers but wreck them more completely than she will wreck ours next year." The plan proposed that the bombing attacks would be mounted by day and night from airfields in the Toul-Verdun area against industrial plants around Dusseldorf, Cologne, Mannheim, and in the Saar Valley. Up to 100 squadrons should be directed against each of these targets in turn, the idea being to keep a given target under a sustained bombardment up to five hours at a time. Such an assault would overwhelm target defenses, wreck manufacturing works, and shatter the morale of workmen.[38]

In Great Britain popular dissatisfaction with the ability of the

air defenses to deal with Zeppelin and Gotha attacks against London forced a reorganization of aviation affairs. On the advice of a board headed by Lieutenant General Jan Christian Smuts (with strong support from Winston Churchill), the British Government set up a separate Air Ministry in December 1917. In the culmination of this reform in April 1918, the Royal Flying Corps and the Royal Naval Air Service would be recombined into the Royal Air Force, but, as a more immediate action, General Trenchard was directed to concentrate a bomber force at Nancy and commence attacks against German industrial centers. Since the British were already operating from Nancy, the American Air Service agreed with Trenchard's suggestion in December 1917 that American bomber squadrons arriving in France would initially operate with British units. Here matters stood on 5 February 1918 when Colonel Gorrell was transferred to the AEF General Staff. On 26 March, moreover, Colonel Bolling was killed by German soldiers while he was reconnoitering the ground front.[39]

Although Gorrell's successor in Strategical Aviation busied himself making plans for the eventual reception of American bombardment squadrons, the establishment of the British Independent Air Force at Nancy under command of General Trenchard on 5 June 1918 forced a reconsideration of American planning. Since the British independent Air Force received its orders from the Air Ministry rather than from the Allied Commander-in-Chief, Marshal Ferdinand Foch, the American Expedtiionary Forces ruled that American bomber squadrons could not operate integrally with it. General Pershing's chief of staff also notified General Patrick that all Air Service officers "must be warned against any idea of independence and. . . that every force must be closely coalescent with those of the remainder of the Air Service and with those of the Grand Army." Believing that the use of the term "Strategical Aviation" had led persons to think that this activity was independent, General Patrick directed in June 1918 that the activity would be known as the "G.H.Q. Air Service Reserve."[40] Marshal Foch believed that the enemy's army was the enemy's strength, and he maintained that bombers should attack the enemy's economy only as a secondary function. The military representatives of the Allied Supreme War Council on 3 August 1918 accordingly established an Inter-Allied Bombing Force which was to operate against the German economy only after requirements of the armies in the field had been met or in lulls between ground battles.[41]

While the Allies moved toward acceptance of strategic bombing, the amount of effort which could be deovted to attacks against Germany's economy was not large. From 6 June 1918 to the Armistice, the RAF Independent Force consisted of only nine squadrons, some of which were equipped with planes which had been obsolete for several years. In these months, the Independent Force dropped some 550 tons of bombs on about 50 targets. Trenchard recognized that his effort was spread very thinly, but his major hope was to disrupt enemy morale.[42] Had the war continued, the American Air Service would

have joined the strategic bombing effort. Back in the United States, however, indecision as to the bombers which would be produced and then slowness in production denied the Air Service a bomber force. In line with the original Bolling recommendations, the United States initially undertook to manufacture Caproni bombers, but it was also decided to produce British-designed Handley-Page bombers. Since it would be difficult to ship the bombers across the ocean, Handley-Page parts would be manufactured in the United States and the planes would be assembled in Great Britain. On 28 June 1918, an Air Service Night Bombardment Section was opened in England to superintend the equipment and training of a night-bomber force, but none of the expected Handley-Page aircraft became available before the Armistice. A single American night-bomber squadron, equipped with improvised DH-4B and old Farman FE-2B aircraft, was committed to the front on 9 November 1918. Looking backward at the failure of the "strategical aviation" program, Colonel Gorrell observed that "entirely too much optimism was felt for the American Production Program" and that "the Air Service failed to secure the approval of the General Staff of its plans for the employment of this aviation and consequently suffered from the fact that its plans for the use of the Strategical Air Service were not synchronized properly. . . with the ideas of G.H.Q."[43]

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In view of the divided War Department authority for training and operations and for aircraft production it was not remarkable that American air unit programs were subject to frequent revision during the course of World War I. In August 1917, the Aviation Section secured approval for a program including 345 combat squadrons, of which 263 were intended for use in Europe by June 1918. Because of lagging aircraft production early in 1918, however, the War Department approved a program of 120 combat squadrons to be at the Western Front by January 1919. In August 1918, the War Department and General Pershing finally agreed on a program calling for 202 squadrons to be at the front by July 1919. This force would have included 60 pursuit, 49 corps observation, 52 army observation, 14 day-bombing, and 27 night-bombing squadrons, plus 133 balloon observation companies. Since aircraft production was beginning to achieve success late in 1918 it appeared probable that this program objective could have been met had the war continued.[44] When hostilities ended on 11 November 1918, however, 45 American air squadrons, with 740 airplanes, 767 pilots, 481 observers, and 23 aerial gunners, were actually assigned to the Air Service AEF. On the Marne, at St. Mihiel, and in the Argonne, American pilots shot down 781 officially-confirmed enemy aircraft and destroyed 73 enemy observation balloons. American losses in air battles included 289 airplanes and 48 balloons brought down by the enemy. The American squadrons participated in 150 bombing raids, during which they dropped more than 275,000 pounds of explosives.[45] During the war,

11,760 airplanes were manufactured by the United States, and, as of 11 November 1918, the Air Service AEF had received 6,287 planes--4,791 from the French, 261 from the British, 19 from the Italians, and 1,213 from the United States.[46] Viewed in themselves, the statistics of American Air Service activities in World War I were somewhat less than impressive. According to his memoirs, General William Mitchell was not entirely happy that the Armistice had come before aviation had proven itself. Mitchell would recall that by the spring of 1919 he had expected to see great bombardment attacks against Germany's economy and even a paratroop employment of the 1st Infantry Division behind German lines. "I was sure that if the war lasted," Mitchell recollected, "air power would decide it."[47]

3. The Mitchell Era: From Air Service to Air Corps

"It is important for the winning of the war," stated the report of Field Marshal Jan Christian Smuts' committee on air organization and home defence to the British Prime Minister on 17 August 1917, "that we should not only secure air predominance, but secure it on a very large scale; and having secured it in this war we should make every effort and sacrifice to maintain it for the future. Air supremacy may in the long run become as important a factor in the defence of the Empire as sea supremacy."[48] In the United Kingdom, the finding of the Smuts committee that the Royal Flying Corps and the Royal Navy Air Service had been bitterly struggling over limited supplies of planes, engines, and personnel available led to the establishment of the Air Ministry in December 1917 and the Royal Air Force in April 1918. Information of the British action reached the United States without delay and caused a renewed congressional and popular demand for an American Air Service altogether separate from the War and Navy Departments.

Within the War Department, it was evident that the separation of responsibilities between the Division of Military Aeronautics and Bureau of Aircraft Production presented an inherent organizational defect. In a memorandum written on 6 June 1918, Colonel Henry H. Arnold, Assistant Director of the Division of Military Aeronautics, stated that the division must control the determination of the design of the equipment with which it was to operate. Arnold did not care who handled supply, but he urged that the Division of Military Aeronautics could not properly be held accountable for operational and military efficiency as long as the Bureau of Aircraft Production was responsible for the quality, design, and production of military aircraft. In order to alleviate some of the criticism of military aeronautics organization, Secretary Baker on 28 August 1918 appointed Mr. John D. Ryan as Second Assistant Secretary of War and Director of Air Service. Since Ryan continued to head the Bureau of Aircraft Production, all Army aviation affairs were in theory under one civilian head. This organization, however, was hardly becoming effective before the Armistice brought Ryan's

resignation, leaving all the offices he had held vacant. In January 1919, Maj. Gen. Charles T. Menoher, a non-flying officer who had commanded the 42d (Rainbow) Division and the VI Army Corps in France, was appointed Director of Air Service. On 19 March 1919, President Wilson signed an executive order which dissolved the old Aircraft Board and placed the Bureau of Aircraft Production immediately under the Director of Air Service. This executive action finally united all Army aviation functions in the Air Service, but President Wilson had acted under a wartime reorganizational authority and the final status of the Air Service would have to be enacted into law by Congress. [49]

Desiring that the lessons of World War I should be recorded promptly by the leaders who had participated in field operations, General Pershing on 19 April 1919 convened a superior board in Paris under the presidency of Maj. Gen. Joseph T. Dickman, which was charged to review the findings of boards of senior officers to be appointed from each branch of the American Expeditionary Forces, including the Air Service. The report of the Air Service Board headed by General Foulois was generally conservative and recommended that most of the Air Service should be assigned to armies, corps, and divisions. The report nevertheless recommended that a G.H.Q. Reserve should be maintained which would never be less than an aerial division, comprising a bombing brigade (a night-bombing wing and a day-bombing wing) and a pursuit brigade (two day wings) plus a 10 percent reserve of all units assigned to armies, corps, and divisions. In reviewing this board report, General Patrick insisted that the prime function of an Air Service was to obtain and transmit information, that the prime function of pursuit was to prevent enemy observation and protect friendly observation planes, and that aircraft intended for bombing distant objectives or industrial centers were a "luxury." "It follows," Patrick wrote, "that when it is possible to place such a bombing force in the field, its size should be limited only by the nation's ability to provide it and by the number and importance of the enemy activities which are to be attacked."[50]

The Dickman Board report noted that the Air Service AEF had developed along four general lines: observation, distant reconnaissance and bombing operations, aerial combat, and combat against ground troops. The board stated that air combat against ground troops was not well developed, and it predicted that this type of aerial work could be made more effective and decisive than distant bombing operations. "Nothing so far brought out in the war," the Dickman Board concluded, "shows that aerial activities can be carried on independently of ground troops, to such an extent as to materially affect the conduct of the war as to materially affect the conduct of the war as a whole. It is possible, perhaps, that future wars may develop aerial forces of far greater extent than those provided in this war. It is safe to assume that Air Forces will not be developed for war purposes to such an extent as to largely

supplant ground and water forces, until such a proportion of the people become airfaring people as are now known as seafaring people." Believing this, the Board also believed that "so long as present conditions prevail. . . Aviation must continue to be one of the auxiliaries of the principal arm, the Infantry."[51]

Other reports, manuals, and histories prepared at the Headquarters, Air Service AEF in Paris and elsewhere in Europe during the immediate post-hostilities period reflected the over-riding importance of observation in the Air Service mission. Written in March 1919 but not published until later, General Patrick's Final Report of Chief of Air Service A.E.F. stated that to regard air forces as separate and distinct from other component parts of the Army would be "to sacrifice the cohesion and unity of effort which alone distinguishes an army from a mob."[52] Two tentative manuals prepared under the direction of Colonel Gorrell--entitled "Notes on the Employment of the Air Service from the General Staff Viewpoints" (February 1919) and "Tentative Manual for the Employment of Air Service" (April 1919)--represented the belief that "when the Infantry loses the Army loses. It is therefore the role of the Air Service, as well as that of the other arms, to aid the chief combatant, the Infantry."[53] The manual of operations for Air Service units which General Mitchell issued at Koblentz as Air Service Commander, U.S. Third Army, on 23 December 1918 portrayed aviation as a supporting arm for the infantry rather than as a decisive force.[54]

Back in Washington during 1919 and 1920 eight separate bills proposing the creation of a separate military aviation establishment were introduced in the U.S. Congress. The leading measures were the New and Curry bills, each of which sought to create an executive department of aeronautics, and, on 8 August 1919, the Secretary of War appointed a board of general officers headed by General Menoher to report on these bills. After study, the Menoher Board reported general agreement on several fundamental considerations: aeronautics would play an increasingly important role in a future war in proportion to the capacity of a nation to produce aircraft and train personnel for aircraft maintenance and operation; no nation could afford to maintain military air fleets required for war in time of peace; the nation which could be first to mobilize a superior air fleet after a war began would have an undoubted advantage; and a nation should desirably have a full development of commercial aviation in order to provide military potential in time of war. The Board stated that a single governmental agency ought to be established for research and development and for procurement of military, naval, and commercial aircraft. It recommended that the government should also develop and operate air route facilities and that it might provide direct subsidies to airline companies but that it should not undertake the production of aircraft. Whether or not a single separate governmental agency for research and development, procurement, and subsidization of the civil air fleet

could be established, however, would depend upon the magnitude of federal expenditures which Congress would be willing to vote for national aeronautics.

The Menoher Board revealed an understanding of the nation's requirement for a progressive development of aviation potential, but it could see no need for a separate Army-Navy aeronautical service. It stated: "An air force acting independently cannot win a war against a civilized nation, nor by itself, accomplish a decision against forces on the ground." On the other hand, military forces could not be efficiently trained nor could they operate effectively without air force support. With respect to an army, an air force was an essential combat branch, and it had to be an integral part of an army command "not only during battle but also during its entire period of its doctrinal training." The Board stated that the outstanding defect of the Air Service AEF had been its lack of cooperative training with the Army, and it quoted extensively from the Dickman Board's findings to substantiate the air mission as being one of support for ground operations. The creation of the Royal Air Force in Great Britain was said to have been motivated "for political rather than military reasons." In regard to the exact organization of the air component of the Army, the Menoher Board recommended that the military air force was an essential combat branch and ought to be placed on an equal footing with the Infantry, Cavalry, and Artillery. "Whatever may be the decision as to a separate Aeronautical Department," the Board concluded, "the military air force must remain under the complete control of the Army and form an integral part thereof both in peace and war."[55]

In the late spring of 1919 the case for a separate air force drew support from the report of a mission headed by Assistant Secretary of War Benedict Crowell. Including American industrialists as well as Army and Navy officers, the Crowell mission visited France, Italy, and England, and conferred with civil and military leaders. The report noted a general agreement in Europe that "any future war will inevitably open with great aerial activity far in advance of contact either upon land or sea, and that victory cannot but incline to that belligerent able to first achieve and later maintain its supremacy in the air." Italy and France were said to realize the military-naval and civil-commercial aspects of aircraft, and Great Britain was reported "to consider the dominance of the air as at least of equal importance with that of the seas, and is frankly and avowedly planning a definite policy of aerial development to that end." Presented to the Secretary of War on 19 July 1919, the Crowell mission report recommended the establishment of a single Department of Air which would be coequal to the Departments of War, Navy, and Commerce, and would have subdepartments including civil aeronautics, military aeronautics, naval aeronautics, and supply and research. Apparently because the Crowell report did not follow accepted viewpoints, Secretary Baker allegedly made efforts to suppress it. The general contents of the report were soon known

to aviation enthusiasts, but Secretary Baker did not release it until December 1919, when he made the observation that the mission had "gone too far in suggesting a single centralized Air Service." Military pilots, Baker stated, had to be trained "to fight singly or in formation, and to operate in coordination with other branches of the military service."[56]

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In his combat command in Europe, General Billy Mitchell had become America's hero and "prince of the air." While he would later re-write and add explanatory notes to his "diary of war-time experiences" that would indicate his early support for the concept of strategic bombardment, Mitchell's wartime activities and writings indicated that he cooperated with the desires of his Army superiors with little real question.[57] In January 1919, however, Mitchell was ordered to return to the United States to become Director of Military Aeronautics. He may well have recognized that he was returning to the United States at a time when the nation lacked an air policy, and, instead of looking backward at World War I, he began to look ahead to logical projections of air power capabilities. One thing was clear, the Air Service needed a definite mission of a distinctive nature. In 1915, when he had been assigned to the War Department General Staff, Mitchell had prepared a survey of America's aviation needs in which he had theorized that Army aviation would be a valuable "second line of defense" if the Navy's "first line of defense" should fail to stop an invasion of the United States. He had made the point that aviation attached to harbor and coastal defenses would be useful both for reconnaissance and for preventing similar enemy activity. Aircraft could also destroy an invader's airplanes, attack his submarines, and disrupt the operations of his minelayers.[58] Something of these earlier thoughts may have been in Mitchell's mind while he was returning to the United States: a naval officer with him aboard the westbound Aquitania duly reported that Mitchell was "fully prepared, with evidence, plans, data, propaganda, posters and articles, to break things wide open" for air power.[59]

When Mitchell assumed office as Director of Military Aeronautics on 6 March 1919, the duties of this position had already been superseded in large measure by the appointment of General Menoher as Director of Air Service. Menoher, however, gave Mitchell the principal assignment as chief of the Air Service's Training and Operations Group, the headquarters agency charged with the preparation of tactical manuals and war plans.[60] In the Training and Operations Group, Mitchell gathered together a team of veteran airmen, including Colonel Milling and Lieutenant Colonels William C. Sherman, Leslie MacDill, and Lewis H. Brereton. Obviously stimulating each other's thinking, these men developed many of the ideas which would eventually be recognized as Air Force doctrine. The

activities of the Training and Operations Group were so clearly contrary to the official positions of the War Department and of General Monoher that Lt. Col. Oscar Westover, who was Menoher's executive officer, recommended on 5 May 1919 that Menoher ought either to get a statement of loyalty from Mitchell or to relieve all of the division heads of the Training and Operations Group.[61]

As Mitchell and his associates assessed the situation confronting the Air Service, they recognized, first of all, that "normalcy" was wrecking the nation's armed forces, and particularly the air force. In the rapid demobilization, the number of Air Service officers dropped from 20,000 to a little more than a nucleus of 200 regular officers in 1919, and these regulars were only "on detail" from other branches of the Army. While Mitchell maintained his rank by occupying a statutory assignment, most Air Service officers returned to their regular ranks--mostly in company grades--when they reached the United States. General Foulois would later recall the sheer shock that he felt when he walked down the gangplank in New York as a wartime brigadier general and became a captain when he stepped on the dock: within a few months, however, he was promoted to major.[62] Even more important, however, was the effect of the return to peace on the development of the airplane. "The airplane," Sherman wrote, "is in its infancy. Many of its features today show the crudity characteristic of all early efforts. But as we compare the airplane of 1918 with that of 1914, it is apparent that progress during that period was unbelievably rapid. This was due, of course, to the urgent demand of war. Now the acceleration of war has been lost; nor does there appear to be any great stimulus to advancement in commercial demand. We may expect, therefore, that progress will be materially slowed down, either until development makes the airplane widely useful to commerce, or until we encounter again the insistent demand of war."[63]

In their assessment of the impact of the airplane on the art of war, the Mitchell group drew an important distinction between the effect of air action on land warfare and sea warfare. "On land," Sherman reasoned, "battle is determined by morale: the aim therefore is to destroy morale by methods that are based on unchanging human nature." Naval warfare, on the other hand, was a product of industrial and inventive genius and firepower. Aircraft, together with submarines, had the ability to destroy naval vessels, and it was obvious that the airplane had altered the means by which sea power was to be attained.[64] At a meeting of the Navy's General Board on 3 April 1919, Mitchell urged that aircraft could successfully attack naval warships, stated that the aerial defense of the nation's coasts should be assigned to land-based aircraft, and urged that the United States should organize a Ministry of Defense, combining Army, Navy, and Air Force under one direction.[65] Mitchell was not again invited to appear before the Navy's General Board, but he presented a steady flow of aviation ideas to the Congressional committees that sat almost continuously during 1919. He advocated

a single department of aviation with military, naval, and civil divisions. "The principal mission of aviation is fighting hostile aviation," he said, "and it does not make any difference where it is found, whether over the water or over the land, the mission of aviation is to destroy that force." "We believe if we are allowed to expand," he continued, "we can put the navy under the water in a comparatively few years as an offensive force against us. We believe we can have a great effect on land operations, although not to the same extent that we can against a navy, because an army can hide itself too well."[66] "If we give up the air to a foreign power," Mitchell testified on 5 December 1919, "it has been proved during the war that they can cause incalculable damage with their air service alone by hitting our industrial and other centers of organization for war, and in all probability they could bring about a decision by their air service alone." Mitchell also emphasized a need for unity of air command: "The principal mission. . . of aviation. . . is the destruction of the hostile aviation, in the same way that the principal mission of the navy is the destruction of the hostile navy, or the principal mission of an army is destruction of the hostile army. Therefore, in order to unite and bring your greatest effect to bear in any one place it is necessary to unite all the elements of your aviation at the place where the decision is called for, no matter whether it is war on the sea or war on land."[67]

In the same months that Mitchell was carrying on the fight for a separate department of aviation, he and other officers were also defining a role for an expanded Air Service within the Army. Major Foulois, who was assigned to the Director of Air Service's Office, bitterly attacked the short-sighted policies of Army General Staff officers in testimony before a Congressional committee on 16 October 1919. These officers, Foulois said, were interested only in a "defensive use" of aircraft and had neglected "the fighting side of aircraft." Although Foulois presented an elaborate justification of the materiel and logistical advantages to be obtained from a Department of Aeronautics (and was far more critical of the General Staff than was Mitchell at this early date), he was somewhat less positive about the relationship of aeronautics to the national defense. "The use of aircraft during the recent war," he said, "has fully demonstrated the fact that in future wars aircraft will play a part second only to the infantry." He added: "In time of war there is no question but that, in order to get the maximum efficiency of all elements of a military command, air service units as well as any other units, must come under the command of the supreme military commander in the field.[68]

In a paper entitled "Tactical Application of Military Aeronautics" apparently prepared in January 1920, Mitchell defined the principal mission and the secondary employment of aeronautics. "The principal mission of Aeronautics," he stated, "is to destroy the aeronautical force of the enemy, and, after this, to attack his

formations, both tactical and strategical, on the ground or on the water. The secondary employment of Aeronautics pertains to their use as an auxiliary to troops on the ground for enhancing their effect against the hostile troops." In this paper, Mitchell divided combat aviation into four branches which would be classic for many years. These were: Pursuit aviation, or the branch "designed to take and hold the offensive in the air against all hostile aircraft" and the branch with which "air supremacy is sought and obtained." Bombardment aviation was "organized for the purpose of attacking enemy concentration points of all sorts at a distance from their front lines. Probably its greatest value is in hitting an enemy's great nerve centers at the very beginning of the war so as to paralyze them to the greatest extent possible." Attack aviation was a specialized branch which had only been coming into being when the war ended in Europe. Attack planes would be heavily armed and armored "flying tanks" which would be able to prosecute low-level attacks against hostile troops, tanks, artillery, motor vehicles, railway trains, or anything of that sort. Observation aviation was the branch "concerned more with the troops on the ground than any other." In the conduct of combat air operations, Mitchell envisioned that the superior command would outline the broad plan of operation and that the Air Service commander would prepare detailed air plans in conjunction with the Army G-3 Operations and G-2 Information branches. When approved by the superior commander, these plans would become orders.[69]

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Despite the ardent pleadings of aviation enthusiasts, the War and Navy Departments acted in unison during 1919 and 1920 to integrate aeronautics into the existing establishment. One of Mitchell's most telling arguments in favor of a separate air force had to do with its potential effectiveness for the coastal defenses of the United States. Allegedly to meet this line of argumentation, Secretary Baker in July 1919 sponsored a reconstitution of the Joint Army and Navy Board (which had been organized in 1903 but had ceased to function). Baker expressed confidence that the joint board would produce cooperation in developing the air services of the Army and Navy.[70] Late in December 1919, the Joint Board recommended a statement of Army-Navy functions in war which was immediately accepted by the Secretaries of War and Navy. The policy statement directed that Army aircraft would operate from bases on shore as an arm of the mobile army; against enemy aircraft in defense of all shore establishments; alone or in cooperation with other arms of the Army or with the Navy against enemy vessels engaged in attacks on the coast, such as bombardment of the coast, operations preparatory to or of landing troops, and operations such as mine laying or attacks on shipping in the vicinity of defended ports.

Navy aircraft would operate from mobile floating bases or from naval air stations on shore as an arm of the fleet; for oversea scouting; against enemy establishments on shore when such operations were conducted in cooperation with other types of naval forces, or alone when their mission was primarily naval; to protect coastal sea communications by reconnaissance and patrol of coastal sea areas, convoy operations, attacks on enemy submarines, aircraft or surface vessels through the sea area; and alone or in cooperation with other arms of the Navy, or with the Army, against enemy vessels engaged in attacks on the coast. Marine aircraft would perform the functions normally assigned to Army aircraft when the operations were in connection with an advance base in which operations of the Army were not represented. The name of the old Joint Army and Navy Board on Aeronautics was changed to the Aeronautical Board and it was agreed that in order to prevent duplication and secure coordination of effort plans for new projects for the construction of aircraft, for experimental stations, for coastal air stations, and for stations to be used jointly by the Army and Navy would be summitted to the Aeronautical Board for study and recommendations.[71]

When General Pershing returned from Europe in the autumn of 1919, Air Service partisans had great hope that he might support their stand for a separate aviation department. Pershing had organized the Air Service AEF as a separate component, and in an appearance before a joint meeting of the Senate and House Committees on Military Affairs he indicated a belief that cooperation and coordination between the different departments of the government which used airships would be essential to the development of aviation. In a letter to General Menoher on 12 January 1920, however, Pershing explained that his testimony had been misunderstood. He unequivocally asserted: "An air force, acting independently, can of its own account neither win a war at the present time nor, so far as we can tell, at any time in the future. An air force by itself cannot obtain a decision against forces on the ground." He stressed that a military air force was an essential combat branch and should form an integral part of the Army not only during battle but during the entire period in which troops received doctrinal training. He hoped that the air service would be established as a separate arm of the Army, coordinate in status with the Infantry, Cavalry, and Artillery.[72]

Despite indications of a considerable sentiment among its members for a separate department of aeronautics, Congress finally voted to preserve the status of organization already existing as a result of war time changes. As a part of the Army Reorganization Act of 1920, which became law on 4 June 1920, the Air Service was made a part of the combat line of the Army and no changes were made in its existing relations with the War Department General Staff.[73] Still far from beaten by the course events were taking, General Mitchell urged the House Committee on Military Affairs to add a clause to the Army appropriation bill for fiscal year 1921 to

provide that the Army Air Service should control all aerial operations from land bases and that the Navy should control all aerial operations attached to a fleet. This clause was opposed by the Secretaries of War and Navy, but, as approved on 5 June 1920, the Army appropriation act nevertheless provided: "That hereafter the Army Air Service shall control all aerial operations from land bases, and Naval Aviation shall have control of all aerial operations attached to a fleet, including shore stations whose maintenance is necessary for operation connected with the fleet, for construction and experimentation and for the training of personnel."[74]

Reportedly under pressure from the War Department General Staff to bring Mitchell into line, General Menoher made a number of changes within the Office of the Chief of Air Service following its legal establishment on 4 June 1920. Since the position of Director of Military Aeronautics was abolished, Menoher named Mitchell as Assistant Chief of the Air Service and gave him no specific duties in the new position other than to advise upon Air Service matters.[75] Mitchell was also relieved as Chief of the Training and Operations Group, and Majors Milling and Sherman, having lost their wartime ranks, were transferred to the new Air Service Field Officers' School, which the War Department had authorized at Langley Field, Virginia, on 25 March 1920. The Training and Operations Group continued to be responsible for "the prescribing of tactical methods to be employed and with the enunciating of tactical doctrine," but, seriously hampered by a shortage of personnel, its product retrogressed. Prepared by the old regime and printed in April 1920, the Air Service's Aerial Bombardment Manual looked to the future. "Bombardment from occupying a practically non-existent and unimportant part in the war," it asserted, "has become a very important branch of the Air Service, and it is believed by many that if carried out in sufficient numbers it will win a war." No such forward-looking thoughts appeared in the Air Service Manual issued in September 1920, which was in fact a reprint of a manual that had been prepared by the Air Service AEF.[76]

Since he lacked formal duties in the Air Service, Mitchell spent much of his time presenting the argument for a separate aeronautical department to the public and continuing the aircraft versus naval vessels controversy.[77] During the winter of 1920-21 he wrote Our Air Force, which summarized his views on aviation. He predicted that future wars would include the destruction of entire cities by airborne gas attacks. "As a prelude to any engagement of military or naval forces," he predicted, "a contest must take place for control of the air. The first battles of any future war will be air battles. The nation winning them is practically certain to win the whole war, because the victorious air service will be able to operate and increase without hindrances." He called for the development of a metal-skin aircraft, which would replace fabric-covered planes, and stated that the United States should possess about 5,000 modern airplanes, with

twice that number in reserve. Fifteen hundred of the active aircraft should be assigned to the Army and Navy for observation, and the remaining 3,500 planes should be held in an air striking force which would be about 60 percent pursuit, 20 percent bombardment, and 20 percent attack planes. He asserted that the Navy should possess 20 aircraft carriers, but no battleships, cruisers, or similar warships. Reductions in the Navy's surface fleet would sustain the added cost of aeronautical development.[78]

Seeking to secure some evidence with which to refute Mitchell's charges that capital ships were vulnerable to air attack, the Navy secretly exploded a 900-pound bomb on the deck of the obsolete battleship Indiana in October 1920. It subsequently announced that the tests demonstrated that aircraft could not sink a battleship, but publication of photographs of the battered vessel led Mitchell to comment that "neither coast defense guns nor a defending fleet of battleships need fire a gun in repelling the attack of a foreign fleet if we have a properly organized Air Force."[79] In testifying on the Army appropriation bill in January 1921, Mitchell pointedly challenged the Navy to permit a live bombing test. "Aviation," he said, "must be ready when the war starts, because that is when aviation will be called on. That is when it will have its greatest effect, and we want to keep the organizations we have in service equipped with modern equipment and have enough in storage to last for two or three months of an ordinary war." As for the role of an air force in a land war, Mitchell saw its chief employment against hostile lines of communications. "I want it to be distinctly understood," he said, "that I do not consider that the air force is to be considered as in any sense supplanting the Army. You have always got to come to man power as the ultimate thing, but we do believe that the air force will control all the communications, and that it will have a very great effect on the land troops, and a decisive one against a navy."[80]

Spurred on by Congressional demands, the Navy agreed to stage aerial bombing tests against captured German warships off the Atlantic coast during the summer of 1921. Based at Langley Field, the 1st Provisional Air Brigade--with Mitchell in command and Milling as chief of staff--practiced bombing for several weeks, and on 18 and 21 July the brigade successfully attacked and sank the cruiser Frankfort and the battleship Ostfriesland.[81] In his report to General Menoher (which was leaked to the press when Menoher would not make it public), Mitchell claimed that "the problem of the destruction of seacraft by Air Forces has been solved and is finished." He concluded his statement by calling for the organization of a Department of National Defense, with a staff common to all services and with subsecretaries of Army, Navy, and Air Force. Only with such an organization would the United States be able to make correct decisions in choosing weapons for the future defense of the nation.[82] As early as June 1921, Menoher had asked that Mitchell be transferred away from Washington, and, following the illicit publication of the bombing report, Menoher told Secretary

of War John W. Weeks that either he or Mitchell had to go. Allegedly because he had failed "to handle and discipline" Mitchell, Menoher was relieved as Chief of Air Service. Selected by Secretary Weeks because of his reputation for having straightened out "a tangled mess" in the Air Service AEF, General Patrick was appointed Chief of Air Service and undertook the duty on 5 October 1921.[83] As a non-flyer, Patrick told Mitchell that he would consult him on major decisions including general air service doctrine and policies, but that he would be the chief in fact as well as in name and would make all final decisions. Patrick said that Mitchell talked of resignation from the Army but that on a little reflection he saw fit to continue as assistant chief of the Air Service.[84]

In the winter of 1921-22, allegedly to get him off the scene while the delicate negotiations attending the Washington conference for the limitation of naval armaments were in progress, Patrick sent Mitchell, accompanied by Lt. Clayton Bissell and Aeronautical Engineer Alfred Verville, on an inspection trip to France, Italy, Germany, Holland, and England. In each of these countries, Mitchell attempted to determine "the national policy of the country and the way in which it was applied from an aeronautical standpoint." Mitchell professed to have found a great emphasis upon aviation: "It is well known by all European nations," he reported, "that an air force can be ready to strike at least two weeks before any armies join battle. . . . If an air force is sufficiently well organized, equipped, and instructed, these armies probably never will come into contact as the air force will settle the matter itself." Applying what he had observed in Europe to the strategic problem of the United States--namely, "the ability to attack at a distance and the ability to attack possible debarkations, other troops on the ground, and to cover landings"--Mitchell advocated a unity of air command. The air force commander should control not only the air force and army observation planes (in the beginning of hostilities before ground combat was joined) but also all antiaircraft weapons, searchlights, and barrage balloons. Since aviation's primary mission was to destroy hostile air forces, Mitchell urged that bombardment wings should be formed out of two groups of "high speed diving type of pursuit" and one group of high-level bombardment. Attack wings should comprise two groups of "fast climbing, maneuverable" pursuit and one group of armored attack aircraft. Mitchell specifically recommended that the minimum air force for the United States should be one brigade of 600 planes behind the east coast, one division of 1,200 planes in the central part of the nation, and one brigade of 600 planes on the Pacific Coast. This force should be roughly one-fifth active air force and four-fifths reserve (which could be mobilized in two days). Mitchell ended his report by pointing out: "The organization along our coasts is so complicated between the corps area, the coast artillery, the naval districts, the coast guard, the air forces, the meteorological service which is under the Department of Agriculture, and the radio

service which is partly under the navy and partly under the army that we would be terribly handicapped and our hands almost tied in case we were attacked by a first-class power."[85]

In commenting upon his visit to Europe, Mitchell reported that he had met "more men of exceptional ability in Italy than. . . in any other country." Ten years would pass before Mitchell would mention that he had had "frequent conversations" with the Italian air strategist Giulio Douhet, whose career paralleled Mitchell's own in many ways. Douhet had begun to write about military aviation in 1909; he had been imprisoned for a year in 1916-17 for having criticized Italy's wartime military policy; the court martial had been expunged in 1920. Promoted to general officer rank in 1921, Douhet completed his first serious treatise on military aviation--Il Dominio del Aria, or The Command of the Air--in October 1921. In this essay on the art of aerial warfare, Douhet demonstrated that two new instruments of war--the aerial arm and the arm of poison gases--had been introduced in World War I. For the future, he predicted: "Not only explosives, but also chemical and bacteriological poisons can be carried by the aerial arm to any point of the enemy's territory, scattering death and destruction over the entire country of the foe." Douhet argued that ground warfare would be progressively stalemated by improvements in guns but that aircraft were instruments of incomparable potentialities against which no effective defense except for the establishment of command of the air could be foreseen. "To prevent the enemy from harming us by means of his air forces," he wrote, "there is no other practical method than to destroy his air forces. . . . Command of the air means to be in a position to prevent the enemy from flying, while at the same time retaining this right for one's self." Believing that "it is easier to destroy the potentiality of the enemy in the air by destroying the nests and eggs of the flyers rather than to seek the flyers in the air for the purpose of bringing them down," Douhet thought that an independent air force should be an air fleet of bombers and "combat planes"--the latter to be a bomber-type plane that would be equipped with many guns and used to convoy bombers and fight off hostile pursuit planes. Following establishment of command of the air, the independent air force would be able to destroy an enemy nation by attacking transportation lines and population centers. On the other hand, if two opposing air fleets began operations simultaneously and command of the air could not be established, Douhet reasoned that it would be necessary "to resign one's self to suffer offensives which the enemy is capable of inflicting upon us, so that all the means we possess may be utilized for the purpose of inflicting on the enemy more powerful offensives."[86]

In his writings Mitchell never attributed any special influence on his thought to Douhet, and U.S. Air Corps officers would not publicly cite Douhet for several years. While it was true that Douhet's works would not be generally available in a published translation until 1942,[87] a five page extract of The Command of the Air was prepared by the War Department Military Intelligence Division

on 23 March 1922 and found its way into the files of the Air Service Plans Division.[88] A typescript translation of the first hundred pages of the book (the substantive portion) was received by the Air Service Field Officers' School on 3 May 1923.[89] During 1922, moreover, Lt. Col. A. Guidoni, the Italian air attache in Washington, sent a summary of the book to Air Service Headquarters and to Lester Gardner, editor of Aviation magazine. Guidoni reported that Gardner had discussed the summary with Mitchell and had said that Mitchell was greatly impressed with Douhet's ideas.[90] Air Service officers thus knew of Douhet's ideas, but they probably recognized that they were politically unacceptable in the United States. "Air raids upon great unfortified cities like London and Paris," Secretary Baker had reported in November 1919, "brought into the war a new element and constituted an abandonment of the time-honored practice among civilized peoples of restricting bombardment to fortified places or to places from which the civil population had an opportunity to be removed. . . . The actual loss of life caused by these bombardments was relatively small and the destruction of property, while large, had no appreciable effect upon the war-making power of either nation. Indeed, it may rather be said that the willingness of the enemy casually to slaughter women and children, and to destroy property of no military value or use, demonstrated to England and France the necessity of beating so brutal a foe, and it is most likely that history will record these manifestations of inhumanity as the most powerful aids to recruitment in the nations against which they were made."[91]

* * * *

"As a whole the Air Service. . . when I took charge," General Patrick observed, "was in about as chaotic a condition as I had found it when some three years before I had been placed in charge of it in France."[92] Patrick believed that thinking about military aviation tended toward the extremes and he preferred a middle way. "There are, on the one hand," he stated, "enthusiasts who believe that the coming into being of aircraft have practically scrapped all other combat agencies; and, on the other hand, conservatives who consider aircraft as merely auxiliaries to previously existing combat branches. The truth, of course, lies somewhere between those two views."[93] As an able but conservative administrator, he favored evolutionary rather than revolutionary changes in the national military organization.[94] Unlike many of the Army-indoctrinated officers of his generation, Patrick had an open mind as to the future of aviation. After months of practice, he passed a normal test and was recognized as a qualified junior airplane pilot. While he had no hope of becoming a skillful pilot, Patrick believed that his ability to fly helped him win the confidence of many younger men whom he was trying to contact, direct, and guide "in an effort to make of the Air Service a united body of men all working toward one end."[95]

A part of the chaos which affected the Air Service grew out of the vast mass of material which had been issued in the Army during World War I for instructional purposes. In the autumn of 1920, the War Department had issued instructions to each of its branches that all training data would be prepared in a new Training Regulation series. Looking toward the accomplishment of this and other tasks, General Patrick during the reorganization of the Office of Chief of Air Services on 1 December 1921 replaced the Training and Operations Group with a Training and War Plans Division, which was made responsible for conducting service tests of new equipment and the preparation training literature. In the other branches of the Army, general boards representing the chief of the service handled test and training literature projects, but the Air Service did not have an Air Service Board. In the absence of such an agency, the Air Service Training and War Plans Division assigned training literature projects to the various schools and units believed best qualified for handling each particular project.[96] At the Air Service Field Officers' School, Major Sherman had been preparing during 1921 a school text on air tactics. In this text, Sherman accepted the prevailing belief that the success or the failure of the infantry determined the success or failure of an army, but he maintained that this had not always been true in the past and might not be true in the future. He also believed that the army aviation was comprised of two portions: "air service" aviation was an auxiliary of the ground forces, while "air force" aviation (pursuit, bombardment, and attack aircraft) constituted a true arm. Sherman suggested that the "air force" portion of army aviation would support the infantry in the same manner that the Navy did--by seeking out its doctrine in the element in which it operated. The first duty of the air force was "to gain and hold control of the air, by seeking out and destroying the hostile air force, wherever it may be found." Although he did not believe that control of the air could ever be completed, Sherman believed that "the backbone of the air forces on which the whole plan of employment must be hung is pursuit." Having established control of the air, the mission of the air force was "to destroy the most important enemy forces on the surface of the land or sea."[97] During 1922, Sherman's manuscript on air tactics was revised into manual form, and early in 1923 it was issued in preliminary form for use in the Air Service as Training Regulation No. 440-15, Fundamental Conceptions of the Air Service.[98]

While the doctrinal project was in progress, General Patrick gave close attention to the pitiful plight of aircraft procurement and the poor state of health of the nation's aircraft manufacturers. While the development of experimental aircraft had made substantial progress since 1918, the quantity procurement of new aircraft and accessories had been penalized by the tremendous stock of equipment still on hand from World War I. Some new planes--such as the Martin MB-2 which could carry 2,000-pound bombs--had been procured,

but the Air Service had been able to purchase only a few of many prototype planes which it wished to see developed to meet specific requirements.[99] In his report for fiscal year 1922, Patrick pointed out: "No nation can afford to support, in times of peace, an air force capable of meeting the requirements of war, and because of the rapid deterioration of aeronautical equipment in storage the proposition to maintain a sufficient war reserve of aircraft is equally untenable." In effect, the Air Service had to plan to use viable aircraft manufacturing companies for the production of its mobilization requirements in a war emergency. Aircraft production in the United States, however, was at such a low ebb that it would not be able to meet the Army's plans to mobilize six armies for a war emergency. General Patrick recommended that a program for the production and purchase of modern aircraft be considered and that a definite amount of aircraft purchase funds should be provided by Congress from year to year. He also stated that a properly balanced Army aviation force ought to have about 20 percent of its strength in "air service" units and the remaining 80 percent in "air force" or combat aviation. Because of reductions in Air Service strength and the requirement to keep enough observation units to conduct training with ground forces, 38 percent of the Air Service strength was in "air service" units. Patrick called for a restoration of a proper balance by the organization of additional "air force" combat units.[100]

Attentive to General Patrick's criticisms, the Secretary of War on 18 December 1922 directed the Air Service to present a study on necessary remedial actions. Patrick accepted the project but he maintained that the study could not be made until the War Department had accepted the concept that Army aviation should be divided into "air service" and "air force" units. In addition to this, he argued that all "air service" observation units should be withdrawn from divisions and consolidated under the command of corps and armies, and that an "adequate well-balanced Air Force"ought to be built to serve as the "G.H.Q. Reserve." "Very often," Patrick wrote, "there is as distinct and definite a mission for the Air Force independent of the ground troops as there is for the Army and Navy independent of each other." For this reason he opposed the assignment of "air force" units to field armies, and he urged that the Air Service should be authorized to maintain a minimum of six bombardment groups instead of the existing authorization for only one bombardment group.[101] Possibly in order to emphasize Patrick's point, General Mitchell wrote a long pamphlet in the winter of 1922-23 entitled "Notes on the Multi-Motored Bombardment Broup, Day and Night." This elaborate treatise on the tactical employment of bombardment aviation was prefaced by the observation: "Offensive aviation is employed most effectively at the beginning of hostilities during the period of ground and water mobilization and concentration. . . . Against an enemy not in possession of an adequate air force, offensive aviation, if employed effectively, can force a decision

before the ground troops or sea force could join in battle."[102]

In order to hear Patrick's plan and make recommendations on it, the Secretary of War appointed a board of General Staff officers, headed by Maj. Gen. William Lassiter. When the Lassiter Board convened in daily sessions beginning on 22 March 1923, General Patrick argued the Air Service plan which he had outlined earlier: he wished to reduce the auxiliary services of aviation (mainly observation) and increase the primary services needed to secure control of the air (pursuit) and to destroy hostile targets behind enemy lines (bombardment). "The principle of concentration of air forces becomes a maxim," he said. And again, he urged: "I am. . . convinced that the concentration of all air force under one GHQ Reserve Commander is the most effective way of assuring aerial supremacy." But Patrick ran headlong into the opposition of Brig. Gen. Hugh A. Drum, of the War Department General Staff, who insisted that the board should first determine what aviation would be needed to support the ground armies and then decide how large the air force ought to be. Under this formula, the board proved unwilling to divest divisions of their observation squadrons and to concentrate all "air force" units in a GHQ Reserve. Instead, the Lassiter Board recommended that the observation air service should be an integral part of divisions, corps, and armies; that an air force of attack and pursuit should be an integral part of each field army; and that an air force of bombardment, pursuit, and airships should be directly under General Headquarters for assignment to special and strategical missions, the accomplishment of which might be either in connection with the operation of ground troops or entirely independent of them. This force should be organized into large units in order to insure great mobility and independence of action. The Lassiter group nevertheless agreed that the Air Service ought to be augmented, mainly, however, because it recognized that "for lack of business our aircraft industry is languishing and may disappear." In place of the single bombardment group in the GHQ Reserve, the board recommended that there should be two bombardment groups and four pursuit groups. It also recommended that Congress be asked to make annual appropriations of $25 million for the Air Service each year for ten years and that approximately $15 million each year should be used for the purpose of aircraft.[103]

The Secretary of War approved the Lassiter Board report on 24 April 1923. While the aircraft procurement recommendations subsequently became lost when the War Department attempted long and unsuccessfully to coordinate a planned purchasing program with the Navy through the agency of the Joint Army-Navy Board,[104] the War Department accepted the Lassiter report as the basis for the internal conceptual organization of the Air Service. Thus the official Field Service Regulations, United States Army, 1923, declared: "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," but it now recognized that "no one arm

wins battles." Since pursuit aviation created "the conditions which enable the other elements to operate with the greatest degree of effectiveness," the regulations considered pursuit to constitute "the most vital element of the air service." Although the assignment of aviation elements to particular commands was said to be "flexible," the regulations followed the assignment recommended by the Lassiter Board: observation units to divisions, corps, and armies; pursuit and attack units to armies; and bombardment units and airships to the GHQ Reserve.[105]

Appreciation of the fact that the Air Service was "a growing factor in national defense," together with the year and a half which had elapsed without positive action on the Lassiter recommendations, caused General Patrick to propose a reorganization of the air forces to the War Department on 19 December 1924. "I am convinced," Patrick wrote, "that the ultimate solution of the air defense problem of this country is a united air force, that is the placing of all of the component air units, and possibly all aeronautical development under one responsible and directing head. . . . The great mobility of the Air Service and the missions it is capable of performing have created a problem in command, the solution of which is still far from satisfactory. . . . Future emergencies will require at the very outset, before the ground armies can get under way, and in many cases before the Navy can make its power effective, the maximum use of air power on strategic missions. . . . We should gather our air forces together under one air commander and strike at the strategic points of our enemy--cripple him even before the ground forces can come in contact. Air power is coordinate with land and sea power and the air commander should sit in councils of war on an equal footing with the commanders of the land and sea forces."[106] "I personally believe," Patrick told the Army War College on 21 February 1925, "that the results desired can be best brought about by a Minister of Defense, under whom would be the Land Force, the Sea Force, and the Air Force."[107]

While he conceived that a Department of Defense, with Army, Navy, and Air Force branches would be the ultimate organizational solution to national defense problems,[108] General Patrick was not in favor of hasty action to separate the Air Service from the War Department. Instead, he called upon the War Department on 19 December 1924 to secure legislation which would accord the Air Service a status within the War Department analogous to that of the Marine Corps within the Navy Department and that would authorize the Air Service expansion recommended by the Lassiter Board. He also recommended that the Army Air Service should be positively charged with all air operations conducted from shore bases, thus ending the overlap of functions of the Army and Navy air forces. He asked that the Chief of Air Service be made responsible for procurement, storage, and issue of Air Service equipment; for the transportation by air of personnel and supplies; for management of Air Service personnel policies; and "for the tactical training and

efficiency of all Air Service units with a doctrine first of offensive action." He further recommended that war plans should establish "one air commander who, in at least the initial stages of an emergency, should control all operations of the air forces, both in the performance of distant strategic missions and in joint action with the land and sea forces."[109]

* * * *

On 24 March 1924, the House of Representatives, sensitive to growing demands for a thorough review of national air policy, established a Select Committee of Inquiry into Operations of the United States Air Services, headed by Representative Florian Lampert, and directed it to make a sweeping investigation of the United States Army Air Service, the Naval Bureau of Aeronautics, the United States air mail service, and "any corporations, firms, or individuals or agencies having any transactions with or being in any manner associated with or controlled or regulated by the said Air Services." Beginning its hearing in October 1924, the Lampert Committee examined more than 150 witnesses over an 11-month period.[110]

When they appeared before the Lampert Committee during the winter of 1924-25, Air Service officers demonstrated a growing recognition of a phenomena which they began to refer to as "air power." In his testimony on 17 December 1924, General Mitchell spoke of the military and civil potentialities of air power, and in an article appearing in the Saturday Evening Post on 20 December he defined air power as "the ability to do something in or through the air."[111] In an elaboration of his testimony, Mitchell stated that military air power, civil air power, and commercial aeronautics were the three elements of national air power.[112] Another Air Service officer, Major Raycroft Walsh, defined air power "as being the power of a country to wage war through aerial forces."[113] Majors Delos C. Emmons and Carl Spaatz spoke of the general agreement among airmen that the next war would start in the air and that the United States lacked preparedness for such a war. Spaatz stated his opinion that the service doctrines laid down by the Army made it impossible to develop a well-defined policy of independent operations by an air force.[114] Major Milling asserted that the Air Service had to be constantly ready for combat, even more so than the Navy. He also urged that the principal air service doctrinal problem which defied solution was the over-lapping jurisdiction between the Army and Navy for coastal defense.[115] General Patrick stated a concept that a nucleus of aircraft manufacturers had to be kept in readiness to expand in time of emergency in order to meet the requirements of war. Emmons called the aircraft industry "a war reserve and a most important one."[116]

"I believe," stated General Patrick to the Lampert Committee on

5 January 1925, "that as time goes on the importance of aircraft in national defense will greatly increase. I try to look ahead and to visualize what would take place if we should be so unfortunate as to engage in another war. I am satisfied that one of the first war-like acts would be an effort on the part of the belligerents each to obtain air supremacy; to sweep the enemy out of the air, in order that he might be free to operate his fleets, his armies, and his own aircraft. It is quite possible that such a move would take place very soon after or almost immediately upon the declaration of war. It would be necessary for every nation to have in being an air force that could be used thus offensively, or if attacked by air that could be used in order to defend itself."[117] As a step in the direction of an independent air service, Patrick recommended the creation of an Air Corps under the Secretary of War which would be "charged specifically with the development and utilization of air power as an arm for national defense." Referring to the duplication of effort wherein both the Army and Navy were apparently charged with air defense of the sea frontiers of the United States because of different interpretations of the meanings of the Army appropriations act of 5 June 1920, Patrick stated that "the assignment to the air corps of all air coast defense functions which can be performed from land bases (the limit to be taken at about 200 miles under the present state of aircraft development) will be one of the most important and immediate economies, and one of the greatest gains to efficient national defense which will result from the formation of the air corps."[118]

The general tenor of Air Service testimony before the Lampert Committee reflected the evolutionary program desired by General Patrick. Only General Mitchell, in repeated appearances before the committee and in his series of articles which appeared at almost the same time in the Saturday Evening Post, deviated from the Air Service position. Mitchell urged that the national organizational pattern which divided aviation between the Army and Navy, the air mail service of the Post Office Department, and the National Advisory Committee for Aeronautics was designed to protect "vested interests" rather than to foster a national air power doctrine. "Air power claims that it is an entirely different element than either sea power or land power," Mitchell said, "and that unless you allow air power to have a coordinate voice in the councils of the Nationa with sea power and land power, that you can not organize an adequate defense." Mitchell sponsored two different plans for organizing aviation: the first visualized the establishment of a Department of Aeronautics coequal with the Army and the Navy and with a division of fabrications, a division for civil aviation, and a division for military aviation; and the second advocated a Department of National Defense with subsecretaries to control the air, the water, and the land. Many of Mitchell's statements were hardly calculated to endear him to either the Army or the Navy. He said, for example, that the Air Service could get

control of the air in two years if it could get half the cost of a battleship as an appropriation each year. "It is a very serious question," he stated, "whether air power is auxiliary to the Army and the Navy, or whether armies and navies are not actually auxiliary to air power."[119] As late as December 1924, Patrick had considered that Mitchell had cooperated with Air Service policies and he had recommended that Mitchell be reappointed as assistant chief of the Air Service. Because of the controversy that he stirred up during January and February 1925, however, Secretary Weeks told Patrick to recommend another officer for Mitchell's position. Patrick chose Lt. Col. James E. Fechet, a veteran pilot and commander of the Advanced Flying School at Kelly Field, to replace Mitchell. On 26 April 1925, Mitchell accordingly reverted to his permanent rank of colonel and was transferred to San Antonio to serve as Air Officer of the VIII Corps Area.[120]

In the early autumn of 1925, before the Lampert Committee was able to make its report, the Secretaries of War and Navy jointly requested President Calvin Coolidge to appoint a board to study the best means of developing and applying aircraft in national defense. Agreeable to the request, Coolidge appointed a board headed by Dwight W. Morrow, lawyer and banker, on 12 September 1925. Appearing before the President's Aircraft Board, which would be better known as the Morrow Board, on the first day of its hearings, Patrick again emphasized the poor state of preparedness of the Air Service and again requested that an Air Corps be created. He spoke out against a Department of Aeronautics, and he stated that the United States would continue to require a Navy for sea operations beyond the range of land-based aircraft. Patrick conceded that the United States was not in immediate danger of hostile air attacks, but he maintained that without an adequate air force the nation would soon be jeopardized by the aircraft carrier forces which foreign powers were constructing.[121] Now serving as the Air Service's Chief Engineer at McCook Field, Major MacDill agreed that a Department of Aeronautics would be no more logical than a department of automobiles or a department of shipping, and he predicted that within five years it would be technologically possible to build an airplane that could fly across the Atlantic and drop up to 4,000 pounds of bombs.[122] Nearly all of the Air Service officers who testified--including Lieutenant Colonel Foulois and Majors Armold, Milling, and Horace M. Hickam--supported Patrick's plan to establish an Air Corps and eventually a Department of Defense. Milling additionally pointed out that the commander-in-chief of U.S. armed forces in future wars would inevitably have to exercise his authority through subordinate army, navy, and air commanders.[123]

Once again the only Air Service officer who presented strongly divergent viewpoints was Colonel William Mitchell. On 5 September, Mitchell had made a public statement that the loss of the Navy dirigible Shenandoah in stormy weather over the Ohio River valley was the direct result "of incompetency, criminal negligence and

almost treasonable administration of the national defense by the war and navy departments."[124] Before the Morrow Board, Mitchell asserted that the United States was strategically vulnerable to an aircraft carrier invasion force which could be mounted by Great Britain in the Atlantic and by Japan in the Pacific. The answer to this strategic problem was an army to hold theland, a navy with a good force of submarines to patrol the seas, and, above all, an air force to protect the seaboard and insular possessions of the United States. "There need be little or no change in the organization of the Army or Navy," he said, "but beside them there should be the department of the air." After he had given this "constructive" testimony, Mitchell recalled the long-standing opposition of Army and Navy officers to the development of aviation. He repeated many of these same grievances at his court martial when he was brought to trial on 28 October on charges of conduct prejudicial to military discipline and of a nature to bring discredit upon the military service. Mitchell was convicted of these charges on 17 December 1925 and resigned from the Army on 1 February 1926.[125]

The hearings before the Lampert Committee and the Morrow Board found Army and Navy officials solidly arrayed in opposition to the Air Service position--even the moderate official position of General Patrick. "I regard the statement that the next war will be in the air as an absurdity, partaking of the Jules Verne type of literature," Secretary of the Navy Curtis D. Wilbur told the Lampert Committee.[126] "Aviation as an independent force cannot operate across the sea," said Rear Admiral William A. Moffett, Chief of the Bureau of Aeronautics. "The thing to do is to put aviation on something," he continued, "and carry it to the enemy, and the only way to carry it is on board something that will float--on board a ship, in other words."[127] "I believe," testified Lieutenant Ralph A. Ofstie, of the Navy Bureau of Aeronautics, "that air power does not exist, absolutely; that it exists only in conjunction with other forces which can cooperate with it or which can transport it."[128] Leading the Navy witnesses before the Morrow Board, Secretary Wilbur stated that the mission of the naval air force was to serve as an arm of the fleet. "Its mission is to aid the surface units in gaining and maintaining command of the sea. It may best carry out this mission by gaining and maintaining control of the air in the theater of naval operations."[129] Admiral Moffett saw no difficulty in maintaining coordination for coastal defense through the agency of the Joint Army and Navy Board and he regarded the "Joint Army and Navy Action in Coast Defense" agreement to be a clear definition of aerial responsibilities.[130] The Navy also held to the official position that the establishment of a central procurement agency for military aircraft was undesirable. "There is very little duplication of effort on the part of the services and such duplication as exists is not only justifiable but, I believe," noted Admiral Moffett, "decidedly necessary, in order that there may be competition, that there may be rivalry, that there may be initiative; otherwise

there is bound to be stagnation."[131]

The high-ranking Army officials who appeared before the Morrow Board opposed changes in the Air Service. Secretary of War Dwight F. Davis stated that the War Department was "convinced that a strong airplane industry is vital to the national defense," but he asserted that the subordination of civil aviation to a military department would be an "economically unsound" and "basically unwise" practice. Davis admitted that the nation's aircraft industry had been starving and that the amount of equipment in the Air Service was inadequate, but these situations were caused by the scarcity of funds appropriated by Congress.[132] Major General John L. Hines, who had succeeded Pershing as Chief of Staff on 14 September 1924, stated that the combat readiness of the Air Service should perhaps excel that of the other branches of the Army, but he could see no reason for a separate Air Service or a separate Air Corps within the Army. "I am of the opinion," he said, "that the Air Service, because of the limitations imposed by natural laws on the operation of aircraft as well as the necessity for unity of action, will always be an auxiliary arm or service. It can never by itself defeat an enemy."[133] The principal Air Service opponent before both the Lampert Committee and the Morrow Board was General Drum, now the assistant chief of staff for operations on the War Department General Staff. In the Lampert hearings, Drum argued that the United States had little to fear from hositle air attack because of the inherent range limitations on land-based aircraft and the tonnage restrictions that had been placed upon the construction of aircraft carriers by the Washington treaty of 1922.[134] Both in his initial statement and in his rebuttal testimony before the Morrow Board, Drum insisted that "the air power principle and its application as recently proposed by the Chief of Air Service. . . is unsound from a national defense viewpoint, as well as from purely Army considerations. At the present and so far as the future of aviation can be foreseen, air power has no function independent of the Army and Navy." Possibly one of his most telling points--and Drum repeated it several times--was the opinion of the august General Pershing. "The Infantry," Pershing had said on the eve of his retirement, "still remains the backbone of the attack, and the role of the other arms is to help it reach the enemy. . . . The idea that principles of warfare have changed and that armed contests will be settled in any other way have nothing substantial in our experience to warrant serious consideration."[135]

What circumstances lay behind the Morrow Board's speed in acting were never definitely known, but it presented its report on 30 November 1925, exactly two weeks before the Lampert Committee could report. "We do not consider," stated the Morrow Board, "that air power, as an arm of the national defense, has yet demonstrated its value--certainly not in a country situated as ours--for independent operations of such a character as to justify the organization

of a separate department. We believe that such independent missions as it is capable of can be better carried out under the high command of the Army or Navy." The board concluded that the United States was in no danger from air attack, and it further stated that "the belief that new and deadlier weapons will shorten future wars and prevent vast expenditures of lives and resources is a dangerous one which, if accepted, might well lead to a readier acceptance of war as the solution of international difficulties." The board nevertheless recommended that the name of the Air Service be changed to that of the Air Corps, that an Assistant Secretary of War be established to give especial attention to aviation matters, that aviation be given special representation in the General Staff sections, and that a five year program of aircraft procurement be initiated with a lesser magnitude than had been recommended by the Lassiter Board.[136] In its report on 14 December 1925, the Lampert Committee stated that aircraft would be "the first resort of our country in case of a war emergency" and would comprise "one of the most essential arms of our military defense." The committee accordingly recommended the establishment of a department of national defense, representation of Army and Navy aviation on the General Staff of the Army and the General Board of the Navy, and that not less than less than $10 million should be appropriated and expanded annually by both the Army and the Navy on the procurement of new flying equipment.[137]

Far from being daunted by what he called the "time-worn, threadbare, reactionary plea" of those who resisted change, General Patrick told Army War College students on 9 November 1925 that he considered it his duty, when done in a proper way, to suggest improvements in national defense. In this lecture, Patrick repeated many of the statements he had presented to the Lampert Committee and the Morrow Board, but he also revealed that he had "recently been quite impressed by a little book written by an Englishman, Captain Liddell Hart." The book, published earlier that year, was Paris: Or the Future of War. Patrick was impressed with Liddell Hart's thesis that the main military objective in war should be the will of the enemy to fight rather than the defeat of his armed forces in the field. He agreed with Liddell Hart's conclusion that the German army had still had a lot of fight left in the fall of 1918 and that the war had ended because the will of the German people to fight had been shattered. While the use of gas was now prohibited by treaty, Patrick doubted that such a prohibition would hold in war. "Assume," he suggested, "that aircraft are able to fly at will over enemy territory, in other words, assume air supremacy. Imagine, in consequence, the enemy's industrial establishments, his munitions factories, his means of communication, destroyed; add to this drenching with gas, which even though not deadly, would cause great discomfort, and then estimate how long such a harassed enemy would fight." The waging of such "air pressure" against an enemy nation, Patrick said, "can best be done by an organization which is developed and directed by those who know thoroughly its achievements, its

possibilities, and its limitations."[138]

During the winter of 1925-26, William Mitchell continued to wage a strong fight for an air power concept, and the emotional responses engendered by his court martial insured him a wide audience. Published in August 1925 as a summarization of some of his articles, Mitchell's Winged Defense was extensively quoted during his trial. Before the House Committee on Military Affairs on 5 February 1926, Mitchell made a statement which represented the culmination of his thinking on the nature of war and of air power: "There has never been anything that has come which has changed war the way the advent of air power has. The method of prosecuting a war in the old days always was to get at the vital centers of the country in order to paralyze the resistance. This meant the centers of production, the centers of population, the agricultural districts, the animal industry, communications--anything that tended to keep up war. Now, in order to keep the enemy out of that, armies were spread in front of those places and protected them by their flesh and blood. You had mass killings there, sometimes for years before these vital centers were reached. It led to the theory that the hostile army in the field was the main objective, which it was. Once having been conquered, the vital centers could be gotten at. . . . Now we can get today to these vital centers by air power. . . . So that, in the future, we will strike, in case of armed conflict, when all other means of settling disputes have failed, to go straight to the vital centers, the industrial centers, through the use of an air force and hit them. That is the modern theory of making war." Four years later in Skyways, the last of his three books, Mitchell would again emphasize this theory of war.[139]

While the Morrow Board report dampened any general reorganization of the armed services, the War Department was prepared to grant some concessions--but not much independence--to the Air Service. On 26 January 1926, the War Department officially issued Training Regulations No. 440-15, Fundamental Principles for the Employment of the Air Service. This was the pamphlet that had been drafted by Major Sherman in 1921 and had been revised and accepted as a policy statement by the Office of Chief of Air Service. Subsequent to that time, it had been reviewed by the Army's Command and General Staff School and the War College, and the General Staff's G-3 division had stamped final approval on it. The pamphlet noted that the primary objective of the whole Army was to destroy hostile armed forces and that the mission of the Air Service was "to assist the ground forces to gain strategical and tactical successes by destroying enemy aviation, attacking enemy ground forces and other enemy objectives on land or sea, and in conjunction with other agencies to protect ground forces from hostile aerial observation and attack. In addition it furnishes aerial observation for information and for artillery fire, and also provides messenger service and transportation for special personnel." It stated further:

"The organization and training of all air units is based on the fundamental doctrine that their mission is to aid the ground forces to gain decisive success." The regulation recognized the distinction between observation which was an integral part of divisions, corps, and armies, and the GHQ air force which was to be self-contained and capable of rapidly shifting its activites from one theater of operations to another. Obviously pleased with the training regulation, General Drum described it as "the most advanced thought in the world today on aviation."[140]

In September 1925, less than a week after Patrick testified before the Morrow Board, the War Department directed him to submit within five days a complete plan to implement his Air Corps idea. The heads of the Army branches which supported the Air Service were given a similar brief period to comment on Patrick's plan. Each objected that the organization of the Air Service on the model of the Marine Corps would upset coordination between the branches of the Army. Secretary Davis nevertheless insisted that it was very important to pass an air bill through Congress in the spring of 1926 because it was necessary to increase the efficiency of the air force and because, in his opinion, the country demanded it. In the end the War Department proved willing to accept the findings of the Morrow Board, and the Air Corps Act of 2 July 1926 constituted a legislative enactment of the Morrow recommendations. The name of the Air Service was changed to the Air Corps, the implication being that the Air Corps was capable of independent as well as auxiliary operations. An additional Assistant Secretary of War was authorized to perform duties delegated to him by the Secretary, and air sections were authorized in the General Staff divisions. A five-year program for expansion of Air Corps personnel and aircraft was to be initiated. The Air Corps attained little autonomy within the War Department by these actions; and no decision was made to delineate the coast defense responsibilities of the Army and Navy, as air officers had desired. In hearings on the legislation, Patrick suggested that it would be economical and practical to combine Army and Navy flying training under one agency, but he noted that "naval officers. . . feared they would lose a certain measure of control over their air component, and. . . insisted also that all of the flyers with the Navy should be trained in naval tactics and should understand all of the tactics employed in naval battles." Thus Patrick's suggestion was not accepted.[141]

For the time being, the Air Corps Act of 1926 ended the struggle for an autonomous air force. General Patrick continued to insist that a department of defense, with army, naval, and air components, would be the ultimate solution to the defense problems of the United States, but he privately expressed the opinion that the best that the Air Corps could hope for in a span of years in which nations were reducing their armaments was some expansion and considerable modernization. Patrick accordingly hailed the Air Corps Act as "a long step in the right direction."[142] Viewed in retrospect,

the Air Corps Act of 1926 was only one of several pieces of legislation which manifested a belief within Congress that the pioneering years of aviation were ending. On 24 June, Congress enacted the Morrow Board recommendations relevant to the Navy: the appointment of an Assistant Secretary of the Navy to assist in furthering naval aeronautics and a five-year naval aviation expansion program. The Air Mail Act of February 1925 has already turned the Post Office Department's federal air mail system over to private contractors, and the Air Commerce Act of 21 May 1926 now created the post of Assistant Secretary of Commerce for Air and authorized the Department of Commerce to license pilots, map and operate airways, provide flight information, and develop new air navigation facilities.[143] In its infancy aviation had been nurtured by military expenditures: now military aviation would begin to share the technological advances which would come from rapidly developing commercial aviation.

4. The Mitchell Era Re-examined

"The former isolation of the United States is a thing of the past," William Mitchell wrote in 1925. "The coming of aircraft has greatly modified this isolation on account of the great range and speed which these agents of communications are developing."[144] Believing that "changes in military systems come about only through the pressure of public opinion or disaster in war," Mitchell hoped that he could modify the military policy of the United States by laying "aeronautical facts" before Congress and the people.[145] Though he counted himself a close personal friend of Mitchell, General Arnold looked backward many years later and observed that Mitchell's agitation for air power had a considerable effect upon the development of naval aviation but that it had made Army officers "set their mouths together, draw more into their shell, and, if anything, take even a narrower point of view of aviation as an offensive power in warfare." As Arnold remembered the early 1920's, the American people were fascinated with flying and loved Billy Mitchell, but no one was willing to think that the United States required a military policy--let alone an air power policy.[146]

It was General Arnold's theory that a marked-magnitude growth of air power depended upon a combination of a critical state of international relations and a favorable state of aviation technology. To his way of thinking such a coincidence of national military requirements and air technology had been near at hand just before the Armistice in 1918 but that it would not again occur for more than a decade.[147] The successful conclusion of World War I and the Washington Disarmament Treaty of 1922 stunted the development of military aviation. Early in 1925, General Patrick predicted that the Locarno agreements which marked a relaxation of tension in Europe would lessen the amount which the American people would be willing to pay for national defense.[148]

The Baker Board stated an unequivocal opinion that the United States was in no danger of air attack from any potential enemy of menacing strength. Even Army and Navy war planners--who made it their business to provide against all contingencies--found it difficult to determine the enemy or enemies who might threaten the United States. Although the Washington Disarmament Treaty had terminated the Anglo-Japanese alliance, the logical opponents of the United States continued to be Great Britain (Red) and Japan (Orange). General Patrick thought in terms of the employment of a mobile GHQ air force in a war with Red and Orange forces in which the British would debark at Halifax and Japanese troops would land at Vancouver.[149] Mitchell visualized a requirement for defensive air forces to be stationed on Hawaii, in Panama, and in Alaska, but he opposed the establishment of a strong air force in the remote Philippine Islands lest it be easily destroyed. Patrick believed, however, that "our only salvation" in the Philippines "is to have an air force there that is competent and qualified to oppose an enemy air force."[150] Oddly enough, the more conservative Patrick believed that there was no question but the time was coming when "we can bomb trans-sea countries."[151] Mitchell, on the other hand, visualized that strings of islands would be seized so that aircraft based on them might fly from one island to another. He pointed out on numerous occasions in 1924 and 1925 that there was no stretch of water in the northern hemisphere between the United States and Europe or Asia greater than the cruising range of the modern aircraft of the day.[152]

Despite their impatience with military conservatism, Air Corps officers of the Mitchell era frequently talked and thought in terms of the strategic situation of World War I. In 1924 these air officers formally introduced the concept that air power was different from land and sea power, but Patrick, Milling, and Mitchell all agreed that air power could be divided into air force and air service (auxiliary) aviation. By 1926, moreover, Mitchell stated that the air service of the Navy could "stay just the way it is. . . for work on the high seas."[153] The Air Service accepted the doctrine that control of the air was necessary for effective air, ground, or naval operations, and Milling stated that "the main role--almost the only role, properly speaking--of Pursuit aviation is to seek out and destroy the hostile air force."[154] Thinking in terms of World War I, however, Patrick described "control of the air" as the condition in which "we get the upper hand of our adversary, make life miserable for him every time he comes on our side of the lines, and even endeavor to meet him on his own side of the lines, and finally his morale is shaken to such an extent that he would rather stay at home. We then have control of the air."[155] Patrick thought of "air supremacy" as a condition wherein one adversary "practically wiped out" another's air force and thus went virtually unchallenged in the air.[156]

Air Service leaders agreed that an air force had to be an

effective D-day force and that it had to be supported by a healthy domestic aircraft industry. In their thoughts on strategic air warfare, the air leaders did not seem to be entirely certain whether air bombardment could win a war without army and navy action. Patrick drew upon Liddell Hart's concept of a future war under conditions similar to tha ground-siege situation of World War I and visualized aerial pressure as breaking the morale and capabilities of an enemy nation which was presumably first brought to bay by air and naval action.[157] Even Mitchell hesitated to say that air power could be decisive without ground and naval action: "I believe," he told Congressmen on 5 February 1926, "air power in the future will have a great influence in determining any conflict, so I believe if you figure your whole national defense as 100 percent, air power would make approximately 50 percent, the land forces 30 percent, and the sea forces 20 percent."[158]

Writing in 1948, an Air Force leader evaluated the significance of William Mitchell as being that of a "visionary and missionary."[159] Certainly Mitchell saw beyond his times, but, because of the close-knit fellowship of air leaders in the early 1920's, one may wonder how many of the basic ideas attributed to Mitchell actually may have originated with his associates. Considered in their essential thinking, Mitchell, Patrick, Milling, and other air officers did not differ markedly, except for the impetuousness manifested by Mitchell. It is significant that Mitchell's last book on aviation, Skyways, published in 1930 after the author had been out of touch with his fellow air officers for some four years, contained few thoughts that he had not presented before 1926.[160] In his early writings, however, Mitchell had publicized the ideas which would be continued, expanded, and refined to become the doctrine of the Air Force.

CHAPTER 3

GROWTH OF THE AIR FORCE IDEA, 1926-1941

1. Beginnings of the GHQ Air Force

"Despite popular legend," reminisced General Arnold, "we could not have had any real air power much sooner than we got it."[1] Arnold reasoned that in the early 1920's the state of the technological art of aeronautics was not far enough advanced to support air power doctrines. In the field of national aviation policy and military aviation technology the early developmental period clearly ended in 1926. In that year the World War I stocks of such items as Liberty engines were used up or declared obsolete, as were many of the war stocks of aircraft. The ten aircraft production companies that had survived the stringent years of the early 1920's were getting on sound footing and were receiving some orders for commercial aircraft. Research and development in aeronautics was making headway in the National Advisory Committee for Aeronautics, the Air Corps Materiel Division at Wright Field, Ohio, and in Guggenheim Foundation laboratories. The Air Corps Act of 1926 stated the policy that the government should encourage the development of design and engineering staffs in aircraft production companies by following a rather liberal policy of placing experimental orders for prototype aircraft. It also provided that the government ought not to enter into competition with private industry by manufacturing aircraft in government arsenals.[2]

In the early years, the U.S. Air Service had considered it logical that the military services should bear the brunt of the burden of developing aeronautics until such time as the utility of air transportation could be established. In 1922, the Air Service had opened a "model airway" connecting New York, Norfolk, Washington, and Dayton, and by 1925 the airway was extended to St. Louis, Kansas City, Dallas, and Fort Worth. Lighted beacons guided night flying, and radio-meteorological stations were established along the routes. Enactment of the Air Mail Act of 1925 and the Air Commerce Act of 1926 took the Post Office Department and the military services out of commercial aviation and served as legislative cornerstones for the development of commercial aviation in America. After competitive bidding, the Post Office Department negotiated 12 air mail contracts, and these initial contracts provided the eventual base upon which the nation's great trunk airlines were built. The real breakthrough in aviation, however, occurred in 1927, when Charles A. Lindbergh's pioneer trans-Atlantic solo flight on 20-21 May galvanized the imagination of the people. After May 1927 the public suddenly wanted to fly: during 1927 the new airline companies carried only 8,679 passengers but the number of passengers transported reached 48,312 in 1928, 161,933 in 1929, and 384,506 in 1930.

In 1926, U.S. aircraft production totaled 1,186 planes and in 1929 the total was 6,193--5,516 of which were civil aircraft.[3]

Both General Patrick and Maj. Gen. James E. Fechet, who became Chief of Air Corps on 14 November 1927, considered that the Air Corps Act of 1926 to have been "far-sighted legislation." In accordance with its provisions, F. Trubee Davison was appointed Assistant Secretary of War for Air on 16 July 1926 and Air Corps officers were assigned to the War Department General Staff divisions. After a year's delay while studies were made, the Air Corps was authorized a five-year expansion program in which it was expected to attain a strength of 1,650 officers, 15,000 enlisted men, and 1,800 serviceable airplanes. The only difficulty with the Air Corps Act--according to Secretary Davison--was that it was never fully implemented. The legislation was never popular with other agencies of the War Department who lost funds and personnel spaces to Air Corps expansion, and there was jealousy that the Air Corps was permitted special representation at the Secretary and General Staff level. "Those in higher places. . .," Davison noted, "were looking more for an alibi rather than a means of carrying out this program." Davison also noticed that Congress did not appropriate authorized funds in full amounts and the Bureau of the Budget impounded some of the Air Corps funds that were appropriated.[4]

As the Air Corps expansion got underway, the Chief of Air Corps continued to be responsible for the preparation and issuance through the War Department General Staff of training doctrine for all Air Corps organizations. Because of the small number of officers in his office, the Chief of Air Service had begun to require the Air Service Field Officers' School to prepare basic drafts of doctrinal manuals. Subsequently redesignated as the Air Service Tactical School in 1922 and the Air Corps Tactical School in 1926, the institution at Langley proved to be the only common location of experienced Air Corps officers who had enough time for creative thinking. Following the practice of other arms and services, an Air Service Board was established at Langley in 1922 and was redesignated as the Air Corps Board in 1926, but the Air Corps did not have enough senior personnel to assign to this board and the commandant of the Tactical School and several of its stafr members accordingly doubled as members of the Air Corps Board.[5] The Chief of Air Corps also took advantage of the experienced men at Langley by referring problems originating in the War Department to the Air Corps Tactical School for study and comment.[6]

Early in the 1920's the manuals of the Air Corps Tactical School closely followed the ideas expressed in statements of air leaders in Washington. Published early in 1926, when Major Oscar Westover was commandant, the instructional manual entitled Employment of Combined Air Force envisioned the air arm as coordinate with land and sea forces, having as its aim the destruction of the enemy's morale and will to resist, preferably by means of attacks against targets in the enemy's interior. Pursuit aviation was designed to establish localized aerial supremacy; command of the air was held to be

"temporary and fleeting." Bombardment was said to cooperate with air and ground forces by giving direct support in tactical operations or by giving indirect support to them through strategical operations.[7] In the spring of 1928, the Air Corps Tactical School undertook a general revision of its texts, and its commandant, now Lt. Col. C. C. Culver, on 30 April forwarded to Washington a paper entitled "The Doctrine of Air Force" which was proposed as a basis for all texts. This draft doctrine obviously followed the letter of the law set forth in War Department Training Regulations 440-15 and concluded: "In the final analysis, the army is the principal component of the nation's militia, both the air and the naval forces being used to further its interests . . . .The Air component . . . always supports the ground forces, no matter how decisive its . . . operations may be, or how indirect its support."[8] When efforts to revise this statement were not accomplished to his satisfaction, General Fechet stated his own idea on 1 September: "The objective of war is to overcome the enemy's will to resist, and the defeat of his army, his fleet or the occupation of his territory is merely a means to this end and none of them is the true objective. If the true objective can be reached without the necessity of defeating or brushing aside the enemy force on the ground or water and the proper means furnished to subdue the enemy's will and bring the war to a close, the object of war can be obtained with less destruction and lasting after effects than has heretofore been the case. At present the Air Force provides the only means for such an accomplishment."[9]

The procurement of aircraft under the Air Corps expansion program was indicative of Air Corps ideas and concepts, and the performance of the new equipment had a substantial impact upon Air Corps doctrine. In 1924 the Air Service Tactical School had stated the proposition that a combat air force could not depend upon surface transportation but required air transport aircraft. The Air Corps began to procure such planes, although in very small numbers since civilian airliners would be available for military service in a war emergency.[10] In the first years of the expansion, the Air Corps gave emphasis to the purchase of new observation and pursuit aircraft. Because of alarming experiences with flutter in experimental monoplanes, the standard Air Corps pursuit aircraft of the 1920's were predominatly biplanes. In the several years following initial purchases in 1925, the Air Corps bought a total of 150 Curtiss Hawk series planes, but beginning in 1928 the Air Corps commenced to buy Boeing P-12F biplanes--which had a top speed of 194 miles an hour--as the standard pursuit planes.[11]

Since observation planes had higher priority, the Air Corps was not permitted to purchase any new bombers in the first year of its augmentation. In May 1928, Major Hugh J. Knerr, the commander of the 2d Bombardment Group (who was additionally named as chairman of a special Air Corps Bombardment Board) recommended the development of a light and fast day bomber and a heavier and longer range night bomber. This proposal was soon lost when the War Department insisted that a twin-engine observation plane be developed and that provision

be made for its modification as a bomber. In March 1930 the Air Corps Tactical School recommended that night bombing was inefficient and proposed that light and heavy bombers should be built solely for day operations. The school believed that speed and armament could protect a day bomber. As a result of circular design proposals in 1930, the Air Corps issued procurement orders for both Boeing B-9 and Martin B-10 aircraft. Built in 1931, the Boeing B-9 was a twin-engine monoplane which bore a superficial resemblance to the later B-17; it subsequently developed a fuselage vibration which made it unacceptable for quantity procurement. The Martin B-10, on the other hand was to be the first of the modern bombers. First flown in early 1932, this all-metal monoplane had front and rear machine gun turrets, a top speed of 212 miles an hour, and a service ceiling of 21,000 feet.[12]

At the Air Corps Tactical School the increasing capabilities of military aircraft opened new vistas of air power which visionary instructors desired to exploit. After completing the school in 1928 and 1929, Captain Robert Olds and Lieutenant Kenneth N. Walker remained on the faculty as instructors in bombardment aviation. Olds had assisted Mitchell in his appearances before the Morrow Board, while Walker was an experienced bombardment officer who had been a member of the Air Service Board in 1925. What these two men already doubtlessly believed was confirmed in May 1929 during the annual Air Corps maneuvers held that year in Ohio. Major Walter H. Frank, assistant commandant of the Air Corps Tactical School, served as chief umpire, and at the close of the maneuvers he reported: "There is considerable doubt among the umpires as to the ability of any air organization to stop a well organized, well flown air force attack. . . . The difficulty that pursuit had, not only in attacking, but in finding some of the missions that were sent into hostile territory during these maneuvers, would make it appear that a well planned air force attack is going to be successful most of the time." Major Frank had obviously studied Douhet's writings, since he observed: "Douhet, a well known Italian writer, says that 'now that aviation has entered the ranks as a means of carrying on war, more than ever war is going to be a question of give and take.' It emphasizes the fact that air force is principally an offensive weapon rather than a defensive one."[13]

Back at the classrooms at Langley, Lieutenant Walker saw the major significance of the theorem that "a well organized, well planned, and well flown air force attack will constitute an offensive that cannot be stopped." In fact, his students would subsequently credit him with the origination of the whole idea.[14] The revision of the Air Corps Tactical School text entitled The Air Force issued in April 1930 boldly stated: "a defensive formation of bombardment airplanes properly flown, can accomplish its mission unsupported by friendly pursuit, when opposed by no more than twice its number of hostile pursuit" and that "defensive formations of attack can accomplish their missions, unsupported by friendly pursuit, when opposed by no more than their own number of hostile pursuit."[15] Bombers would rely upon superior speed and firepower for protection

in deep penetrations into enemy territory; the only pursuit support they would be likely to require would be in crossing the crust of enemy air opposition along the front lines.[16]

To Olds and Walker the supremacy of the bomber held important significance. Under the older air doctrines, air superiority, air supremacy, or control of the air had been considered to be fleeting and attainable by the concentration of a predominant number of pursuit aircraft in a local area. The Air Corps Tactical School text on The Air Force issued in April 1930 continued to mention the old doctrine but suggested that bomber attacks against enemy airdromes would be the best method of destroying enemy aircraft.[17] The text on The Air Force of February 1931, however, boldly predicted that control of the air, air superiority, or air supremacy (the terms were said to be synonymous) would be attainable throughout a combat theater by destroying the hostile air force in the air, on its airdromes, and in the enemy's depots and factories. "Victory is practically assured to the commander whose air force has gained and can maintain, control of the air," the text stated, "even if his ground forces are merely equal or somewhat inferior to those of his enemy."[18] "Pursuit alone," the text continued, "cannot ensure protection from air attack, but . . . bombardment and attack must participate to a degree undreamed of in the World War in the contest for control of the air, by attacks against the hostile air force on the ground."[19] What friendly control of the air would mean in the course of a war had already been suggested in the April 1930 text: "An army with an air force strong in bombardment and attack should be able to defeat its opponent, as when its air force has reduced the bombardment and attack of the enemy to a negligible quantity, its ground operations will progress without important hostile air interference, and its air force will then be able to assist these operations directly by attack on terrestial objectives. An air force preponderately pursuit, cannot materially affect the ground situation except through the indirect method of destroying hostile aircraft."[20]

At the same time that the concept of the primacy of bombardment aviation was becoming firmly established at the Tactical School, the War Department also appeared to have gotten a clear mandate to develop aviation for the performance of its traditional coast defense mission. Unwilling to accept General Patrick's demands for legislation defining the exact division of Army-Navy responsibilities for aerial operations at the nation's sea coasts, the War Department had preferred in 1926 to rely upon the Joint Army and Navy Board for such decisions. As a portion of the Joint Board's Joint Action of the Army and the Navy approved in December 1926, the Secretaries of the War and Navy Departments had agreed that naval peacetime procurement of land-based aircraft would be "limited to those primarily designed and ordinarily used for scouting and patrolling over the sea." In time of war, however, the Navy would be authorized to conduct "operations from shore bases for overseas scouting, and for the observation and patrol of sea communications and their defense against raids."[21]

Notwithstanding this agreement, both Patrick and Fechet continued to fear that the Navy intended to take over coastal air defense, and the matter came to a head in August 1930 when Secretary of War Patrick J. Hurley received a copy of a Navy letter to President Herbert Hoover containing severe criticism of the Army program for coastal air defense. In an effort to clarify the apparent confusion, the Army Chief of Staff, General Douglas MacArthur, and the Chief of Naval Operations, Admiral W. V. Pratt, reached an agreement between themselves on 9 January 1931, which General MacArthur described in these terms: "Under it the naval air forces will be based on the fleet and move with it as an important element in performing the essential missions of the fleet afloat. The Army air forces will be land based and employed as an element of the Army in carrying out its mission of defending the coasts, both in the homeland and in overseas possessions. Through this arrangement the fleet is assured absolute freedom of action with no responsibility for coast defense." Admiral Pratt apparently entered into this agreement because he wished to develop the Navy's fleet as an offensive rather than a defensive force. The Navy's General Board, however, strongly disapproved of the agreement since it feared that the Air Corps might lay claim to the Navy's air stations ashore. After a detailed study had been made by the War Plans Division, however, General MacArthur issued an order on 3 January 1933 specifically requiring the Air Corps "to conduct the land-based air operations in defense of the United States and its overseas possessions."[22]

* * * *

When Major General Benjamin D. Foulois moved up from assistant chief to become Chief of Air Corps on 22 December 1931 he brought with him a long record of experience that went back to the earliest days of Army aviation and a new assessment of the international situation. From 1920 to 1924, Foulois had served as the Assistant Military Observer with the American Commission and as Assistant Military Attache at the American Embassy in Berlin. He had had intimate talks with many of the German airmen who smarted from defeat: they had insisted that Germany would rise again and would use aviation to conquer Europe. "The first phase of the next war," Foulois reasoned, "is going to be the conquest of Europe, and the second phase is going to be the conquest of the United States. They're going to use short range aircraft to do the conquest of Europe job, but they'll need long range stuff to lick us." Anticipating that the United States could well be isolated in the Western Hemisphere, Foulois had returned home as an active advocate of long-range bombers.[23]

As the Air Corps five-year expansion program approached a delayed completion in 1933, the added War Department responsibilities for coastal defense and the increasing technological capabilities of bombardment aircraft led General Foulois to suggest that an air power strategy was appropriate for the United States. At the completion

of the five-year program, the Air Corps would possess 13 squadrons of observation, 12 squadrons of bombardment, 4 squadrons of attack, and 21 squadrons of pursuit aviation. Instead of the 1,800 aircraft authorized to it, however, the Air Corps had only 1,619 planes, of which 442 were either obsolescent or non-standard.[24] The Air Corps based its new defense strategy on the assumption that the United States would be attacked by a coalition of two or more naval powers who would muster a superior force of carrier-based aviation and upon the fact that the War Department was responsible for coastal air defense. Based upon this appreciation of the situation, Brigadier General Oscar Westover, the Assistant Chief of Air Corps, requested the War Department on 15 March 1933 to strengthen the air garrisons of Panama Canal department, the Hawaiian Islands, the Philippines, and to authorize the organization of bombardment and coast defense patrol units in the six critical defense areas along the Atlantic and Pacific coasts of the United States. Noting that Air Corps operational doctrine varied according to the various Air Corps tactical commanders, General Westover also asked authority to establish a Center of Tactical Research at the Air Corps Tactical School, which had moved from Langley to Maxwell Field, Montgomery, Alabama, on 1 July 1931.[25]

The timing of the Air Corps plan was appropriate since General MacArthur was considering a reorganization of the Army into four continental armies, but the War Department General Staff viewed the Air Corps submission with skepticism. Like the rest of the world, the United States was in the throes of an economic depression. The five-year Air Corps expansion plan which was just concluding, moreover, had worked hardships upon the Army's ground arms which had been compelled--since ceilings on over-all Army strength had been curtailed while Air Corps authorizations had increased--to give up personnel spaces to the Air Corps.[26] On 3 June 1933 the War Department directed the Chief of Air Corps to submit a new plan, staying within his approved ceiling of 1,800 aircraft, which would recommend the manner in which a GHQ Air Force would be employed under war plans Red, Red-Orange, and Green. War plan Red visualized conflict with Great Britain, Orange with Japan, and Green visualized certain operations against a hostile force in Mexico. The Air Corps submitted these plans on 13 July, and on 11 August a special committee of the Army General Council chairmanned by Major General Hugh A. Drum, who was now Deputy Chief of Staff, was designated to review the Air Corps plan. General Foulois was a member of this special committee, which would usually be known as the Drum Board.[27]

When it reported in October 1933, the Drum Board was chiefly concerned about the worst possible strategic alignment which could confront the United States: a two-front coalition attack by Great Britain and Japan which would involve an inferiority of U.S. Navy forces and probable surface invasions of the northeastern and northwestern United States mounted from beach-heads established in the vicinity of Halifax and Vancouver. Such a war would also be accompanied by attacks against Alaska, Hawaii, the Philippines, and the

Canal Zone. Because of the elaborate logistical requirements and the rather slow progress of the flight of Italian bombers under General Italo Balbo to the opening of the Chicago world fair, the Drum Board did not fear attacks by land-based bombers against the United States, but it was apprehensive about carrier-based air which would support landings of British and Japanese forces in Canada. Both Army and Navy air forces would have to oppose this two-front operation, and the strategic problem posed a distinct requirement for the organization of a mobile GHQ Air Force which could be concentrated in the peripheral areas of the United States to oppose the landings of hostile forces and to support subsequent ground operations against the invaders. The Drum Board recommended that the GHQ Air Force should be organized, and it stated that the Air Corps had a requirement for 2,320 aircraft to be organized into 27 bombardment, 17 pursuit, 11 attack and 20 observation squadrons. The Drum Board, however, was unwilling to recommend an immediate increase in Air Corps personnel or aircraft strength until other Army requirements needed to augment ground forces were met. Secretary of War George H. Dern approved the Drum Board report on 11 October 1933.[28]

While the War Department was examining its strategic planning, additional information became available from the concentration of a GHQ Air Force (Provisional) on the Pacific coast for a maneuver defense against a simulated hostile fleet and accompanying aircraft. In his report of this maneuver made in July 1933, General Westover called attention to the wide disparity between the speed of new bombers and of pursuit and observation planes. "The modern trend of thought," Westover wrote, "is that high speed and otherwise high performing bombardment aircraft, together with observation aviation of superior speed and range and communications characteristics, will surfice for the adequate air defense of this country. The ability of bombardment aviation to fly in close formation and thus to insure greater defense against air attack . . . warrants the belief that no known agency can frustrate the accomplishment of a bombardment mission." Lieutenant Colonel Arnold, who served as Westover's chief of staff during the maneuver, called for the development of air task forces (including transport planes) built around the modern bombers. He also recommended that the time had come for the establishment of an Air Corps Board with experienced membership, which could study and recommend policy for the ultimate development of the air force.[29] At the Army War College on 12 September, General Foulois defined air power "as the strength of a nation in its ability to strike offensively in the air" and stated that the size of the air force should "be determined as that which can operate successfully against that amount of hostile aviation to which it may be opposed on our frontiers." "The real effective air defense," he stated, "will consist of our ability to attack and destroy the hostile aviation on the ground before it takes to the air." In response to a question put to him on this same occasion at the Army War College, General Westover explained: "Within the Army Air Corps, there has been a growing conviction that we have got to come down to practically two

types of aircraft. One type designed in general for the patrol missions, and the other designed for the high-powered, bombing offensive missions with sufficient machine gun fire power to protect itself."[30]

While it is impossible to assess the exact degree of influence which the ideas of Giulio Douhet had upon the development of American air power doctrine, there is no doubt that Air Corps thinkers were familiar with Douhet's writings. Copies of Douhet's "The War of 19 . . .," which appeared in Revista Aeronautica in March 1930 were in the Air Corps Tactical School library as early as November 1931.[31] In 1933, Captain George C. Kenney, who had been an instructor at the Air Corps Tactical School from 1927 to 1929 and was assigned to the chief of the Air Corps Plans Division between 1933 and 1935, made a translation of an epitome of Douhet's ideas which appeared in the French magazine Les Ailes. This translation from Les Ailes seems to have provided the basis for an article published by Colonel Charles DeF. Chandler (Retired) entitled, "Air Warfare Doctrine of General Douhet," in U.S. Air Services in May 1933.[32] At the very least, Douhet's arguments in favor of the decisiveness of air attack as a means of winning a war, for the establishment of command of the air by air attacks against an enemy's airdromes, for "battle cruiser" aircraft that would not require fighter escort, and for the development of commercial air transport aviation as an adjunct to military aviation proved useful as a corroboration of Air Corps ideas. Thus, on 9 May 1933, General Foulois sent thirty mimeographed copies of Chandler's article to the Chairman of the House Committee on Military Affairs, with the notation that the paper "presents an excellent exposition of certain principles of air warfare."[33]

Although the War Department was unwilling to permit any immediate Air Corps expansion, General MacArthur was sympathetic with Air Corps proposals for the development of experimental long-range bombers. Completed in July 1932, a study by the Air Corps Materiel Division indicated that a bomber with a speed of 200 miles per hour, a range of 5,000 miles, and a 2,000-pound bomb load was technically possible. In December 1933 the Air Corps suggested and the War Department approved the commitment of funds for Project A: the development of a long-range bomber which would not only be able to "reinforce either coast line . . . but would definitely enable . . . reinforcement of . . . Panama and Hawaii." The single XB-15 that the Boeing Company would deliver under this contract in 1937 would be too large for existing engines (someone once humorously remarked that if the engines on the XB-15 had ever looked back to see what they were pulling, all four of them would have quit simultaneously). But technology was catching up with requirements, and the Air Corps was learning to write military characteristics for planes which would be good yet attainable. In 1933 the Air Corps distributed proposals to manufacturers specifying a design competition for a multi-engine bomber with a 2,000-mile range and 250-miles-per-hour speed. In the design competition the following year Douglas offered the DB-1 (an extrapolation from its DC-3 transport which would be the prototype

for the twin-engine B-18), Martin proposed a modification of its already successful B-10, and Boeing offered a four-engine Model 299, which would be the prototype of the B-17 Flying Fortress.[34]

* * * *

While the Air Corps was making plans to implement the recommendations of the Drum Board in the winter of 1933-34 it was suddenly launched into a tragic undertaking that would center public attention and criticism upon it. Convinced that there were evidences of collusion and fraud in airmail contracts with commercial air transport companies, President Franklin D. Roosevelt ordered the Air Corps to start flying the air mail effective on 19 February 1934. Undertaking this mission without proper equipment, with inadequate ground organization, in the face of extremely bad winter flying weather, and with only ten days' preparation, the Air Corps would experience 57 accidents and suffer 12 fatalities while flying 1,590,155 miles with 777,389 pounds of mail. Alarmed by the loss of life, President Roosevelt directed the Air Corps on 10 March to operate only in favorable weather conditions. On 8 May new contracts with private companies went into effect, and the Army Air Corps flew its last scheduled mail flight on 1 June 1934. General Foulois would remember the air-mail episode as a dramatic illustration to the American people that the Air Corps had been neglected. "In the blaze of editorial and Congressional reaction to the deaths of Army flyers," Foulois recalled, "the President and the Congress were, in my opinion, forced to release funds for immediate use in Air Corps experimental and research work, for the immediate procurement of advanced types of aircraft and aircraft materiel and for the immediate advanced training of Army Air Corps personnel."[35]

Even before the Air Corps completed its air-mail duty, the Secretary of War on 17 April 1934 named Newton D. Baker to head a special committee of civilian and military members which was charged to make a constructive study and report of the adequacy and efficiency of the Army Air Corps for the performance of its missions in peace and war. In twenty-five days, the Baker Board heard 105 witnesses, but, possibly because General Drum was its executive vice chairman, the report released on 18 July 1934 accepted virtually all of the conclusions of the Drum Board report which had been approved the previous October. "Our national defense policy," stated the report of the Baker Board, "contemplates aggressive action against no nation; it is based entirely upon the defense of our homeland and overseas possessions, including protection of our sea and air-borne commerce." The board found that the purpose of the Army was "to hold an invader while the citizen forces are being mobilized." Aviation was advantageous to the national defense, but the board stated: "The idea that aviation can replace any of the other elements of our armed forces is found, on analysis, to be erroneous. . . . Since ground forces alone are capable of occupying territory, or, with certainty, preventing occupation or our own territory, the

Army with its own air forces remains the ultimate decisive factor in war." Citing the Drum Board report as evidence that the United States was in no danger of land-based transocean air attack, the Baker Board stated that "the ideas that aviation, acting alone, can control the sea lanes, or defend the coast, or produce decisive results in any other general mission contemplated under our policy are all visionary, as is the idea that a very large and independent air force is necessary to defend our country against air attack."[36]

As was to be expected from its concept of national military policy, the Baker Board recommended that the existing Army and Navy organizations be continued, with air forces an integral part of each. It found the only potential area of Army-Navy disagreement to be the employment of aircraft in coastal defense, and it recommended that the Joint Board should continue to resolve any such controversy in accordance with the old formula expressed in the Army appropriation act of 5 June 1920. The board thought that the position of Assistant Secretary of War for Air should be abolished and that the Air Corps should "become in all respects a homogeneous part of the Army, under General Staff control, and be subject to military coordination, study, influence and operation." Following and elaborating on the Drum Board recommendations, the Baker Board recommended that a Headquarters Air Force, be established outside of Washington to supervise the training and operations of combat air units, that an Air Corps Board be created to formulate uniform tactical doctrines, and that a model Air Corps unit be created at the Air Corps Tactical School for employment in tactical testing and experimentation. The board recognized that the Air Corps had a requirement for 2,320 airplanes, but it proposed that any Air Corps expansion ought to be a part of a comprehensive Army augmentation plan.[37]

Of the several members of the Baker Board--including General Foulois and Edgar S. Gorrell--only James H. Doolittle filed a minority report. "I believe," stated Doolittle, "that the future security of our Nation is dependent upon an adequate air force. This is true at the present time and will become increasingly important as the science of aviation advances and the airplane lends itself more and more to the Art of Warfare." Doolittle insisted that the air force could be most rapidly developed if it were separated from the Army. If this were impossible, the Air Corps should have a separate budget, a separate promotion list, and be removed from the control of the General Staff.[38] There is no indication that these remarks by Doolittle, an experienced Army aviator who had resigned from the service to take an engineering job with the Shell Oil Company, were ever considered by the Secretary of War. In fact, Secretary Dern was in Panama when the Baker Board completed its report, but he immediately messaged Baker that he had "no hesitancy in approving in principle your conclusions."[39]

When the Federal Aviation Commission, which President Roosevelt appointed in June 1934 under the chairmanship of newspaper editor Clark Howell to make recommendations concerning all phases of aviation, began its hearings, Secretary Dern informed it that the

War Department endorsed the report of the Baker Board. Brigadier General C. E. Kilbourne, Assistant Chief of Staff, War Plans Division, moreover, instructed all officers summoned to testify to familiarize themselves with the approved policy and not to express personal opinions unless they were so identified.[40] With the exception of William Mitchell, who seized the opportunity before the Howell Commission to denounce the Baker Board report, the testimony of Air Corps officers was marked by restraint. Colonel Arnold stated a personal opinion that an independent air force would be desirable, but he evidently stated off the record that the GHQ Air Force ought to be organized and given a two year-trial. Other Air Corps officers favored no immediate change in defense organization until the GHQ Air Force had been tested.[41] In spite of a general reticence to talk, Major Donald Wilson, Captains Harold Lee George and Robert Olds, and Lieutenant Kenneth Walker freely expressed many of the ideas which were being taught at the Air Corps Tactical School.

When he appeared before the Howell Commission, Captain George emphasized that "the object of war is now, and always has been, the overcoming of the hostile will to resist. . . . When that will is broken down, when that will disintegrates, then capitulation results." Reasoning that the strength of opposing air forces would never permit a nation to utilize its potential to build air power after a war began, George defined air power as "the immediate ability of a nation to engage effectively in air warfare." Future wars," he predicted, "will be fought by the air forces which are in existence when the war breaks out and not by air forces which are created after the war commences." George argued that in a future war air forces would be in action for weeks or months before land forces got into action and that an air force, therefore, required independent organization.[42]

Emphasizing that he was expressing a personal opinion, Major Donald Wilson pointed out that world conditions were leading toward war, that the basic principles of war applied by an intelligent enemy portended that the principal hostile effort against the United States would be through the air, that the defense problem of the United States with planes of limited range was particularly disadvantageous, and that an air force organized, equipped, and trained to defend the United States was an essential element in providing the national defense.[43]

Lieutenant Walker prefaced his testimony by reading the statement of the primacy of the ground force mission as it appeared in the Field Service Regulations of 1923, and he charged that Army leaders refused "to consider that an Air Force is of real value, other than to cover the mobilization of the Army." "We insist," said Walker, "that the defeat of the enemy results from breaking his will to resist and that this is most quickly accomplished, in the scheme of modern war, by disruption, by direct action, of his means for prosecuting the war. . . . An Air Force is an arm which, without the necessity of defeating the armed forces to the enemy, can strike directly and destroy those industrial and communications facilities, without which no nation can wage modern war." Walker

believed that the Army should control observation aviation and that the Navy should have aircraft carriers to protect its fleets, but he urged that a separate air force had to be created for the air defense of the United States--the air defense mission being defined as seeking out and destroying the enemy air force on its home bases. "Gentlemen," Walker concluded, "unless we create an adequate and separate Air Force, this next war 'will begin in the air and end in the mud'--in the mud and debris of the demolished industries that has brought us to our knees."[44]

At the outset of his testimony, Captain Olds expressed opposition to the creation of a unified air force that would amalgamate all of the aviation components of the Army and Navy, because he held that the Army mission required observation aviation and balloons and that the Navy mission necessitated sea-based aircraft. Olds nevertheless pointed out that the waging of air warfare was of equal importance to the waging of ground and sea warfare. "We simply cannot predict a limit," he said, "nor is it safe to predict the definite role aircraft will fill in a future war. . . . A determined air armada loaded with modern agencies of destruction, in readiness within range of our great centers of population and industry, may eventually prove to be a more convincing argument against war than all the Hague and Geneva Conventions put together." Olds called for the establishment of a Department of National Defense, with subordinate departments of Army, Navy, Air, and Procurement and with a Supreme General Staff headed by a single Chief. He urged that a National Air Force should be organized and should have subordinate air forces in the North Atlantic, South Atlantic, Gulf, and Pacific states, and in Alaska. He proposed no changes for the defensive air garrisons assigned to the Army commands in Hawaii, the Panama Canal Zone, and in the Philippines.[45]

Since the members of the Federal Aviation Commission had not previously committed themselves on the subject of defense organization, they had a splendid opportunity to make a fresh approach to aviation problems. On 31 January 1935, however, the Howell Commission reported to Congress that "the present degree of mutual understanding between the Army and Navy is less than might be desired, that the machinery for setting differences in matters of detail lacks something in effectiveness, and that the arrangements for keeping commanders in the field notified of their respective responsibilities in joint operations . . . are strikingly inadequate," but that it did not believe that it would be easier to coordinate three services than two. Since plans for the GHQ Air Force were already being issued, the Howell Commission preferred to refrain from comment on the matter of an independent air force. "It must be noted, however," the report stated, "that there is ample reason to believe that aircraft have now passed far beyond their former position as useful auxiliaries, and must in the future be considered and utilized as an important means of exerting directly the will of the Commander in Chief. An adequate striking force for use against objectives both near and remote is a necessity for a modern army, and the projected

G.H.Q. Air Force must be judged with reference to its effectiveness in this respect."[46]

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Both in his first conceptual thinking and later in more exact planning, General Foulois urged the War Department General Staff to observe the principle of unity of command when it organized the GHQ Air Force. In March 1933, Foulois stated his belief that the Army Chief of Staff in a time of war should go into the field as the Supreme Military Commander and leave his second in command in the Zone of Interior. Following the same pattern, Foulois believed that the Chief of Air Corps should accompany the Supreme Military Commander into the field, and he accordingly made his assistant chief, General Westover, his executive officer in order that Westover would be able to take over all incumbent Zone of Interior duties in time of war.[47] Actually, however, the younger Westover commanded the provisional GHQ Air Force in the field maneuvers of 1933 and he also headed the air-mail operation. As a part of the planning for the organization of the GHQ Air Force under the Army's four army plan, Foulois got War Department approval for a procedure whereby officers from the Office of Chief of Air Corps would additionally serve as the mobilization staff of Headquarters, GHQ Air Force. Under this same type arrangement, Foulois intended that most of the officers of the Air Corps Plans Division would, in a war emergency, become the Aviation Section of the Army General Headquarters in the Field.[48]

In his argument for unity of command within the Air Corps, Foulois expressed his conviction that it was wholly impracticable to divorce the authority for training and operations from the functions and responsibilities for research, experimentation, procurement, supply, and repair. In what was widely interpreted as a direct rebuff to Foulois for his advocacy of a separate air force, however,[49] the Baker Board not only recommended increased General Staff supervision over the Air Corps but it also insisted that the primary functions of the Air Corps were (1) fighting, and (2) development, procurement, and supply of equipment and trained personnel. The first function should be assigned to the Commanding General, GHQ Air Force, who would be directly subordinate to the Army Chief of Staff. The second function should continue to be handled by the Chief of Air Corps, as a staff officer of the War Department.[50]

The War Department required little time to effect the top-level changed recommended by the Baker Board. The position of Assistant Secretary of War for Air had been left vacant when F. Trubee Davison resigned at the outset of the Roosevelt administration and this post would remain vacant.[51] On 24 August 1934, the War Department announced that four additional Air Corps officers were being detailed to General Staff divisions, bringing the number of Air Corps officers on the high staff level to nine, a proper quota in view of the relative size of the Air Corps.[52] Because the GHQ Air Force represented a "new conception," the War Department proceeded more

cautiously with its organization. On 31 December 1934, the Secretary directed that the GHQ Air Force would be organized and would begin operation at a headquarters at Langley Field on 1 March 1935. Headquarters of the Air Force's three wings would be at Langley, at March Field, California, and at Barksdale Field, Louisiana, and all Air Corps pursuit, bombardment, and attack groups were assigned to the GHQ Air Force.[53] Lt. Col. Frank M. Andrews, an experienced Air Corps officer who had been serving on the War Department General Staff, was announced as Commanding General, GHQ Air Force, with a temporary rank of brigadier general. On 19 February 1935, the War Department provided Andrews with tables of organization for the new command, and he was directed to service test the new organization and to make a final report on its effectiveness before 1 February 1936.[54]

Along with its other organizational changes, the Baker Board had recommended the creation of an Air Corps Board to formulate uniform tactical doctrine. As has been seen, such a board had existed on paper since 1922, and had been moved with the Air Corps Tactical School from Langley to Maxwell in 1931. For more than two years, General Foulois resisted suggestions from within his own office that the Air Corps Board ought to be revitalized, both because he had a scarcity of senior officers and because he preferred to rely on the Air Corps Plans Division for policy recommendations. Although the Baker Board forced him to act, Foulois continued to plead that the Air Corps did not have the five to eight senior officers needed to man the Air Corps Board. He accordingly received permission to name the Commandant and Assistant Commandant of the Tactical School to serve on the board as additional duty. Two officers already at Maxwell, Major William O. Ryan and Lieutenant Gordon P. Saville, were assigned to the board on full-time duty. In a statement of mission, the Air Corps Board was directed to consider such subjects as might be referred to it by the Chief of Air Corps and to originate and submit to the Chief of Air Corps recommendations looking toward the improvement of the Air Corps.[55]

2. Development of Doctrine in the Air Corps and GHQ Air Force

Looking backward with regret at his failure to have convinced "those earnest and conscientious men" of the Baker Board of the urgent national need for a unification of military forces and for an independent air force, James H. Dolittle observed in 1945 that the report of the Baker Board should have borne the sub-title: "Pearl Harbor, Here We Come." "Basically," reminisced Doolittle, "the trouble was that we had to talk about air power in terms of promise and prophecy instead of in terms of demonstration and experience."[56] When the GHQ Air Force was organized and began to receive modern aircraft, the Air Corps was able to begin to base its doctrine on a lengthening record of demonstrations and experience.

Because of fundamental changes in the Air Corps mission resulting from the MacArthur-Pratt agreement and the Drum Board Report

the War Department directed the Air Corps on 27 December 1933 to review and revise its training regulations and manuals in order to insure that the new principles and doctrines were disseminated. The project was assigned to the Air Corps Training and Operations Division, but it made little progress because of continuing changes in the Air Corps mission.[57] What the war Department General Staff judged the role and mission of the GHQ Air Force to be was demonstrated in a directive for a GHQ command post exercise prepared in the War Plans Division in June 1934. In the directive, the bombardment plane was said to be the "most important element" of the GHQ Air Force. The mission of the GHQ Air Force included bombardment of enemy establishments and installations beyond the range of artillery, pursuit action to counter enemy air operations, long-range reconnaissance, and attacks against critical targets in the battle area. In addition to furnishing air protection to bombardment, pursuit aviation was to be used to assist in preventing hostile aviation from operating over friendly territory. The most important point in the directive was the manner in which the GHQ Air Force would receive its targets: the preferred method would be one in which General Headquarters would designate objectives to the GHQ Air Force commander in order to "insure the cooperation of the Air Force with the ground units and that it will be directed against those objectives which will further the operations of the ground forces and the general plan of campaign."[58] In commenting on this directive, General Westover stated that because of its limited range of action pursuit would rarely be able to afford protection to bombardment or to long-range observation. Instead of the assignment of air objectives by General Headquarters, General Westover recommended that the GHQ Air Force commander be informed about the campaign and its objectives and that he be charged to prepare and present an air plan to support the campaign. This air plan could be modified by General Headquarters or by the GHQ Air Force as a result of mutual consultation that would be taking place as the campaign progressed.[59]

One of the reasons for the establishment of the GHQ Air Force was the MacArthur-Pratt agreement which had given the coastal air defense mission to the Army. This agreement apparently was not popular within the Navy, and the Navy Department promptly reopened the matter in Joint Board discussions following Admiral Pratt's retirement in June 1933. In these discussions, Navy spokesmen insisted that the Navy had a primary mission for "air operations in support of local naval defense forces operating for the protection of lines of sea communications and coastal zones against attacks by hostile submarines and surface raiders." Although the Baker Board report of July 1934 called for a resolution of this matter in accordance with the act of Congress of 5 June 1920, the Joint Board agreement of 26 September 1934, entitled "Doctrine for the Employment of the G.H.Q. Air Force," stated that the Navy would have "a paramount interest" in operations at sea when the fleet was present and free to act, and it authorized the Navy to maintain "shore

stations at strategical centers, where scouting and patrolling seaplanes may be concentrated to meet naval situations."[60] Air Corps officers protested that this agreement gave the mission of coastal frontier air patrol to the Navy and permitted it to maintain as many shore bases and patrol planes as it deemed necessary in peacetime as well as wartime. The Navy apparently wanted to circumscribe the Army air mission still further. In its presentation to the Federal Aviation Commission in November 1934, the Navy urged that: "The Army should develop and build those types of airplanes required by the Army to fulfill its mission in land operations. The Navy should develop and build those types of airplanes required by the Navy in its operation over the sea or for operation from fleet air bases or naval stations. The Army should have paramount interest over the land and the Navy over the sea. Neither service should build or operate planes intended to duplicate the functions of the other."[61] At an assemblage of naval officers at San Diego on 14 June 1935, Admiral W. H. Standley, Chief of Naval Operations, stated that the Navy was going to build up a striking force of 1,000 aircraft.[62]

Convinced by the Baker and Howell hearings that the Army ought to arrive at a united front on the subject of aviation, General MacArthur directed that a statement of facts, principles, and doctines relating to the Army Air Corps should be prepared. In the past, the Air Service and the Air Corps had been permitted to initiate such work, but now the initial task was undertaken by the War Department General Staff. As a "sighting shot" the War Plans Division drew up a draft revision of War Department Training Regulations No. 440-15 from many sources, and General Kilbourne circulated the draft paper for criticism. As written, the WPD paper asserted that the "land campaign and battle" was "the decisive factor in war." While it noted that air force action would be intensive at the beginning of a war, it stated that the advantages of "alluring" air missions at such a time should be weighed against the requirement to keep superior air forces in being to support operations which would take place after the ground armies made contact. The greatest part of the paper dealt with the employment of air forces in continental defense: in fact, the paper defined "air defense" as the means whereby a nation exerts Air Power." During the period of strategical development before ground contact, the GHQ Air Force commander would work from "a broad general mission," but once battle began he would receive specific assignments from General Headquarters.[63]

A copy of the War Plans Division's proposed doctrinal statement was transmitted to Maxwell Field, where Colonel John F. Curry served both as Commandant, Air Corps Tactical School, and President, Air Corps Board. Since the Air Corps Board had only two full-time officers, the study and commentary on the WPD paper was made by the staff of the Air Corps Tactical School. In the introductory remarks to its study completed on 31 January 1935, the Tactical School pointed out that any doctrine which would receive more than lip service had to appeal to reason and to be acceptable in principle.

The Tactical School was critical of the fact that the WPD paper was predicated upon the geographic isolation of the United States and emphasized a counter air force mission which was narrowly conceived in terms of continental defense. "The principal and all important missions of air power, when its equipment permits," stated the Tactical School critique, "is the attack of those vital objectives in a nation's economic structure which will tend to paralyze that nation's ability to wage war and thus contribute to the attainment of the ultimate objective of war, namely, the disintegration of the will to resist." When employed from bases in the United States, the GHQ Air Force would have such a limited range that the only positive way in which it could insure the success of the Army would be to defeat the hostile air force. The possibility of simultaneously defeating the hostile air force and of attacking the enemy army in support of friendly ground forces was described as an alluring but false doctrine. Only if the hostile air force were defeated would occasions arise when the GHQ Air Force would be able to attack targets in direct support of the ground battle.[64]

Very little of the thought contained in the Air Corps Tactical School critique appeared in the final draft of the War Plans Division paper which was officially published as War Department Training Regulations No. 440-15, Employment of the Air Forces of the Army, on 15 October 1935. This regulation defined air power as "the power which a nation is capable of exerting by means of its air forces," but it stated: "Air forces further the mission of the territorial or tactical commands to which they are assigned." It contemplated that a phase of air operations would probably precede the contact of the surface forces and that the outcome of this phase would exert a potent influence upon subsequent operations. The functions of the GHQ Air Force included air operations beyond the sphere of influence of the ground forces, in immediate support of the ground forces, or in coastal defense and other Army-Navy operations. The regulation stated that the effect which air forces were capable of producing and the extent to which they would influence warfare was still undetermined. Attainment of complete control of the air was said to be an unlikely prospect, but attacks were to be made against hostile air forces prior to ground army contact and the interdiction of enemy air reconnaissance and hostile attacking aircraft was to be a continuing function during ground battles. In effect, the new edition of Training Regulations No. 440-15 was a middle-ground compromise between extreme viewpoints of both air and ground officers. There were enough loop-holes to permit continued air force development: the regulation, for example, respected the unity of the GHQ Air Force and it allowed leeway for independent air operations that were to be conducted before ground armies made contact. For the first time, Major General Follet Bradley would later remark, the regulation spelled out an air doctrine "to which most Air Force officers could subscribe."[65]

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Much of the work in the reorientation of the Air Corps which was required when the GHQ Air Force was being established fell to Major General Oscar Westover, who moved up from Assistant Chief to Chief of Air Corps when General Foulois retired in December 1935. This reorientation had to do with organization, the procurement of new aircraft, and the promulgation of a uniform tactical doctrine for the employment of all branches of aviation. For the preparation of basic studies on each of these subjects, General Westover relied heavily upon the Air Corps Tactical School and upon the Air Corps Board, the latter being considered to be a portion of the Office of Chief of Air Corps on detached location at Maxwell Field. While he was Acting Chief of Air Corps in the absence of Foulois, Westover directed the Air Corps Board on 11 March 1935 to devote its efforts to the preparation of a uniform tactical doctrine for all types of Air Corps units, but he indicated that the board's mission would be expanded when more personnel could be assigned to it.[66] As an immediate solution to the tactical doctrine task, the Air Corps Board surveyed the Air Corps Tactical School's text books, and, following some changes in bombardment and pursuit pamphlets, it obtained authorization to make these books available to field units as doctrine.[67] In June 1935, Lt. Col. Jacob H. Rudolph was assigned as Director, Air Corps Board, and the Office of Chief of Air Corps reopened the question of the Board's mission. There was general agreement that the Board should be responsible for developing doctrine, making recommendations on air force organization, and making tactical evaluations of equipment. The Air Corps Materiel Division demanded that it continue to be responsible for preparing the specifications for, and conducting service tests on, new equipment, but it suggested that the Air Corps Board ought to function as a planning agency which would look several years ahead and visualize developmental objectives for air force equipment. All of these ideas were incorporated in the expanded mission of the Air Corps Board.[68]

Even though air officers considered the establishment of the GHQ Air Force to be a major psychological victory, they recognized that control of the Army's air force had been undesirably compartmented. On 2 November 1935, General Andrews decried the arrangement whereby the GHQ Air Force was responsible for combat efficiency while the Office of Chief of Air Corps selected equipment and personnel, prescribed tactics and methods of employing combat units, and controlled funds. General Andrews recommended the creation of an Air Division within the War Department General Staff, to be headed by an Assistant Chief of Staff who would be responsible for military aviation. Alarmed by the rumored possibility--said to be favored by Rear Admiral Ernest J. King, Chief of the Navy's Bureau of Aeronautics--that the Navy might try to take control of continental air defense and organize a large shore-based air force, the Air Corps Tactical School forwarded a study to Westover on 13 January 1936 which proposed to establish the United States Air Force as a part of the War Department under a Chief of Air Staff. Under this plan, the Chief of Air Corps would become the Deputy Chief

of Air Staff and his office would become the Air Staff. Westover was unwilling to accept either General Andrews' suggestion or the Tactical School proposal, but he instead urged on 17 January 1936 that the GHQ Air Force be placed under the Chief of Air Corps. During the next two years, both Andrews and Westover continued to urge that unity of command was required in the Air Corps, but General Malin Craig, who became Army Chief of Staff on 2 October 1935, was quite opposed to according any preferential treatment to the Air Corps.[69]

With the Secretary of War's approval of the Drum Board report the Air Corps had an approved requirement for an expansion to 2,320 aircraft which were to be organized into 27 bombardment, 17 pursuit, 11 attack, and 20 observation squadrons. A substantial number of these squadrons were committed to overseas air garrisons in the Philippines, Hawaii, and Panama, and most of the observation squadrons were to be in the National Guard. The War Department did not indicate a time schedule for the achievement of the limited Air Corps expansion, and, as a matter of fact, it was going to authorize Air Corps personnel increases only in conjunction with an ordered expansion of the basic ground forces. Following the redesignation of one pursuit group as an attack bombardment group and the redesignation of long-range observation squadrons as reconnaissance squadrons, the GHQ Air Force at its organization in March 1935 consisted of four bombardment, three pursuit, two attack groups, and four reconnaissance squadrons, with a total of approximately 1,000 airplanes.[70] If this force could not be greatly expanded, General Andrews nevertheless desired a continued modernization of its aircraft. Because of the limited funds available to the Air Corps during the middle 1930's, however, a great amount of thought had to be given to the planned tactical usage and the state of the art of aviation technology prior to awarding contracts for aircraft purchase. Any arm or service or individual could propose military characteristics of a required type of equipment, and, after approval by the Office of Chief of Air Corps, these characteristics were submitted to The Adjutant General for General Staff study. Approval of the military characteristics by the War Department constituted a requirement for the item. Thereafter an aircraft went through a design phase, the letting of contracts for an experimental model, the testing and evaluation of the experimental model, the procurement of a small quantity of aircraft for service testing, and finally the procurement and delivery of standardized aircraft in numbers. So much time was involved in this process that when standard aircraft were put in service they were already obsolescent in the sense that newer ideas for tactical employment and subsequent advances in aeronautical science had already created a demand for improved types of planes.[71]

During the early and middle 1930's, the state of aeronautical technology, the strategic requirements of the Red-Orange war plans, and the industrial fabric theory of war which was being put together

at the Tactical School melded together to produce an emphasis on the development of long-range bombers. Using the latest model P-26 pursuit aircraft and B-12 bombers in tests flown at March Field, California, in 1934, Lieutenant Colonel Arnold (who would become Assistant Chief of Air Corps in January 1936) concluded that the speeds of bombers and fighters were so evenly matched that "pursuit or fighter airplanes operating from front line airdromes will rarely intercept modern bombers except accidentally."[72] Arnold suggested that the Air Corps ought to develop a two-place, long-range pursuit aircraft that would be able to provide escort for bombers, and during 1935 the Air Corps Materiel Division experimented with the design of such a pursuit plane, which turned out to be basically a heavily-armed B-10 type. When the matter was referred to the Air Corps Board, it reasoned that a large pursuit plane with pursuit safety factors, with at least 25 percent greater speed than bombers, with at least the range of bombers, with a higher ceiling capability than bombers, and with an extremely high rate of climb would probably not be technologically possible. It recommended that continued experiments should seek to develop such a plane, but that bombardment should exhaust every conceivable means of defending itself before such long-range fighters were provided.[73]

The principal concern of the Air Corps continued to be the development of long-range bombers. From data developed in the Project A bomber program, the Air Corps Materiel Division reported early in 1936 that an 8,000-mile, 230-mile-per-hour bomber could be built. Ignoring some protest that such an "intercontinental" bomber would be a weapon of aggression not required for defense, the War Department authorized General Westover in April 1936 to secure a prototype plane from the Douglas Aircraft Company. Given the name of Project D and later (when it was completed in 1941) the XB-19, this intercontinental bomber would provide a great quantity of technological information needed for the development of long-range bombers, but, like the B-15, the XB-19 would be underpowered for its size and weight and would never be placed in quantity procurement.[74]

Already, as a result of design competitions announced in 1934, the Boeing Company offered a prototype XB-17 and the Douglas Company provided an XB-18. In its initial tests during 1935, the four-engine XB-17 flew nonstop at 232 miles per hour for a distance of 2,100 miles. The Air Corps was so favorably impressed that it wished to purchase 65 of these aircraft, but an unfortunate crash on 30 October 1935 destroyed the original XB-17 before it could be formally evaluated. As a result, the War Department awarded the 1935 bomber competition contract to Douglas for the purchase of 133 twin-engine B-18 aircraft. In February 1936, the Air Corps nevertheless obtained permission to order 13 YB-17's for service testing in a squadron. One justification used at this time was that a limited purchase order would assist Boeing in developing a commercial transport aircraft. Delivery of these thirteen planes was completed in August 1937.[75]

During May 1937, the GHQ Air Force tested the first seven of the B-17's that were delivered to it in an Army-Navy maneuver off the Pacific coast. Possessing greater range and speed than the B-10's that also participated, the B-17's showed important advantages both in sea-search and in bombing operations against the battleship Utah, which was deployed for maneuver purposes under a fog bank 385 miles off the California coast. Using new Norden bombsights, the crews of the B-17's were able to score many hits with water-filled bombs with as little as five-second bomb runs over the battleship.[76] After nearly a year's service testing in the 2d Bombardment Group, Lt. Col. Robert Olds recommended that the B-17 be classified as standard and that the GHQ Air Force's three bombardment groups be equipped with them. Colonel Hugh J. Knerr, chief of staff of the GHQ Air Force, positively stated that his headquarters was convinced that the B-17 airplane "is the best bombardment aircraft in existence; particularly for coastal defense purposes."[77]

At the Air Corps Tactical School news of the superb performance of the YB-17 and the hope that the intercontinental XB-15 might prove practical strengthened proponents of strategic bombing. As demonstrated by its critique of the draft of Training Regulations No. 440-15, the Tactical School as early as January 1935 had rejected the idea that Air Corps doctrine be solely linked to continental defense and had argued that the mission of air power was to paralyze a hostile nation's will and ability to wage war. The Air Corps Tactical School text on The Air Force, issued on 1 March 1936, stated that a hostile air force was a primary strategic air objective but it argued that the defeat of an enemy air force might entail difficult and time-consuming operations which might not prevent the enemy from quickly attaining his purpose by direct attack. "In selecting the hostile air forces as the objective," the text stated, "it is intended to remove the only force that can successfully oppose the attainment of the ultimate objectives and thus achieve a status that will permit unhampered application of pressure against the nation."[78] By 1938 the School was teaching: "Air warfare may be waged against hostile land forces, sea forces, and air forces, or it may be waged directly against the enemy nation. The possibility for the application of military force against the vital structure of a nation directly and immediately upon the outbreak of hostilities is the most important and far reaching development of modern times."[79]

The concept of "bombardment invincibility" and of the defensive character of air battles was not implicity accepted throughout the Air Corps. Even at Maxwell Field, in the five years that he served as an instructor and post officer prior to his retirement in 1937, Major Claire L. Chennault argued that pursuit aviation was a weapon of opportunity which might be employed either offensively or defensively. To support his contention, Chennault devised and advocated a workable plan for aircraft warning and pursuit control services based upon visual aircraft observers and radio and telephone communications nets.[80] Lieutenant Colonel Millard F. Harmon subscribed wholeheartedly to the requirement for the development of bombardment

but he was "irked no end" at the lack of prestige accorded to pursuit. Named to head a board of GHQ Air Force officers at Barksdale Field which reviewed the Tactical School's Air Force text in 1935, Harmon suggested that it was entirely possible that a hostile air force could be defeated by air combat and other activities. His board also argued that defense of the United States was the established national policy--not the destruction of vital elements within enemy nations.[81] Major O.S. Ferson, a member of the board at Barksdale, argued that improved interplane radio communications would enable an air commander to control large airborne forces and thus to fight major coordinated air battles.[82] Lieutenant Colonel A. H. Gilkeson, Commander of the 8th Pursuit Group, stated bluntly that "this recent academic tendency to minimize, if not entirely dismiss, the consideration of the fighting force as a powerful and extremely necessary adjunct of the air force has led to the teaching of doctrines which have not been established as being true and might even be fatally dangerous to our aims in the event of armed conflict." Gilkeson urged that "a superior fighting force will always gain control of the air in at least a restricted sense."[83]

In an effort to develop facts on pursuit aviation, General Westover directed the Air Corps Board in 1935 to determine whether the Air Corps had a requirement for the development of an interceptor type airplane. In February 1937 the Board reported that the most efficient means of neutralizing an enemy air offensive was to conduct a counter air force operation against the bases that supported the offensive. The Board nevertheless recommended that friendly defenses against hostile aircraft would be necessary, and it recommended an immediate development of an interceptor which would have aircraft cannon and at least 20 percent greater speed than proposed bombardment planes. It also recommended that immediate steps be taken to provide ground observer posts and aircraft reporting nets in the United States and its overseas possessions. Without having waited for the delayed Air Corps Board Report, the Air Corps Technical Committee in November 1936 had already stated military characteristics for an interceptor aircraft. During fiscal year 1937 the Air Corps ordered an XP-37 which would be the progenitor of the P-40 and an XP-38 which would become standard as the P-38 Lightning. Like the XP-39, which was ordered in fiscal year 1938, the Lightning would be a short-range, cannon-equipped interceptor.[84]

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During the 1920's, possibly because of Mitchell's enthusiasm for such an aircraft, the Air Corps had been interested in the development and employment of heavily-armored attack planes which would be able to seek out and destroy enemy personnel and materiel in low-level strikes. The Lassiter Board of 1923 recommended that both observation squadrons and a force of attack and pursuit aviation should be an integral part of field armies. The developmental assumption was that attack aircraft would be designed for strafing and

fragmentation bombing. In the late 1920's, however, the Air Corps did not have a standard attack aircraft; in Air Corps maneuvers pursuit squadrons frequently were employed to simulate attack missions. In 1932, tests of the all-metal low-wing Curtis XA-8 aircraft led to the procurement the following year of 46 of these planes which were redesigned with radial engines and designated A-12's. Following another development of opportunity from a commercial aircraft model, the Air Corps secured delivery of 110 Northrop A-17's in 1936. These two-place monoplanes carried five .30-caliber machine guns and stowed fragmentation and demolition bombs internally.[85]

When the Army began its study looking toward a reorganization of its basic ground forces, the Air Corps initiated serious studies of ground support aviation. In a report on the modernization of the Army completed on 9 January 1936, the Air Corps Board recommended that there should be no change in the existing assignment of an observation group and a balloon observation group as organic parts of each corps and an observation group as an organic part of each field army. The Board, however, displayed misgivings about the proposed assignment of attack aviation as an organic part of an army. It noted that attack aviation would appear to be "an ideal weapon in the hands of an Army commander," but it argued that, because of its expense, relative scarcity, and capability to penetrate, attack aviation ought to be assigned to the GHQ Air Force, in order that it could be employed anywhere in a theater of operations as directed by General Headquarters. "A weapon capable of giving direct support to more than one subordinate unit," the Board reasoned, "should be assigned to a superior headquarters." The Board also indicated that one of the principal missions of attack aviation would be to disrupt the railways which supported an enemy's front; highways were thought to be much less vulnerable to air attack.[86]

At a meeting of the General Staff committee which was studying the reorganization of the Army on 13 April 1936, General Westover reported his approval of the Air Corps Board report. In some cases, Westover said that he would be willing to attach aviation to armies or corps, but he emphasized that aviation normally ought to operate in support of an army under the control of the GHQ Air Force. Westover further stated that because of the relative invulnerability of dispersed ground troops aviation should not be used against dispersed, front-line troops except in vital situations.[87] In commenting on one of the Army reorganization planning papers sent to him, General Andrews took strong exceptions to the term "air-ground military team" which was used in it. He could understand how observation aviation could be a part of the air-ground team, but he argued that pursuit, attack, and bombardment received no assistance from the ground forces in their combat operations. The War Department General Staff did not agree with these independent ideas: it insisted that "even independent air operations are carried out as part of the general plan of the Commander-in-Chief . . . and must be designed to support the general strategic purpose which he desires to attain."[88]

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Early in the 1930's, the War Department had been willing to permit the development of experimental long-range bombers, apparently because General MacArthur held a permissive attitude toward such endeavor. The attitude of the War Department General Staff switched abruptly after October 1935, when General Craig became Army Chief of Staff. Beginning in 1936, General Craig and his Deputy Chief of Staff, Major General Stanley D. Embick, pressed the entire Army to reduce expenditures for research and development.[89] In June 1936, the War Department turned down Westover's request for authority to buy a service test quantity of XB-15's and enough B-17's to equip at least two groups. At a General Staff bombardment conference held on 28 August, both Westover and Andrews argued that the four-engine bomber would be the most effective weapon that the Air Corps could procure, but the General Staff held that the "bulk of bombardment aviation operating with a mobile Army should be the size and capacity of the standard B-18 medium bomber." Additionally alleging that no action could be taken until the YB-17's were thoroughly service tested, the War Department cut B-17 procurement out of the Air Corps budget requests for fiscal years 1937 and 1938 and added twin-engine bombers. Because of the successful service tests of the YB-17's in the summer of 1937, however, the War Department later authorized the Air Corps to procure 26 B-17B's from fiscal year 1938 carry-over funds and 13 B-17B's from current funds in fiscal year 1939.[90]

Although the Air Corps was not obtaining the type aircraft that it felt necessary for the performance of its missions, the War Department procurement actions of the middle 1930's pushed the Air Corps up toward its authorized strength of 2,320 aircraft, which would be attained with fiscal year 1939 purchases. Looking toward the stabilization of Air Corps strength at this figure in annual modernization of it by the purchase of newer replacement aircraft, Secretary of War Harry H. Woodring directed the General Staff to provide him with a five-year aircraft replacement program which would take effect beginning in fiscal year 1940.[91] After it had been drawn up in conferences between Westover and Andrews and had been modified by the General Staff, Secretary Woodring on 18 March 1938 approved the Balanced Air Force Program--better known as the Woodring Program--which authorized the Air Corps to maintain a combat strength of 144 four-engine bombers, 266 twin-engine bombers, 259 attack aircraft, and 425 pursuit aircraft. Although the Air Corps had also asked to purchase a modest number of transport planes, Woodring instead directed that obsolescent bombers would be used for transport purposes. The Air Corps was specifically authorized to purchase 67 four-engine bombers in fiscal year 1940 and 48 in fiscal year 1941.[92]

Although the Woodring Program was said to manifest "an excellent spirit of cooperation with the ultimate objective of the Army," events were brewing which would cause the War Department to suspend heavy bomber procurement. In April 1937, the chairman of the House Appropriations Subcommittee that handled War Department estimates recorded his protest against the "unwise" tendency to build larger

and more expensive bombers such as the B-17. On 23 September, however, Andrews forwarded an elaborate defense of the planned four-engine bomber procurement under the Woodring Program. He argued: (1) that the heavy-load, long-endurance, multi-engine bomber was a powerful instrument of defense, and, in view of the nation's fortunate strategic position and defensive policy, such an airplane, as the basic element of the GHQ Air Force, was essential to the accomplishment of the GHQ Air Force mission; (2) that such an airplane, with bomb and fuel loads interchangeable to a high degree, offered the most economical and efficient means of performing the functions of reconnaissance and bombardment (though not on the same mission); (3) that per ton load of bombs carried or per square mile of area reconnoitered, a multi-engine aircraft was actually cheaper to operate than medium bombers such as the B-10 or the B-18; and that (4), in view of these factors, the process of aircraft and engine experimental development had to continue so that bombers of longer range and superior performance could be made available.[93] On 9 October 1937, Andrews told an audience at the Army War College that: "From some sources comes the statement that the modern development of large bombers is for the purpose of aggressive action on the part of the United States. Often we hear of our large bombers spoken of as 'Weapons of Offense,' 'Superbombers,' and similar appelations. These terms are unfortunate and misleading."[94]

At the same time that General Andrews was pleading the cause of the multi-engine bomber, Army officers were drawing different lessons as a result of reports received from the Italian campaign in Ethiopia and the Spanish Civil War. A course at the Army War College conducted during September 1937 employed a text entitled Air Forces and War, which demonstrated that air power had limited value when employed independently and was chiefly useful as a support for surface operations. The text cited military attache reports received from Spain which said that high-altitude bombing was ineffectual, that the "Flying Fortress" concept had "died in Spain," and that small bombers and fighters, which could operate from cow-pasture facilities, were of the utmost utility.[95] What made the text seem more authoritative was the fact that Colonel B. Q. Jones, a long-time Air Corps officer who had served as a sector commander in the air mail episode and was now an instructor at the Army War College, completely endorsed it in a summary lecture on 9 September 1937. Colonel Jones (who would transfer to the Cavalry in 1939) stated that the Spanish Civil War had demonstrated that the capabilities of air power had not progressed markedly from those displayed in World War I, and he advocated the use of bombardment aviation as long-range artillery, the attachment of attack and bombardment to lower echelons of the Army for use in the same manner as artillery, and the employment of GHQ aviation in close support of ground forces. Seeking to counteract the influence of the Jones lecture in the War Department General Staff level, Lieutenant Colonels Ralph H. Wooten and Walter F. Kraus, who were the Air Corps officers assigned to the G-3 Division, drew up a paper which pointed out that Jones was inconsistent with

approved Army doctrine incorporated in Training Regulations No. 440-15. General Embick, however, refused to accept this finding: "Aviation," he wrote on 23 October 1937, "is a new arm. Our present War Department doctrine has had to be based necessarily on theory and assumption rather than on factual evidence. Now we are getting evidence of that character. No doctrine is sacro-sanct, and of all military doctrines that of our Air Corps should be the last to be so regarded."[96]

Even though the Woodring Program authorized the procurement of four-engine bombers for the Air Corps, the War Department General Staff apparently had approved the program with severe misgivings. The whole matter was thrust back into controversy in May 1938, when General Westover, mindful of the fact that the B-17's were already four years old, requested the War Department to authorize the Air Corps to undertake the development of a new high-altitude, 4,000-mile-range bomber, which would be able to carry two tons of bombs. General Embick exploded into action. "Our national policy," he wrote on 9 May, "contemplates preparation for defense, not aggression. Defense of sea areas, other than within the coastal zone, is a function of the Navy. The military superiority of a plane the size of even the B-17 over the two or three smaller ships that can be procured with the same funds, remains to be established, in view of the vulnerability, air base limitations, and complexity, of the former type. . . . If the equipment to be provided for the Army Air Corps be that best adapted to carry out the specific functions appropriately assigned it under Joint Action as an integral part of the national defense team, there would appear to be no need for a plane larger than the B-17, and only the relatively small number of the latter desirable as potential reinforcing units for Oahu or Panama."[97]

At General Embick's instigation, the War Department referred Westover's request for the development of a high-altitude, long-range bomber to the Joint Army and Navy Board for its consideration and recommendation. On 29 June the Joint Board recommended that it visualized no likelihood that the Army Air Corps would be called upon in time of war to perform missions requiring the use of bombers with greater capabilities than those of the B-17. It believed, however, that the Air Corps would be called upon to perform many missions with aircraft of the less-expensive medium-bomber type. It therefore recommended that the largest proportion of Army bombardment and reconnaissance planes ought to be aircraft smaller than the B-17.[98] As the matter continued under General Staff study, the Assistant Chief of Staff G-4 estimated that the funds required to buy 67 B-17's in the first year of the Woodring Program could otherwise be used to purchase nearly 300 attack bombers, and he recommended that such a change in procurement should be made. General Craig approved the recommended change with the notation: "This is O.K. and solves the problem of 17-B's vs. medium bombers." On 29 July, the War Department informed Westover that the approval which had been given to the Woodring Program was withdrawn and that

estimates for bombardment planes to be procured in fiscal year 1940 would be restricted to light, medium, and attack types.[99] On 6 August, Westover was additionally informed that the developmental expenditures for fiscal years 1939 and 1940 would be "restricted to that class or aviation designed for the close support of ground troops and the protection of that type of aircraft."[100]

In the same season that he curtailed four-engine bomber procurement, General Craig gave indications that he wished to transfer Army responsibilities for coastal defense to the Navy. As a part of the Navy expansion program submitted to Congress in January 1938 by President Franklin D. Roosevelt, the Navy not only requested funds to purchase a large number of patrol aircraft but also asked relief from the proviso which had been incorporated in all naval appropriation bills since 1920 which limited it to not more than six heavier-than-air bases on the coasts of the United States.[101] In the opening phase of the GHQ Air Force war games in the northeastern United States, however, General Andrews employed B-17 and B-18 bombers in sea-search and simulated attack missions against vessels in in-bound toward the United States. In one of these missions, flown on 12 May, three B-17's successfully located and simulated attacks against the ocean liner Rex at a distance of 725 miles out of New York.[102] To the Air Corps the interception of the Rex proved the value of the B-17 for coastal defense, but the demonstration of effectiveness apparently displeased either the Navy or the War Department General Staff. What happened next has never been exactly documented: General Arnold later suggested that the Navy protested the flight of the B-17's so far out to sea and that the War Department agreed to limit Air Corps patrol activities. Lieutenant General Ira C. Eaker, who was then a major, recalled that he was in General Andrews' office when General Craig telephoned and verbally instructed him to limit Army flights to a 100-mile zone off the nation's coasts. According to Arnold, the War Department would not put this order in writing, but it was nonetheless binding and evidently represented a coordinated Army-Navy policy.[103] Indicating that old policies had somehow changed, a revision of the Joint Action of the Army and the Navy manual issued on 8 August 1938 authorized shore-based naval aircraft "to operate effectively over the sea to the maximum distance within the capacity of aircraft development."[104] Army aircraft, on the other hand, had to operate at a reduced range. The report of the annual tactical inspection of the GHQ Air Force made on 28 July 1939 protested: "Navigation training in the GHQ Air Force has suffered because of the 100-miles restriction, except by special permission, placed by the War Department on the distance to which airplanes may fly to sea."[105]

After he had studied the War Department's disapproval of the Woodring Program, Westover procested that the action had set the development of the Air Corps back by at least five years and proposed to restore "hit or miss" procurement. He formally requested that the original Woodring Program be re-established and that the Air Corps be authorized to develop a successor aircraft to the B-17.[106]

The War Department General Staff deliberated Westover's reclama at great length. In the end the G-4 Division provided General Craig with what he described as "a very able study" which was used as the basis for the carefully-weighed War Department decision rendered on 5 October 1938. In this decision the War Department professed to recognize the increased potential of aircraft, but it stated that "none of this progress . . . has changed the conception that the Infantry Division continues to be the basic combat element by which battles are won, the enemy field forces destroyed and captured territory held." It stated that all combat arms ought to be brought up to nearly-equal preparedness status and that it would not be possible "to maintain the Air Corps in a higher state of immediate war readiness than the other arms." It enjoined the Air Corps "to obtain and develop aircraft suitable for the close support of ground troops to the same extent that now pertains with respect to types suitable for strategic and more distant missions." Only one concession was made: in order to provide a replacement for the B-17 at some future date the restriction previously imposed on the development of four-engine bombing planes was rescinded.[107]

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At least in theory the Chief of Air Corps was responsible for the preparation of Air Corps doctrine, and in June 1935 General Westover had directed the Air Corps Board to formulate a uniform tactical doctrine for the Air Corps. With never more than five full-time members, the Air Corps Board found it difficult to complete such a doctrinal manuals project. At the top level in Washington--as Lieutenant Colonel Kraus pointed out--the War Department General Staff exerted "an important influence on the tactical doctrine" of the Air Corps since "such doctrines obviously must be governed to a large extent by the characteristics of the weapons made available."[108] Located at Maxwell Field, the Air Corps Board also was influenced by the fact that the Air Corps Tactical School was far from sympathetic toward official Army doctrine. As a matter of fact, the Tactical School frankly questioned and invited academic disagreement with all doctrine. "Battles have been won too often," stated Captain Laurence S. Kuter, in a Tactical School lecture on 2 March 1938, "by the judicious violation of doctrine. . . .Disagree with doctrine in the conference room--be familiar enough with it to violate it in the conference room--but know it well enough to know what it is and why you are violating it."[109] The School was able to think and teach about absolutes in war which were not necessarily related to current war plans. "Even though air warfare may be waged simultaneously against both the enemy armed forces and the enemy national structure," the School argued in 1938, "the main purpose of the air offensive will be to nullify the former so as to permit breaking down or conclusively threatening the latter."[110]

While the Air Corps Board was mindful of the mandate requiring it to provide a uniform tactical doctrine for the Air Corps, work on

this project could not get underway prior to the final publication of War Department Training Regulations No. 440-15 in October 1935. Even when this regulation appeared, Colonel Rudolph, the Air Corps Board's director, pointed out that it did not contain the fundamental principles which were needed to guide Air Corps development. For one thing, the Army was not definitely committed to provide aviation for coastal defense. Rudolph pointed out these facts to General Westover in May 1936, and Westover verbally instructed the Board to prepare a study entitled "The Functions of the Army Air Force." This study recommended that the War Department commit itself to develop air forces for continental defense, for immediate support of ground combat, and for the conduct of strategic offensive operations. In April 1937, Brigadier General H. C. Pratt, commandant of the Tactical School and ex officio president of the Air Corps Board, requested that the War Department approve these functions as a guide for both the Board and the School. This the War Department refused to do, and it noted that such strategic questions had no place in an Air Corps field manual.[111]

In response to the War Department admonition, the Air Corps Board reduced the scope of its field manuals project to two volumes, the first to deal with tactics, technique, and training and the second to deal with maintenance, base functions, logistics, and staff data. Giving first priority to the first volume after April 1937, the Board completed a draft which was forwarded to the Office of Chief of Air Corps on 11 March 1938. General Pratt pointed out that the manual represented "an enormous amount of work, thought, and study . . . and constitutes the best available thought on the use of a D-day air force."[112] After some suggested changes in wording were made, the Office of Chief of Air Corps submitted the draft manual to the War Department on 14 September 1938. Within the General Staff the manual received six months of review, and on 29 March 1939 Major General R. M. Beck, Assistant Chief of Staff G-3, returned it with a suggested outline for its revision. Beck stated that the manual ought not to make any mention of "independent air operations" or of air attacks which were designed to destroy hostile civilian morale and that discussion of air action against naval forces should be avoided since this was within the province of Joint Board papers. Beck also provided a statement of basic Air Corps doctrine which had been drawn up in his division and which he directed would become the first chapter of the Air Corps manual. The basic tenor of this G-3 doctrinal statement, which was not to be changed without coordination with G-3, left little doubt that it was the intention of the War Department General Staff to develop and employ aviation in support of ground operations. "The mission of the air component of the Army," the statement read, "is to perform effectively the air operations devolving upon the Army in its assigned functions in the National Defense. . . . Air operations beyond the sphere of action of the surface forces are undertaken in furtherance of the strategical plan of the commander of the field force."[113]

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In the spring of 1938, while General Westover was providing theoretical arguments in favor of long-range bombers to the War Department General Staff and the Air Corps Board was completing an equally-theoretical statement of proposed Air Corps doctrine, Brigadier General Arnold, then Assistant Chief of Air Corps, expressed doubts that the roles and missions of the Air Corps could be justified on an abstract basis. Early in June, Arnold knew increasing concern about the forces of aggression which were building up in Europe and which could well threaten the Western Hemisphere. He accordingly conceived of the need for a study of the employment of the Air Corps in support of the national policy of the United States as represented by the Monroe Doctrine. He thought it best that the study remain unknown to the War Department until the Air Corps had "crystallized its own thought." Among its other undertakings, the Air Corps Board was already working on a study to determine the most effective methods of employing aircraft in defense of the continental United States. Arnold accordingly assigned the secret project relative to the Monroe Doctrine to the Air Corps Board on 6 June, and, when General Pratt protested that neither the Tactical School nor the Air Corps Board was equipped for making war plans, General Westover told him that the Board would nevertheless undertake the study with such assistance as it could get from the Tactical School faculty.[114]

Because of a shortage of personnel during the summer vacation season at Maxwell Field, the Air Corps Board made little progress on the Monroe Doctrine before August 1938, when Colonel J. H. Pirie and Major Orvil A. Anderson reported as the Board's director and recorder. As Anderson later recalled, the Air Corps Board had never before addressed a specific situation which so clearly demanded long-range bombers and quasi-independent air actions as did the requirement for an air defense of the Monroe Doctrine. After an analysis of the potential military requirements for support of the Monroe Doctrine, Anderson, who drew the logistical requirements for the study, was able to demonstrate the inherent efficiency of long-range aircraft in terms of planes, personnel, and bases required to defend the North American continent and the South American continent down to the 36th parallel against seaborne threat or invasion. The study was not developed in full detail because Arnold, who became Chief of Air Corps on 22 September 1938 following Westover's death in an air accident, demanded that it be put in his hands not later than 18 October, but it nevertheless recommended the development and procurement of bombardment and reconnaissance aircraft with a radius of action of at least 1,500 miles, a service ceiling of 35,000 feet or more, and the highest speed consistent with its range and altitude.[115] General Arnold immediately approved the Air Corps Board report, and, believing that the appeasement which had been manifested at Munich at the end of September portended an "almost certainty" that Germany would regain her former African colonies and would use them as a

springboard for the establishment of points of strength in South America, Arnold began to argue that the Air Corps needed seven heavy bombardment groups and an equal number of heavy reconnaissance squadrons for stationing in the United States, Alaska, Panama, and Hawaii to close the "aerial doors" to the United States.[116]

3. Mobilization for Western Hemisphere Defense

In spite of the demonstration that Adolf Hitler had capitalized the superiority of the Luftwaffe at Munich at the end of September 1938 to apply pressure upon a fearful England and France, the American War Department continued to be committed to a phased-augmentation of all of its basic forces, including the Air Corps. In October and early November, General Arnold submitted a number of proposals to the War Department looking toward an increase in Air Corps strength and an immediate expansion of aircraft production industries, but General Craig could not see how these actions could be taken without upsetting the orderly balance of Army forces.[117] Whether any of the Air Corps proposals got through the General Staff to the White House appears in doubt, but President Roosevelt had his own sources of information and he was going to make decisions independently of the recommendations of the War Department. In a confidential letter on 11 July 1938, Ambassador Hugh Wilson in Berlin was emphatic in his discussion of the German air-potential either for war or political blackmail. In a long conversation with Roosevelt on 13 October, William C. Bullitt, the Ambassador to France, brought out the belief of the French military chiefs that Hitler's power rested upon his possession of an already large air force that was capable of rapid expansion from huge airplane factories already in operation. Both the British and French wanted the United States to increase its aircraft production rapidly in order that they might be able to buy planes to build up aerial fleets that would either overawe Hitler or, if war came, could help to defeat the Axis without American armed intervention.[118]

At a meeting of civilian and military leaders at his White House office on 14 November 1938, President Roosevelt issued instructions which General Arnold later described as the "Magna Carta" of the Air Force. Roosevelt announced that airplanes--not ground forces--were the implements of war which would have an influence on Hitler's actions. In view of the air orders of battle of the Axis nations, he continued, the United States had to prepare itself to resist assault on the Western Hemisphere "from the North to the South Pole." Roosevelt's desired objective was an Army air force of 20,000 planes and an annual productive capacity of 24,000 aircraft, but he did not think that Congress would approve more than 10,000 planes--2,500 trainers, 3,750 combat line, and 3,750 combat reserve--and this became the objective. Roosevelt's plan also called for the construction of seven government-financed aircraft plants, two of which would be put into operation, the remainder to be temporarily in reserve.[119]

President Roosevelt's announcement that he would present an Air Corps expansion program to Congress in his State of the Union message early in January 1939 left little time for planning. At this time, the Office of Chief of Air Corps had no staff agency that was able to state immediately what the complexion of the Air Corps strength ought to be. Arnold quickly began to transfer into his office a roster of experienced Air Corps officers which included Lieutenant Colonels Carl Spaatz, Joseph T. McNarney, and Ira C. Eaker, and Major Muir S. Fairchild. When Captain Kuter stopped on a flight at Bolling Field to refuel, he found orders to report to the basement of the Munitions Building where Major Fairchild and Captain Kenney were attempting to determine how big an air force was needed and what it was needed for. Many of the answers came from an Air Corps Tactical School map problem which had focused on the defense of the Western Hemisphere against an Axis air threat from the direction of Dakar and Natal. Largely on the basis of this strategic concept, the Air Corps stated requirements for a 5,500 airplane program which promised to fall within the cost figure of $500 million which Roosevelt had said he would request for airplanes. When the plan went to the War Department General Staff for review, however, the War Plans Division insisted that an augmentation of ground combat strength would have to accompany the Air Corps buildup in order to combat Axis intrigue in South America. When Roosevelt was briefed on the final plan, he complained that the War Department offered him everything except the airplanes he wanted, and on 12 January 1939 he asked Congress for $300 million--instead of $500 million--for the Air Corps. In three months Congress passed the emergency Army air defense bill substantially as requested: the Air Corps was authorized a total strength of 5,500 aircraft and given authority to procure 3,251 new planes.[120]

As finally enacted, President Roosevelt's somewhat hastily managed Army air defense program promised a larger expansion of American aviation production facilities than an increase in the size of the active Army Air Corps. The War Department, however, inclined a more sympathetic ear to the Air Corps in part because of the personal influence of Brigadier General George C. Marshall, who replaced General Embick as Deputy Chief of Staff. Employing arguments long used by Air Corps officers, General Marshall on 29 November 1938 cited to General Craig numerous reasons why it was essential for the Air Corps to purchase maximum quantities of B-17B aircraft.[121] Yielding to Arnold's argument that unity of purpose and of planning were necessary for the attainment of the Air Corps mission, the War Department on 1 March 1939 placed the GHQ Air Force under the immediate responsibility of the Chief of Air Corps rather than the Chief of Staff.[122] In view of the impending retirement of General Craig on 1 September 1939, General Marshall became Acting Chief of Staff on 1 July. That same day he assembled ten new Air Corps officers who were joining the General Staff and told them that they had a war assignment. On 4 August, Marshall also brought Major General Andrews to the General Staff as Assistant Chief of Staff G-3.

Andrews immediately organized an Air Section in the G-3 Division, thereby causing "lifted eyebrows" all over the Munitions Building.[123] On 24 August, the War Department's old restriction against Air Corps flights of more than 100 miles out to sea was finally rescinded by the issuance of an Air Corps circular which permitted air operations over the sea to the maximum range of multi-engine aircraft.[124]

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President Roosevelt's decision to emphasize air power touched off an expansion of the Army Air Corps, but it did not end the controversy as to what the mission of the Air Corps should be. Looking toward this end on 23 March 1939, Secretary of War Woodring appointed an Air Board to consider and recommend the fundamental policies which would govern the tactical and strategical employment of the Army's air force under current national policies, including hemispheric defense. Woodring designated Arnold as president of the Air Board and named as members Major Generals Andrews and Beck and Brigadier General George V. Strong, the latter being the Assistant Chief of Staff War Plans Division.[125] Privately to General Arnold, Lieutenant Colonel Spaatz urged that the Air Board could not perform its task until it first determined the Air Corps' mission, the doctrines for its employment, and the characteristics of the forces it would require.[126] At its first meeting on 31 March, the Air Board agreed to study each of these matters.[127]

In order to provide an input into the War Department Air Board, the Air Corps Board at Maxwell Field was required to expedite the preparation of its study on "Employment of Aircraft in Defense of the Continental United States," and, to hasten the work, the Air Corps Board found ideas in studies made at the Tactical School and in the answers to a questionnaire which it sent out to the GHQ Air Force and its unit commanders. Completed on 7 May 1939, the Air Corps Board study visualized the primary purpose of the national defense as being to hold U.S. territory inviolate, to discourage an enemy from attempting an invasion, and to defeat an invasion if it were attempted. The Board assumed that an enemy nation would employ combined air, ground, and naval forces in a series of expeditionary operations designed to establish bases progressively closer to vital areas of the United States. It defined air power as "a measure of a nation's capacity to wage air warfare," and it stated that air power would be effective only if it could strike an enemy decisively and simultaneously preserve its own integrity. Under this definition, the range of bombardment aircraft both increased the ability of a plane to apply pressure against the enemy and increased the security of the bombardment bases against enemy attack. Since air forces were said to lack the ability to control the air to a degree that would positively deny hostile air operations, an air force could be defeated only by attacks against its bases. The report asserted that the mission of air power was the offensive, and it accordingly argued that primary emphasis should be given to the development of

striking force aviation (bombardment and attack) and secondary emphasis to security force aviation (pursuit and fighter) and to information aviation (reconnaissance and observation). While it would be desirable to have fighter escort for bombardment missions, such was believed to be impractical. The Board recommended that the main aircraft production capacity should be devoted to the production of the bombardment planes, which would be of greatest value in the initial phases of an attack against the United States. Although it was apparently valuable only for local air defense, pursuit aviation would be required and ought to be assisted by an aircraft warning service.[128]

The GHQ Air Force replies to the Air Corps Board questionnaire differed from the Board report in a few respects, principally in the characteristics of the aircraft desired for development. Where the Board wished to standardize chiefly upon 1,500-mile bombers required for hemisphere defense, the GHQ Air Force wanted a family of bombers, including a heavy bomber with a 5,000-mile radius to make reprisal attacks against an enemy's homeland, a medium-range bomber with a 2,500-mile radius for hemisphere defense, a short-range bomber with a 1,500 mile radius to attack hostile naval forces, and an attack bomber with a 500 to 750-mile radius to support ground forces. It wanted reconnaissance aircraft with ranges equal to bombers, a speedy 350-mile range interceptor, and a 1,500-mile range fighter. Like the Board, the GHQ Air Force assumed that bombers would not require fighter escort, but the 8th Pursuit Group in a subjoined statement said that the Air Corps had a requirement for a fighter aircraft that would be able to accompany bombers over enemy territory and render support in the vicinity of defended objectives. The 1st Pursuit Group, on the other hand, did not think that bombardment would require pursuit protection unless a situation demanded bomber operations over a prolonged period against a single objective or a number of objectives in a specific limited area.[129]

As formally undertaken on 12 June 1939, the Aviation Expansion Program authorized an approximate three-fold expansion of the combat strength of the Air Corps, and the construction of hemisphere defense bases in the northeastern and southeastern United States, in Alaska, in Puerto Rico, and in Panama.[130] The Air Corps planned to attain within two years an over-all strength of 24 groups--including five heavy bombardment, six medium bombardment, two light bombardment (formerly attack), seven pursuit interceptor, two pursuit fighter, one composite (for the Philippines), and one demonstration group (for Maxwell Field). The program also included nine corps and division observation squadrons. Each of the heavy (four-engine) groups and medium (twin-engine) groups of bombardment would have a reconaissance squadron of the same basic type aircraft.[131] Of the 5,500 aircraft in the expansion program, 2,084 combat aircraft were to be assigned to tactical units, 1,341 combat aircraft were to be maintained in a rotating reserve, and 2,073 training aircraft were to be in service or in reserve. The rotating reserve aircraft were apparently authorized in order to expand American aircraft production capacity, but

the Air Corps believed that these planes would permit units to maintain themselves at full strength and that they would also replace any combat losses incurred between M-day and the time that aircraft facilities could meet wartime demands.[132]

New aircraft for the Air Corps were already on order or were quickly placed on order. In fiscal year 1939, when heavy bomber purchases had not been authorized, the Air Corps had already issued procurement orders for 206 Douglas A-20 attack bombers and for 200 Curtis P-40 pursuit interceptors. In fiscal year 1940, it ordered 70 B-17's and, in order to have a second source of production for four-engine bombers, it procured a service-test quantity of 16 new Consolidated B-24 aircraft. As replacements for the twin-engine B-18's, it ordered 183 North American B-25's and 201 Martin B-26's. Ordered as pursuit fighter planes were 66 Lockheed P-38's and as pursuit interceptors were 95 Bell P-39's. As a potential additional source for pursuit fighter aircraft, the Air Corps ordered a single experimental XP-47 from Republic Aircraft. Early in 1939, the Air Corps Materiel Division conducted investigations based on what had been learned from the design of the XB-15 and the XB-19. In May 1940, the Air Corps would be able to circulate a request for bids for the production of prototype bombers which would have a tactical operating radius of 2,000 miles, a cruising speed of 200 miles per hour, and a normal bomb load of 2,000 pounds. In the autumn of 1940, it would order an XB-29 from Boeing and an XB-32 from Consolidated Aircraft.[133]

After deliberating through a summer of sweeping changes, the War Department Air Board completed a report which was approved by General Marshall with a few changes on 1 September and by Secretary Woodring on 15 September 1939. The report declared: "Air Power is indispensable to our national defense, especially in the early stages of war. . . . Our aviation in peacetime, both its organization and its equipment, must be designed primarily for the application of Air Power in the early days of war. The basis of Air Power is the bombardment plane." Assuming that "a well led and determined air attack once launched may be interfered with, but it can rarely, if ever, be entirely stopped by local defense," the report stated that "the only reasonable hope of avoiding air attack is in the possession of such power of retaliation as to deter an enemy from initiating air warfare." Because of the vital relationship of air bases to air power, the report stated that such bases would be primary air objectives. For the defense of the United States and its possessions, aircraft with superior range were vital. The board recommended a 2,000-mile radius heavy bomber and a 1,000-mile radius medium bomber, and it judged that a 500-mile radius pursuit fighter would satisfactorily perform such support as bombers might require. The report functionally divided air power into Army Aviation--to include training and special purpose aviation, observation and liaison, and oversea garrison aviation--and GHQ Aviation--which included striking and defense forces. The major function of the GHQ Aviation striking force was to attack and destroy enemy aviation at its bases, whether on land or sea; the GHQ Aviation defense forces were intended only to

provide reasonable protection to the most vulnerable and important areas. GHQ Aviation was also to include a nucleus of aviation which would be properly trained to support ground troops and would be capable of expansion to meet war requirements. In General Marshall's words, the Air Board report established "for the first time a specific mission to the Air Corps, and provides for its organization on functional lines."[134]

Given the approval of the Air Board report, Lieutenant Colonel Carl Spaatz, chief of the Air Corps Plans Section, called for an early completion of the Air Corps basic doctrinal mannual which had been held up for so many years. Early in October 1939, Spaatz called Colonel D. B. Netherwood, who was now the director of the Air Corps Board, to Washington, where, in conferences with the new G-3 Air Section, Netherwood not only received permission to junk the old statement of basic doctrine which had been prepared by the G-3 but also secured authority to prepare a small basic doctrinal manual which could be elaborated by several more detailed field manuals. A draft of the basic manual was put together while Netherwood was in Washington, and the completed project was published as Field Manual 1-5, Employment of the Aviation of the Army, on 15 April 1940.[135]

In approving the Air Corps basic field manual, which superseded Training Regulations 440-15, General Andrews remarked that the manual did not endorse radical theories of air employment. As a matter of fact, the portions of the manual dealing with mission, characteristics, and purposes of aviation were lifted bodily from the Air Board report. The manual continued to respect the old relationships between air and ground warfare: portions of GHQ aviation could be attached to armies or corps for the accomplishment of specific missions, but they were to revert to GHQ control as soon as the necessity for the attachment ended. Reconnaissance, observation, and liaison squadrons were to be assigned or attached to armies, corps, and divisions. Strategic air operations were to be undertaken by bombardment aviation "to nullify the enemy's war effort or to defeat important elements of the hostile military forces." Pursuit aviation was to be designed for the defense of important areas, installations and forces, and for the protection of other aircraft in flight. Since pursuit aircraft would have a shorter range than bombers, they would need to be based well forward of the aircraft which they might be called upon to escort.[136]

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The report of the War Department Air Board and War Department Field Manual 1-5, Employment of the Aviation of the Army, were based upon a theory of air warfare, but, with the German invasion of Poland and the beginning of World War II on 1 September 1939, air warfare was no longer theoretical but had become an actuality. The announced policy of the War Department continued to be one of planning and building for an adequate defense of the Western Hemisphere rather than for the preparation of expeditionary forces. The War Department

nevertheless anticipated that the war in Europe would indicate the desirability of many changes, particularly in reference to air forces, since this was the first time in history that powerful air forces had been available for use in a war between major powers.[137]

Although the initial Luftwaffe operations in Poland were mainly in support of German ground forces, American air officers generally agreed in the autumn of 1939 that their theoretical doctrines were being substantiated in combat. At the Air Corps Tactical School, Lieutenant Colonel Donald Wilson wrote in September 1939 that Hitler's air force had "voluntarily undertaken the job of demonstrating our theories." The Luftwaffe had established control of the air by destroying the Polish air force on its airfields, it had conducted strong attacks against Poland's lines of communications, and then it had supported the invading ground armies in a blitzkrieg attack.[138] Operating under conditions of almost complete air superiority, the JU-87 Stuka dive-bomber proved to be a very effective weapon for the delivery of firepower and of terror. Air Corps officers, however, were quick to note that the Stuka was operating only against a little small calibre antiaircraft fire and they predicted that it would not be able to defend itself against determined opposition in the air.[139]

As he looked at the German campaign in Poland, however, General Arnold was far from happy. On 14 November 1939 Arnold stated that the doctrine so widely propounded in Air Corps circles for so many years to the effect that fighter aircraft could not shoot down large bombardment aircraft which were flying in defensive formations had been "proven wholly untenable." Arnold blamed the problem on the teachings of the Air Corps Tactical School and the fact that older and higher-ranking Air Corps officers had sought to avoid strenuous service in pursuit units, but he called on Major General Delos C. Emmons, commander of the GHQ Air Force, to submit a study looking toward the development of pursuit tactics, planes, and equipment. In the GHQ Air Force, Major Harold L. George, commander of the 96th Bombardment Squadron, advised Emmons: "There is no question in my mind but that American bombardment units could not today defend themselves against American pursuit units." A meeting of pilots in the 8th Pursuit Group, reported by Lieutenant Colonel W. E. Kepner, unanimously agreed that existing types of bombers would be subject to a probably 50 percent loss from attacks by existing-type fighters, unless the bombers operated at night. On the basis of these opinions, the GHQ Air Force stated: "Aerial operations of the present European conflict confirm the results of the World War; that is that the present bombardment airplane cannot defend itself adequately against pursuit attack."[140]

In the winter of 1939-40, the Air Corps gravely considered the matter of pursuit and bombardment, but no one found any definite answers. Even though prevailing testimony indicated that existing pursuit aircraft were already superior to existing bombers, the GHQ Air Force recommended means of improving pursuit aircraft and the caliber of pursuit personnel. Antedating what would later be called the weapon-system concept, the GHQ Air Force suggested that a pursuit

plane should be built around a previously determined armament rather than being built as an airframe and fitted with whatever armament possible.[141] Working through the Christmas holidays, the Air Corps Board completed a report on "Fire Power of Bombardment Formations" on 3 January 1940. This report noted that the fire power of American bombers was decidedly greater than that of European bombers. It recommended increased numbers of guns as practicable, better sighting systems, and increased gunnery training. It also recommended that consideration be given to the development of a long-range fighter, a means whereby bombers could refuel accompanying fighters in flight, or a means by which bombers could carry, release, and recover high-performance pursuit aircraft. Despite the demonstrations of the vulnerability of bombardment aircraft, the Board recommended that no thought should be given to a reduction of the importance attached to bombardment aviation in Air Corps doctrine. While pursuit escort was "highly desirable" for bomber penetrations into heavily-defended areas in order to minimize bombardment losses, the absence of such pursuit protection should not justify the abandonment of important missions.[142]

During the spring of 1940 a steady stream of observer reports from France and England kept the War Department informed of the doctrinal lessons of the belligerents. These reports noted that the Luftwaffe preserved the integrity of its air fleets and air corps and employed them as unified and flexible striking forces in support of the blitzkrieg. On 11 and 12 May, for example, two air fleets supported the German northern army group in Belgium and Holland, but on 13 and 14 May the whole air mass shifted southward to place a tremendous concentration of fire on French defenses at Sedan in support of a few armored divisions. The British initially attached a Royal Air Force component to the British Expeditionary Force in France and maintained an independent Advanced Air Striking Force on the continent. On 15 January 1940, however, the British Air Ministry put all this aviation under the Commander, British Air Forces in France, who was directed to use the whole force to the best possible effect in support of the Allied armies as a whole. From Paris, Lieutenant Colonel Kenney reported that captive observation balloons were completely impracticable, as were slow and vulnerable observation planes.[143]

Even though he remained committed to heavy bombardment, General Arnold continued to be troubled about the ability of bombers to operate in the face of strong hostile fighter operation. Accordingly, on 2 March 1940, he instructed the Air Corps Board to obtain a consensus at Maxwell Field as to the types of pursuit and fighter aircraft required and the actions which could be made to develop them from existing aircraft types. Taking into consideration the existing defensive mission of the Air Corps, the Board report, rendered after seven days of study, recommended that highest priorities be given to the development of a fighter interceptor for local air defense. The only possible solution that the Board could see for the development of a bomber escort aircraft was to adapt some

bombers to defensive purposes. While the Board was not entirely certain that such would be necessary if the bomber defenses were strengthened by additional machine guns, it suggested that some bombardment planes might be very heavily armed with extra guns and gun turrets. Three of these special aircraft could be employed as the rear element of a nine-plane bombardment flight in order to defend the vulnerable rear area of the formation from attacks by hostile fighters.[144] This solution apparently caught the attention of General Marshall, who asked Arnold on 13 June to consider the practicability of developing an "air cruiser" plane which would perform both air combat and bombardment missions. At this juncture, however, Arnold argued that the Air Corps had to emphasize production of existing equipment instead of research and development on an entirely new aircraft.[145]

As time passed, the German victories over British and French forces in Holland, Belgium, and northern France caused American air leaders to increase rather than to diminish their requirements for heavy bombers. On 12 June 1940, General Emmons advised Arnold that Great Britain had made a serious mistake in building a defensive air force consisting largely of interceptor fighters and light reconnaissance bombers. Emmons suggested that if the Royal Air Force had possessed a stronger bomber force it could have effected heavy destruction on the German troop and supply columns which had jammed the roadways leading toward Dunkirk. He recommended that the United States must materially increase its long-range bomber force.[146] On 4 June 1940, Brigadier General J. E. Chaney, commander of the new Air Defense Command at Mitchel Field, addressed a letter to General Marshall which argued that the United States must develop a long-range bomber force which would be able to carry destruction to Germany. Chaney believed that a huge force of bombers, capable of taking the war to Berlin, would prove to be the only effective threat to German aggression and permit counter air force operations against any attempt Hitler might make to establish bases in or near the Western Hemisphere. Chaney's letter was endorsed by both Andrews and Arnold.[147]

These Air Corps assessments had hardly been put on paper before the Luftwaffe launched into the Battle of Britain and commenced a phase of air combat which engendered still more thinking. Serving in London as a special observer from May to September 1940, Colonel Spaatz had a first-hand view of some of the heaviest fighting of the Luftwaffe blitz. As shown by his diary and his reports, Spaatz quickly reached a conclusion that the Germans had developed "a mass of air geared to the Army" which was not going to be able to prevail against the "real air power" developed by the British. German bombers were inadequately armed and lacked capabilities for heavy bombing attacks. Held to close support of bombers, German pursuit forces were unable to gain a general control of the air. Spaatz nevertheless noted that British airmen discredited the American concept that a hostile air force was easiest destroyed on the ground. They had found a well-dispersed air force to be an exceptionally

difficult bombing target and they believed that it was more efficient to destroy hostile aircraft in the air by fighter attack. When enemy planes were shot down, both planes and crews were destroyed. "General opinion," Spaatz noted in his diary, "is that German fighters will not attack a well-closed-in day-bombing formation."[148] Visiting Great Britain in August and September 1940, Emmons reached much the same conclusion. He attributed the severe losses taken by the Luftwaffe to the large volume of fire that could be delivered by British fighters, the poor rear-hemisphere gun defenses of German bombers, and the German employment of vulnerable dive-bombing tactics, large inflexible formations, and poor air discipline. Emmons also reported that the British believed that six-plane formations of bombers, with sufficient guns and armor, could conduct daylight attacks without sustaining serious losses.[149] Early in 1941, Spaatz urged that every effort be made to expand American production of four-engine bombers. The British, he said, had committed themselves to short-range planes only to find that they urgently needed long-range bombers.[150]

In August and September, General Emmons and Colonel Spaatz also learned the well-kept secret that the British had developed a system of electronic early warning and fighter control, without which the R.A.F. Fighter Command probably could not have defeated the Luftwaffe during the Battle of Britain.[151] Actually, the basic principle that very short radio waves produced echoes when reflected from targets had become known quite early by scientists in all nations of the world. In 1925, scientists of the Carnegie Institution and Naval Research Laboratory had devised and used radio pulse ranging to explore the ionosphere. Using these same principles, the Naval Research Laboratory and Army Signal Corps scientists had developed prototype radio ranging and detection equipment, which would later be called "radar." On 18 and 19 May 1937, the experimental Signal Corps radar equipment and also an infra-red aircraft detector were demonstrated to the Secretary of War and a group of high-ranking Army officers, including General Arnold. On 21 March 1938, the New York Herald Tribune printed a very accurate and comprehensive description of radar. The Army had begun to develop a radar set to direct antiaircraft artillery guns and searchlights, and the Air Corps had stated a requirement for the development of an early-warning radar which would have a range of 120 miles.[152] Electronic development in Germany had produced a prototype radar by 1938, but neither the Wehrmacht nor the Luftwaffe considered the production of radar equipment sufficiently important to divert available facilities to it. In 1939, however, Hermann Goering, the Luftwaffe commander, preempted some 100 warning radar sets which had been ordered by the German navy and sited them along Germany's coasts and borders.[153]

Only the British had made a full development of the potential of radar. Recognizing the vulnerability of the British Islands to German air attack, the British Air Ministry had established a special Committee for the Scientific Survey of Air Defense, under the chairmanship of Henry T. Tizard in 1934. In a highly secret

program, Robert Watson-Watt and other scientists had devised radio direction finding equipment, and a chain of these R.D.F. stations was sited to guard Britain in a hurried program following Munich. As a result of expedited research, the British developed air-to-surface vessel (ASV) search radar by September 1938 and experimental airborne-intercept (AI) radar by June 1939. The demonstration of a working model of a new type of microwave radar tube in February 1940 portended an additional important breakthrough in the whole field of radar.[154] "Unless British science had proved superior to German," Winston S. Churchill would subsequently write of the Battle of Britain, "and unless its strange sinister resouces had been effectively brought to bear on the struggle for survival, we might well have been defeated, and being defeated, destroyed."[155]

In the United States during the 1930's the existence of radar was a "heavy secret," and the air warfare theorists at the Air Corps Tactical School were uninformed about its potential. As long as aircraft warning services depended upon visual reports of ground observers (who could not be stationed within enemy territory) the problem of massing fighter defense against a bombing attack was practically insurmountable considering the great advantages possessed by the bomber force in selecting the time, altitude, density, and place of attack. In the 1938 Air Corps maneuvers, pursuit units had been unable to locate inward-bound bombers except on the occasions when the bomber crews intentionally revealed their positions by radio transmissions, thus allowing the pursuit pilots to get some intercept training. In short, the theorem that "a well planned and coordinated bombardment attack, once launched, cannot be stopped" was heavily based on the belief that pursuit aircraft would have great difficulty locating bombardment formations.[156] Looking backward at the air doctrine of the 1930's, Major General Haywood S. Hansell later commented that the Air Corps Tactical School had correctly assumed that modern bombers could penetrate to their targets within enemy nations, but the margin of the capability of the offense over the defense had been much narrower than anyone had believed. Hansell nevertheless remarked: "Our ignorance of radar development was probably a fortunate ignorance. Had this development been well known it is probable that theorists would also have reasoned that, through the aid of radar, defensive forces would be massed against incoming bomber attacks in a degree that would have been too expensive for the offensive. As it ultimately developed the School's basic concept that the offensive enjoyed a peculiar advantage in air warfare did later turn out to be substantially correct."[157]

In the winter of 1940-41, however, General Arnold was not inclined to be very philosophical. In view of reports from the Battle of Britain, he stated in September 1940 that the Air Corps might well have to conduct the bulk of its bombardment operations at night.[158] Based upon already completed development, the War Department placed production orders for SCR-268 antiaircraft artillery radars and for a new SCR-270 early-warning radar. Early in September 1940, Sir Henry Tizard brought the secret of the improved microwave radar to

Washington.[159] In February 1941, Arnold complained that air defense was getting "nowhere fast." Asked whether the United States should produce existing early-warning radars or delay production in the expectation of getting improved microwave equipment, he stated that the Air Corps "was badly in need of detector equipment for tactical use" and required equipment without delay for training purposes, even if it was not the ultimate type which would be produced.[160] Arnold may well have been thinking about the new capabilities of electronic-directed pursuit when he wrote: "During daylight in good weather, when pursuit aviation is present in strength in an area, it can pretty nearly bar the air to the bomber."[161]

4. Mobilizing the Army Air Forces for War

To President Roosevelt the German victories in Europe in the spring of 1940 presaged increased aerial threats to the Western Hemisphere. Apparently selecting a good round number which would jolt the nation's thinking, Roosevelt asked Congress on 16 May to provide 50,000 planes for American defense and a productive capacity for at least that many more planes each year. In addition to building up the Army and Navy, Roosevelt had in mind an "even Stephen" division of new bombers with the British.[162] Shortly after he took office, the new Secretary of War, Henry L. Stimson, declared on 9 August: "Air power has decided the fate of nations; Germany, with her powerful air armadas, has vanquished one people after another. On the ground, large armies had been mobilized to resist her, but each time it was additional power in the air that decided the fate of each individual nation."[163]

Despite the President's willingness to talk about large numbers of planes and an increasing awareness that the United States might be required to fight overseas, the expansion of the Army Air Corps was related to the defensive Rainbow War Plans, which originated in the General Staff's War Plans Division and were put into final shape by the Joint Army and Navy Board. With the approval of Secretary Stimson on 12 July 1940, the Air Corps was authorized to expand to 54 combat groups and 6 transport groups. Under this program--called the Army's First Aviation Objective--the Air Corps authorized 4,006 combat aircraft, including 498 heavy, 453 medium, and 438 light bombardment, 1,540 pursuit interceptors and 220 pursuit fighters, 539 observation, liaison, and photo planes, 252 transports, and 66 amphibian aircraft. The group strength included 14 heavy, seven medium, and seven light bombardment groups, five fighter and 18 interceptor pursuit groups, and three composite groups. The large increase in pursuit units over the old 24 group program apparently required little justification, but both Congress and the National Defense Advisory Commission asked questions about the heavy bombers. Arnold defended the requirement for the heavy bombers by citing the strategic mobility they afforded.[164] Assistant Secretary of War Robert P. Patterson explained to the National Defense Advisory Commission that the range of four-engine aircraft was mandatory

for the distances involved in hemispheric defense, and that, in the event of military operations in the Far East, long-range bombers would be the only weapons which could exert immediate pressure.[165]

Hardly before the First Aviation Objective was underway, General Marshall discussed the national need to expedite aircraft production in government-owned plants with representatives of the Air Corps Plans Division on 24 October 1940, and at this time Marshall asked whether the Air Corps ought not to visualize expansion beyond the 54 group program. As a result or this conversation, the Air Corps planned a Second Aviation Objective, which was not so much designed to increase the number of air groups as to provide an internal augmentation of existing units. As far as possible, the Air Corps handled an additional number of aircraft by increasing the unit equipment of squadrons, by activating one additional squadron in bombardment and transport groups, and by the addition of two squadrons (one designed to be a training squadron) in each interceptor and fighter pursuit group. In addition to these augmentations, the Air Corps expanded its over-all force objective to 84 groups, including 24 heavy, 12 medium, and 13 light bombardment, five fighter and 18 interceptor pursuit, 11 observation and one photographic groups. Not included in the 84 group strength were seven transport groups. Because General Marshall announced that he wanted to see significant numbers of JU-87 Stuka type aircraft in the program before he would approve it (and postively overruled the objection of air officers that dive-bombers would be very vulnerable), the 84 group program included 12 groups of dive bombers in the light-bombardment category. On the basis of this planning, the War Department approved the plans for the Army's Second Aviation Objective on 14 March 1941, thus authorizing a combat strength of 7,799 planes, including 1,520 heavy bombers, 1,059 medium bombers, 770 light and dive bombers, 2,500 pursuit interceptors, 525 pursuit fighters, 806 observation, liaison, and photo, 469 transport, and 150 amphibian aircraft.[166] The Second Aviation Objective was designed and was justified as being necessary for hemispheric defense.

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Early in 1940, General Arnold opposed suggestions for a Congressional reorganization of the armed forces designed to provide air autonomy because he felt that the main requirement was to get on with the expansion of the Air Corps. With the expansion of the Army, however, General Marshall found it more and more difficult to get decisions through the War Department General Staff. Making a move to decentralize the War Department, Marshall established General Headquarters, U.S. Army, under Brigadier General Leslie J. McNair at the Army War College on 26 July 1940. According to the plan for the decentralized GHQ field headquarters, General Headquarters received command over the GHQ Air Force. The War Plans Division assured General Arnold that this development would cause no substantial change in the relationship between the Chief of Air Corps

and the GHQ Air Force,[167] but neither this disclaimer nor the explanation that the establishment of General Headquarters meant no more than an effort to take training out of the G-3 Division of the General Staff satisfied Arnold, who ordered his Plans Division to prepare a study showing why the GHQ Air Force should remain under the Chief of Air Corps. In lieu of the General Headquarters plan, Arnold formally proposed that three Army deputy chiefs of staff, one each for ground, air, and service forces should be established and that each should have broad authority under the Chief of Staff to control the field activities of their respective forces. The War Department General Staff disapproved the plan, observing: "The Air Corps believes that its primary purpose is to defeat the enemy air force and execute independent missions against ground targets. Actually, its primary purpose is to assist the ground forces in reaching their objective." As an immediate compromise, however, Marshall appointed Arnold as Acting Deputy Chief of Staff for Air on 30 October 1940. Major General George H. Brett became Acting Chief of Air Corps, and on 19 November 1940 the GHQ Air Force was removed from the control of the Office of Chief of Air Corps and placed under General Headquarters.[168] In December 1940, General Brett further recommended that there ought to be three Assistant Secretaries of War to correspond to the three Deputy Chiefs of Staff. Late in December, Secretary Stimson named Robert A. Lovett as his special assistant for all air matters, and in April 1941 Lovett would be named to the post of Assistant Secretary of War for Air which had been vacant since 1933.[169]

The Army's First Aviation Objective necessitated an expanded subordinate command organization within the GHQ Air Force. On 26 February 1940, the GHQ Air Force had already established an Air Defense Command at Mitchel Field, and it planned to establish a Bombing Command, which, like the Air Defense Command, would be directly subordinate to the GHQ Air Force commander. Instead of moving in this functional direction, however, the Army's First Aviation Objective demanded a geographical distribution of air units into the Northeast, Northwest, Southeast, and Southwest Air Districts, which were thought of as being defensive air theaters of operations within the United States. In the event of the establishment of theaters of operations outside the United States, Arnold suggested that the GHQ Air Force commander would detail one of the air district commanders to command the air component of the theater. These districts were activated on 18 December 1940, with headquarters at Mitchel Field, McChord Field in Washington, MacDill Field in Florida, and March Field in California. The Air Defense Command at Mitchell was superseded and absorbed by the Northeast Air District.[170]

"A numerically inferior air force has been phenomenally successful in stopping the unbroken chain of victories of the world's strongest air power," wrote Brigadier General Carl Spaatz on 29 February 1941 in reporting his observations of the British victory over the Luftwaffe. "A great part of this British success has, undoubtedly," he continued, "been due to the realization for the

necessity of a unified command which centralizes control of all military air matters under an air high command concerned solely with air matters." Having been promoted to higher rank and made Chief of the Air Corps Plans Division, Spaatz recommended that a staff study be initiated at once "with a view to adopting the better features of the British Air Organization and providing an air organization and an air high command for the efficient control of the military aviation of the United States."[171]

Although the Air Corps had gained increased autonomy, General Brett continued to protest that too much vital time was lost in getting air matters cleared through the General Staff. After conference with Brett and Arnold on 26 and 27 March 1941, Marshall issued orders that the Chief of Air Corps would prepare for final action all papers pertaining to purely Air Corps matters, except those pertaining to war plans and intelligence, and that the Deputy Chief of Staff for Air would be responsible for coordination in air matters. Secretary Stimson, moreover, directed that still further steps would be taken to place the air arm under one responsible head. By May 1941 the Air Corps Plans Division prepared a reorganization which was put into effect by the publication of a new Army Regulation 95-5 on 20 June 1941. This regulation created the Army Air Forces, headed as chief by Arnold, who continued to be Marshall's Deputy Chief of Staff for Air. The Army Air Forces was given authority to coordinate the Office of Chief of Air Corps, the Air Force Combat Command (the GHQ Air Force was so redesignated), and all other Army air elements. Direct responsibility for Army aviation matters was given to the Chief of the Army Air Forces, who was to be assisted by the Air Staff. Arnold formed the Air Staff by removing most of the Plans Division from the Office of Chief of Air Corps and designating its sections as A-1 Personnel, A-2 Intelligence, A-3 Operations and Training, A-4 Supply and Maintenance, and Air War Plans. The Air War Plans Division was charged to prepare "over-all plans for the control of the activities of the Army Air Forces."[172]

Within the Air Force Combat Command, the beginning of the Army's Second Aviation Objective demanded further internal expansion. At its establishment, the Air Force Combat Command took command over the First, Second, Third, and Fourth Air Forces, the former air districts which had been redesignated on 17 March 1941. Placed under command of the similarly numbered air forces, the I, II, III, and IV Interceptor Commands were constituted on 26 May 1941 and were activated a few days later. The I, II, III, and IV Bomber Commands were constituted on 4 September 1941 and were quickly activated.[173] With the implementation of the Second Aviation Objective, the War Department also resolved to make reforms in the organization of the corps and army observation squadrons, which had always been assigned to ground force commands. As a result of fiscal year 1938 expansions, eleven corps and army observation squadrons were included in the Air Corps strength, and 21 National Guard observation squadrons were inducted into federal service during fiscal year 1941.

Based upon the lesson that Luftwaffe fighters easily destroyed slow-flying Allied observation planes and captive observation balloons, the War Department decided in the autumn of 1940 to abandon observation balloons and develop two types of observation planes: a short-range, slow-flying liaison type and a long-range, relatively high-performance observation aircraft. In the Army's spring maneuvers of 1941, however, General McNair concluded that observation equipment and tactics had not progressed any since 1918. In Washington there was a growing appreciation of the fact that the observation squadrons were orphans which had been cut off for too long from the advancing Air Force. On 3 July 1941, General Emmons and General McNair accordingly agreed to establish an Air Support Section which would represent General Headquarters and Air Force Combat Command and that all observation squadrons would be gathered into groups and assigned to five air support commands under the Air Force Combat Command. The War Department directive for the reorganization was issued on 25 July, and on 30 August Command issued orders establishing the 1st (Mitchel), 2d (Will Rogers Field, Oklahoma), 3d (Savannah, Georgia), 4th (Hamilton Field, California), and 5th (Bowman Field, Kentucky) Air Support Commands. These commands were designed to support the four continental armies and the armored force. They were immediately charged to organize parent groups for all observation squadrons: while the groups would continue to be assigned to armies, corps, and armored forces, they would be detached from the ground forces for a considerable portion of each year in order that the air support commands might superintend their basic air training.[174]

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With the expansion of the Air Corps after 1939, the capabilities and functions of the Air Corps Board were progressively reduced and eventually dissipated. Following the successful completion of Field Manual 1-5, Employment of the Aviation of the Army, in the winter of 1939-40, the War Department and the Office of Chief of Air Corps charged the Board to produce a number of manuals on tactics and techniques concerned with air attack, air fighting, air reconnaissance and observation, air navigation, aerial photography, combat intelligence, and signal communications, the whole task to be completed not later than 1 June 1940. Since the preparation of manuals was only a part of the small Air Corps Board's mission of tactical testing and development, it had always depended heavily upon the Air Corps Tactical School for much of its "pick and shovel work." During the school year 1939-40, however, the Tactical School ran four accelerated courses, each for 100 officers, and had little time to assist the Board. In the winter of 1939-40, moreover, several of the mature officers of the Board completed their tours at Maxwell and other experienced officers preferred command assignments to the often-discouraging work on the Board. Recognizing that Lt. Col. Edgar P. Sorenson, who took over as Air Corps Board director in January 1940, faced personnel difficulties, the Air Corps directed

him to use Tactical School people where possible and to call in experts from other air commands to perform needed research. Using temporary duty personnel, the Board completed drafts of each of the required tactics and techniques manuals and forwarded them to Washington early in May 1940, where they were subsequently published with little or no revision.[175]

As a part of the Army's First Aviation Objective and in view of the establishment of the 23d Composite Group at Maxwell Field for test and demonstration purposes, Colonel Walter R. Weaver, Commandant of the Air Corps Tactical School, proposed on 17 January 1940 that an Air Corps Tactical Center be established at Maxwell with academic, research, and test departments. Weaver also recommended that the Air Corps Board should be reorganized to comprise the commander of the Tactical Center and three departmental directors. General Arnold was willing to commend the proposal, but he was unwilling to act on it. He specifically feared that the Air Corps Board might become a "rubber stamp agency" for academicians at Maxwell.[176] As a result of the accelerated course, moreover, nearly all regular air officers completed the Tactical School, and the Air Corps needed Maxwell Field to become the site of a new Southeast Training Center. Effective on 30 June 1940, the Tactical School was accordingly suspended and its faculty was reduced to seven caretaker officers. Looking at the new state of affairs in September 1940, Arnold asked his Plans Division why the Air Corps Board should not be brought to Washington and put to work evaluating information received from Europe. The Plans Division agreed that the Board ought to evaluate these lessons but it considered that it was "vital that the Air Corps Board continue its present work at its present location and away from the turmoil of this office."[177]

In view of the many changes which were sweeping the War Department in 1941, it is possibly remarkable that any doctrinal lessons at all were committed to paper that year. In the spring of 1941, however, Colonel Sorenson, who was now both the Commandant of the inactive Tactical School and the Director of the Air Corps Board, used available personnel to complete a revision of Field Manual 1-5, to include matter on the aerial support for armored forces and to prepare a new manual on weather. Pointing out that the responsibility of the Air Corps Board for preparing training literature was causing undesirable delay in its accomplishment of more important test and evaluation studies, Colonel Sorenson recommended that he be permitted to organize a small Training Literature Unit, with at least four qualified officers and five professional civilians, and put it under the Tactical School. With approval from the Army Air Forces, this action was taken on 1 July 1941.[178] This decision was no sooner made than General Brett pointed out that Army Regulation 95-5 charged the Air Force Combat Command with "the development of doctrines of air tactics and technique of Air Force." Brigadier General Muir S. Fairchild, the Executive of the Office of Chief of Air Corps, protested that the arrangement would be too awkward to work, but General Spaatz, now Chief of Air Staff of the Army Air

Forces, ruled that the Air Force Combat Command would develop doctrines and forward drafts of such literature to the Chief of the Army Air Forces. The Chief of Air Corps would receive the drafts, prepare them for publication, and, following final approval of the Army Air Forces, submit them to the War Department Adjutant General for publication.[179]

In July 1941, Colonel Sorenson was summoned to Washington to serve as Assistant Chief of Air Staff, Intelligence, and several acting directors now headed the Air Corps Board, which was physically transferred from Maxwell to the new Air Corps Proving Ground at Eglin Field, Florida, on 10 September 1941. During the summer of 1941, the Air Corps Tactical School with its Training Literature Unit was physically transferred to Washington, where it was made responsible to the Air Corps Training and Operations Division. Here the Training Literature Unit was greatly expanded by the assignment of reserve officers from colleges and universities, but its major work was the editorial production of technical manuals and extension courses. At Eglin Field, the remnant of the Air Corps Board became moribund. According to the recollection of Colonel H. G. Montgomery, who was assigned to the Board in the autumn of 1941, the Board continued to do good work but many of its reports were promptly filed and forgotten by Air Staff divisions which disagreed with the conclusions and recommendations. In a final effort to save the Board, its director wrote personally to Arnold recommending that a whole new group of officers should be assigned to the Board if the ones serving were not to be believed. This action went without result.[180]

As General Fairchild had protested the divided responsibility for the formulation and promulgation of doctrine was indeed awkward and the contemplated cooperation was not going to materialize. Under the Air Force Combat Command, test and experimentation in air defense was centered at the I Interceptor Command at Mitchel Field. Major Saville, now the executive officer of the I Interceptor Command, visited Great Britain early in 1941, and, in the autumn of that year, following the nation's first large-scale air defense maneuvers, he prepared the draft of an air defense doctrine which integrated pursuit interceptors, antiaircraft artillery, barrage balloons, and signal air warning units into a coordinated air defense establishment. This draft manual distinguished for the first time between "air defense," which was a direct defense against enemy air operations, and "counter air force operations," which were said not to be properly within the scope of air defense.[181] The draft of the manual provided a basis for air defense training and organization, but it would not be officially approved and published. Based upon the agreement between Emmons and McNair, the Air Support Section of their respective commands was made responsible for the supervision of cooperative air-ground training and for the development of air support doctrine. With the passing of time, the Air Support Section would produce a doctrinal manual, but during 1941 no one knew how an air support command was to support an army or what its composition would be. The only War Department letter touching on the subject

on 7 October 1941 merely stated: "Air Support Command may be attached to army or armored force upon entry into Theater of Operations or as directed by the Theater Commander."[182]

With the Air Corps Board in a moribund condition, the Army Air Forces turned to other devices for basic thinking. On 11 October 1941, the Assistant Chief of Air Staff, Operations, thus assembled a special board of knowledgeable officers headed by Colonel Earl L. Naiden to study and make recommendations on the future development of pursuit aviation. This ad hoc board assembled, studied the problem, and recommended on 27 October that the Army Air Forces should develop high and low altitude interceptors and night fighters and long-range, multi-place fighter escorts, with the lowest priority to be given to the escort fighters. Although it arrived at a decision, Naiden's ad hoc Pursuit Board protested that no group of men ought to be expected to plunge into the middle of a complex problem, assimilate background material, and formulate definitive answers. The Pursuit Board accordingly recommended that the Army Air Forces should establish an operational requirements agency which would be able to maintain a current familiarity with developmental problems and be prepared to recommend guidance to General Arnold.[183]

* * * *

Although War Department planning remained committed to the defense of the United States and its possessions, President Roosevelt grew increasingly aware that America's security required the defeat of the Axis powers. In May 1938 the Joint Army-Navy Board and its adjunct Joint Planning Committee addressed themselves to the preparation of a new series of Rainbow strategic war plans, of which Rainbow 5 visualized hemispheric defense coupled with concerted action between the United States, Great Britain, and France to effect the decisive defeat of either Germany or Italy, or both. The collapse of France and the adherence of Japan to the Axis on 27 September 1940 required the scope of Rainbow 5 be broadened and expanded.[184]

In recognition of the growing peril of the Axis to the Free World, Anglo-American military staff conferences began in Washington on 29 January 1941 with the purpose of laying down principles of cooperation "should the United States be compelled to resort to war." The three aviation experts at the conference were Air Vice-Marshal John C. Slessor of the Royal Air Force, Colonel J. T. McNarney, an Air Corps officer assigned to the War Plans Division, and Captain DeWitt C. Ramsey of the Navy. On 27 March, the military experts formally approved a document subsequently cited as American-British Conversations-1, or more usually ABC-1, which visualized a basic Anglo-American war plan and a summary of strategic policies. Since Germany was the most powerful Axis partner, the main Allied effort would be conducted in the European theater. The United States would expect to depend largely upon its Pacific Fleet to maintain a defensive against Japan in the Far East. The Allied offensive in

Europe was to include economic pressure through blockade, a "sustained air offensive" against German military power, early defeat of Italy, and the build-up of forces for an eventual land offensive against Germany. As rapidly as possible, the Allies would achieve "superiority of air strength over that of the enemy, particularly in long-range striking forces." On the basis of ABC-1, the Joint Planning Committee rapidly completed War Plan Rainbow 5, and the Secretaries of War and Navy approved both ABC-1 and Rainbow 5 and sent them to President Roosevelt on 2 June 1941. The President indicated his satisfaction with the plans, which he said should be returned for his formal approval in case of war.[185]

In Order to provide some realistic guidance to the Office of Production Management (which had superseded the National Defense Advisory Commission), President Roosevelt requested the Secretaries of War and Navy on 9 July 1941 to explore "the over-all production requirements required to defeat our potential enemies."[186] In the War Department, the War Plans Division broadened the scope of the problem by undertaking to base the production program on a prior determination of strategic concepts, and, after some delay, the Army Air Forces Air War Plans Division, headed by Lieutenant Colonel Harold L. George, was brought into the problem. At this time the only other officers assigned to the Air War Plans Division were Lieutenant Colonels Orvil Anderson and Kenneth Walker and Major Haywood S. Hansell, but George secured the temporary services of several other officers including Lieutenant Colonels Max F. Schneider (A-4) and Arthur W. Vanaman (A-2) and Majors Hoyt S. Vandenberg (A-3), Laurence S. Kuter (G-3), and Samuel E. Anderson (Combat Command). The War Plans Division had asked only to know the maximum number of air squadrons which the Army Air Forces might ultimately require to garrison a great number of geographic sites and to hold as "reserves of opportunity," but George and his associates (most of whom had been faculty members at the Air Corps Tactical School) undertook to prepare a comprehensive air plan for the defeat of the Axis. Beginning on 4 August, teams of two or three officers worked up separate subjects and supporting tabs, and AWPD-1, "Munitions Requirements of the Army Air Forces" was completed on 12 August 1941."[187] The completion of the first major strategic air war plan by the newly-formed Army Air Forces staff in only nine days was a notable achievement which marked both the apex of prewar air force doctrinal thought and a blueprint for the air war which would follow.

As conceived in AWPD-1 the military mission of the United States was the defeat of the nation's potential enemies--Germany and her allies. The air mission outlined followed ABC-1 in that it required a sustained air offensive against German military power, supplemented by air offensives against other regions under enemy control which contributed to that power. The air mission also required the air force "to support a final offensive, if it becomes necessary to invade the continent" and "to conduct effective air operations in connection with Hemisphere Defense and a strategic defensive in the

Far East." The air planners thought it improbable that a land invasion could be mounted against Germany for at least three years, and, if the air offensive were successful, a land offensive might not be necessary. Three lines of U.S. air action were open against a German economy and society that was already strained by the military camapign in Russia. The first line of air action--which would accomplish the air mission in Europe--required disruption of Germany's electric power system and transportation system, destruction of Germany's oil and petroleum resources, and undermining of Germany's morale by air attack against civilian concentrations. The second line of air action--representing intermediate objectives which might be essential to the accomplishment of the principal effort--required neutralization of German air forces by attacks against their bases, aircraft factories, and aluminum and magnesium factories. A third line of action--which might have to be undertaken to safeguard operating air bases--included actacks against submarine bases, surface seacraft, and invasion ports. The planners advocated a concentration of daylight precision-bombing attacks against the principal objectives. They did not favor attacks against cities unless the enemy people were known to be low in morale either because of sustained suffering and deprivation or because of a recognition that their armed forces could not win a favorable decision. The planners believed that by relying on speed, massed formations, high altitude, defensive fire power and armor, and simultaneous penetrations at many places, heavy bombers could make deep penetrations of German defenses in daylight hours. They nevertheless felt that it would be wise to develop a large, heavily-armed escort fighter, which would have the range of and a speed slightly superior to the bombers it would escort.

Simultaneously with the strategic air campaign against Germany, other Army Air Force units would be dispersed in Alaska, Hawaii, Iceland, and South America to maintain Hemispheric Defense. To maintain a strategic defensive in Asia, the planners visualized a build-up of bomber forces in the Philippines and the shuttle employment of B-29 or B-32 aircraft from Alaska and the Philippines to a refueling and staging area in Siberia. This concept was so persuasive, in fact, that the planners urged immediate efforts be made to deploy four groups of B-17's or B-24's to the Philippines in order to deter the Japanese from moving toward the Netherlands East Indies. It was assumed that the Hemisphere and Asian defensive forces would provide the aircraft needed to control adjacent seas against the operation of hostile seacraft.

In establishing requirements for pursuit aircraft, the planners reasoned that the principal role of pursuit was defensive--the protection of bases and vital areas--and that air superiority would be won by bombers. Because of an anticipated shortage of air bases, especially in England, the air planners urged that pursuit complements should be kept at a minimum level consistent with safety in order that the strength of the bombardment strike force would not be reduced. Much the same line of reasoning was applied to air support

aviation: ground operations were not expected to be mounted until strategic air campaigns had already attained a preponderant air superiority, and, in appropriate situations, all available combat aviation would support theater operations of ground armies. Both for training with ground forces and for eventual oversea employment in air support forces, however, the Air Force required pursuit aircraft, light bombers, dive bombers, observation aircraft, photo mapping planes, and transports and gliders. In addition to the transport aircraft required for employment of airborne forces, the air planners placed a requirement for long and medium range transport aircraft which would provide quick delivery of essential aircraft and engine spares from air depots to worldwide operating units.

Lacking any valid aircraft production data based on experience, the air planners could not offer a definite schedule for the attainment of the air units they visualized. They expected, however, that by 1943 or 1944 the Army Air Forces would have an "interim expedient force" which would include 203 groups and 108 observation squadrons and a grand total of 59,727 airplanes. Of this force, 10 groups of B-25's and B-26's, 20 groups of B-17's and B-24's, 24 groups of B-29's, and 21 groups of pursuit would be committed to the air offensive against Germany. The smaller bombers would be used only because they were available, and the planners specified that an ideal force from a standpoint of economy would consist entirely of B-29's. The major difficulty in mustering the air attacks against Germany appeared to be the scarcity of airfields in England and in the Middle East, the latter area being tentatively designated as the operating location for long-range B-29's. Based on intelligence of 154 strategic targets in Germany, expected bombing accuracy, and a desire to complete the air campaign in a six months' period, the planners computed that 98 bombing groups would be required, of which only 54 could be based in England and the Near East. For this reason, they stated an urgent requirement for the development of 44 groups (3,740 aircraft) of bombers which would have a 4,000-mile tactical operating radius. These planes would be able to operate against Germany from bases in Newfoundland, Greenland, Africa, India, or the northeastern United States. The employment of these 4,000-mile bombers would permit some reductions in other type units, with the result that the "ultimate force" which could not be ready before 1945 would comprise 239 groups and 108 observation squadrons and a grand total of 63,467 planes.

At its completion on 12 August 1941, AWPD-1 was signed by General Arnold and its findings were immediately the subject of almost daily briefings to Air Corps and War Department officers. Comments were generally favorable, although Lieutenant Colonel Clayton Bissell, an Air Corps officer in the War Plans Division, argued that the need for an escort fighter was just as great as the need for a 4,000-mile bomber, and he thought it peculiar that the plan called for only 13 experimental escort fighters but called for 3,740 of the 4,000-mile bombers, when the latter would be just as much a developmental problem as the former.[188] Mr. Lovett tacitly

approved the study and General Marshall marked it "Okay G.C.M." on 1 September. On the afternoon of 11 September and the morning of 12 September, George, Walker, and Kuter presented AWPD-1 to Secretary Stimson and Assistant Secretary John J. McCloy. Mr. Stimson apparently accepted the study as a matter-of-fact statement of the air forces required to defeat the Axis, but he mentioned that the expansion of aviation manufacturing facilities and Air Corps training establishments proposed in the plan would depend entirely upon the nation being in a war spirit or at war. McCloy expressed pleasure that AWPD-1 was offensive instead of defensive in nature because, he said, ground and air plans were being stifled by the out-of-date conception of hemispheric defense. McCloy felt that both the ground and air forces had made a major error in failing to press for an early seizure of African air bases.[189] While the briefings were in progress, AWPD-1 also went forward to the War Plans Division and from there to the Joint Army and Navy Board. There was some reason for optimism that the plan might be acceptable to the Joint Board, since, in view of the increased importance being accorded to air operations, General Arnold and the Chief of the Navy Bureau of Aeronautics had won seats on the Joint Board on 2 July 1941. On the board, however, General Arnold had found that he was not a full-fledged member. "When air problems came up," he would recall, "I sat as a member of the Board; at other times I could sit in as a 'listener' but not as a member."[190]

When the Joint Board issued its "Estimate of United States Over-All Production Requirements" on 11 September 1941, it accepted AWPD-1 as a statement of Army Air Forces requirements and incorporated its tabulations in the joint estimate. Like AWPD-1, the Joint Board estimate proposed that hemispheric defense was an insufficient national policy. The major national objectives of the United States which were related to military policy were believed to be: preservation of the territorial, economic, and ideological integrity of the United States and the Western Hemisphere; prevention of the disruption of the British Empire; prevention of further expansion of Japanese territorial dominion; eventual establishment in Europe and Asia of balances of power which would most clearly ensure political stability in those regions and the future security of the United States; and, as far as practicable, the establishment of regimes favorable to economic freedom and individual liberty. The fundamental military policy of the United States was hemispheric defense, but the attainment of the complete list of national policies could be effected "only through military victories outside this hemisphere, either by the armed forces of the United States, by the armed forces of friendly powers, or by both."[191]

Based upon its assessment of the strategic objectives of Germany and Japan, the Joint Board stated that "the principal strategic method employed in the immediate future should be the material support of present military operations against Germany, and their re-enforcement by active participation in the war by the United States, while holding Japan in check pending future developments."

In view of the impossibility of mounting an early land offensive against Germany, the Board recommended a continuation of the economic blockade, the conduct of land offensives in distant regions where German troops were weak, the prosecution of air and sea offensives against German military, economic, and industrial resources, and the support of subversive activities in conquered territories. The Board warned: "Naval and air power may prevent wars from being lost, and by weakening enemy strength may greatly contribute to victory. By themselves, however, naval and air forces seldom, if ever, win important wars. It should be recognized as an almost invariable rule that only land armies can finally win wars."

The Joint Board's statement that "only land armies can finally win wars" indicated a polite disbelief of the contention in AWPD-1 that a strategic air offensive against Germany might preclude the need for a land campaign. In its annex to the Joint Board report, the Army insisted that the United States should have forces in being for a land offensive against Germany by 1 July 1943 and that prior to the undertaking of a land campaign against the Continent of Europe sea and air forces should have established control of the Atlantic, accomplished "overwhelming air superiority," rendered the economic and industrial life of Germany ineffective, weakened the combat effectiveness of German air and ground units, and reduced the popular support of the German people for the continuation of the war.

Although a summary with verbatim extracts of the Joint Board Estimate was published in the Chicago Daily Tribune on 4 December 1941 as an exposure of Roosevelt's "secret war plan," neither the Joint Board Estimate nor AWPD-1 was a war plan, but rather an effort to provide the Office of Production Management with a good feel for what America's wartime military requirements might be. As a matter of fact, the visualization in AWPD-1 to the effect that the Army Air Forces would require an "ultimate force" of 239 air groups and 108 observation squadrons turned out to be an estimate that was remarkably similar to the 269 tactical groups that the Army Air Forces would possess at its maximum strength during World War II.[192] Much of the strategic thought expressed in the two studies would turn up in one form or another during World War II. The studies, moreover, were productive of at least two immediate actions. On 11 April 1941 the Air Corps had initiated a design competition for a high-altitude, 10,000-mile intercontinental bomber, and on 19 August General Arnold indicated that the project must be pushed. Both Douglas and Northrup submitted preliminary designs, and on 15 December 1941 a contract for the development of two experimental XB-36 aircraft was awarded to the Douglas Aircraft Company.[193] AWPD-1 also provided new hope that Japanese aggression could be deterred and that the Philippines could be defended.

In November 1938, when he had stated that only long-range bomber aircraft could affect Hitler's mad course toward war, President Roosevelt had appeared to grasp the close relationship between effective military force and the national foreign policy

objectives. On 26 July 1941, however, President Roosevelt issued an executive order freezing Japanese assets in the United States and halting all trade with the aggressor nation. Both General Marshall and Admiral Harold R. Stark recommended against this action, reasoning that an embargo on Japan's oil supplies would force Japan either to surrender its long-range aggressive aims or--much more likely--strike for oil in the Netherlands Indies at the cost of war with the United States. Only belatedly, after the diplomatic move had been made, attention was given to the strengthening of the defense of the Philippines. In order to maintain the strategic defensive in the Far East, AWPD-1 recommended and the Joint Board Estimate accepted an immediate need for the movement of additional air units--principally four heavy bombardment groups--to the Philippines. On 18 August, Secretary Stimson approved a Philippine reinforcement plan including the movement of one B-17 group without delay and the arrival of three other groups there by February 1942. Whether or not the reinforcement could have been effected as scheduled--the Air Force Combat Command had difficulties getting together 35 B-17's for the first group and there was doubt that air facilities could have been readied by February--would remain academic for the Japanese found themselves becoming weaker as a result of the economic embargo at the same time that the United States was strengthening its Pacific garrisons. On 6 September 1941, Japan made the fateful decision to preempt with military force if diplomatic negotiations could not end the embargo. When negotiations deadlocked the Japanese began the war with an attack on Pearl Harbor on 7 December 1941, coinciding with a parallel assault on the Philippines.[194] Military ideas, concepts, and doctrine would now be tested in global warfare.

CHAPTER 4

AIR FORCE THINKING AND WORLD WAR II

1. Planning and Analysis in the Army Air Forces

"In the nineteen-thirties, when air power was the unseen guest at those grim conferences which marked the Nazi march to power," observed General Henry H. Arnold on 4 January 1944, "the Army Air Corps, which preceded the Army Air Forces, had drawn its blueprints for war." The Air Corps Tactical School, Arnold would note, had developed the "strategic and tactical doctrines that would later guide our air campaigns in World War II."[1]

One week after the Japanese attack at Pearl Harbor, the Air War Plans Division sought to commit the United States and Great Britain to an air strategy against the Axis. Representing the thought of Harold George, Hansel, Walker,* and Orvil Anderson, AWPD-4, "Air Estimate of the Situation and Recommendations for the Conduct of the War," which appeared on 15 December 1941, advocated that the United States should give first concern to the protection of the Western Hemisphere and Great Britain and the sustenance of America's fighting men in the Philippines and then bend every effort toward the implementation of an air offensive against the Axis powers in Europe. Since a successful air offensive would have to precede the launching of any land or sea offensive, and, in as much as a powerful air offensive might be decisive in itself, the Air Plans study recommended that first priorities in war production should be given to the Army Air Forces and that sea and ground force priorities should be allocated "in the light of their contribution to the Air Force mission."[2]

The plan of action recommended by AWPD-4 included three phases of activity and sets of subordinate tasks, many of which would be undertaken concurrently. The first phase was to safeguard the United States and Great Britain through defense of existing possessions and extension of the defenses to Natal, the Cape Verde Islands, and Dakar. The second phase was to wage a decisive air offensive against the Axis powers in Europe, a defensive effort in the Far East, and to conduct a land invasion of Europe "when and if it becomes necessary." After the defeat of European enemies, the

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*This would be the last contribution of the 44-year old Kenneth Walker to Air Force doctrinal thought. Having been promoted to the rank of brigadier general, Walker was transferred to the Southwest Pacific in June 1942 where he assumed command of the V Bomber Command. He was killed in action on 15 January 1943, while on a B-17 mission over Rabaul. In 1943 he was posthumously awarded the Congressional Medal of Honor, and in 1948 Roswell Air Force Base, New Mexico, was renamed Walker Air Force Base in his honor.

third phase was to be a sustained air offensive against the sources of Japanese military and civil strength, the employment of land forces when and if necessary, and the maintenance of sufficient flexibility to exploit opportune openings for decisive action against Japan. The plan recommended an air force of 90,000 airplanes, 3,000,000 men, and a production rate of 3,000 airplanes a month. The recommended air order of battle included 13 medium bomber, 64 heavy bomber, 32 B-29 or B-32 bomber, 59 long-range (4,000-mile) bomber, 35 light and dive bomber, 72 pursuit, and 82 transport groups, plus 159 observation and photographic squadrons. The plan posed a requirement for naval strength "capable of safeguarding our essential sea lanes of communication" and for ground forces sufficient to maintain the security of Allied base areas and eventually to undertake a final surface invasion of Germany and then Japan, if such became necessary.[3]

In reply to a request for information, the Air War Plans Division on 9 January 1942 also sought to attain a high degree of autonomy for the Air Force. On 24 October 1941, Brigadier General Spaatz had already formally proposed that GHQ be eliminated, that over-all command be returned to the Army Chief of Staff, that the General Staff be limited to considering broad policy, and that broad responsibilities should be delegated to the chiefs of Ground, Service, and Air Forces (the last already in existence). In its suggestions, the Air War Plans Division proposed that coordinate ground, air, and naval services be created, with unity of command to be secured by a common head of all armed services, who would report directly to the President and would have a small staff of ground, air, naval, production and supply, and political and economic warfare representatives. The Air War Plans Division urged that such an organization would provide each service with a desired freedom of action and at the same time ensure unity of command.[4]

Although the Air War Plans Division had forcefully asserted prevalent air doctrines, the United States was not going to adopt an undiluted air strategy nor would the Air Force attain full-fledged autonomy. Meeting in Washington between 22 December 1941 and 14 January 1942, the Anglo-American Combined Chiefs of Staff Arcadia conference did not favor such an overriding priority as AWPD-4 would have accorded to aircraft production but instead favored a Victory Program, calling for increases of air, land, and naval forces and for the allocation of resources for the manufacture of munitions in a sequence of limited schedules geared to successively approved operations. The combined staff planners accordingly accepted AWPD-1, with some modifications, rather than AWPD-4. As a result of agreements with the British, Secretary Stimson on 19 January 1942 authorized the Army Air Forces to expand during 1942 to a total of 115 groups, including 34 heavy bomber, 12 medium bomber, 10 light bomber, 31 pursuit, 12 transport, and 16 observation groups.[5]

The Arcadia conference also established the mechanism for the direction of the Anglo-American war effort and a precedent looking toward unified command of combined forces in theaters of operations. From his experience in World War I in France, General Marshall held a conviction that "there must be one man in command of the entire theater--air, ground, and ships." Despite a lack of enthusiasm among the other military chiefs, Marshall convinced President Roosevelt and Prime Minister Churchill of the need to establish a unified American-British-Dutch-Australian Command (ABDACOM) in the Western Pacific-East Indies. From this time, the U.S. War Department believed that the Allies were committed to the establishment of a "Supreme Commander" in combined operations, but, as a matter of fact, ABDACOM would be disestablished on 23 February 1942, and future Allied theater commanders would not be given "supreme" authority. The question of the manner in which an Allied theater commander would receive his directives was solved at Arcadia by the establishment of the Combined Chiefs of Staff, a composite organization of the British chiefs of staff for army, navy, and air force and their American opposite numbers. The use of the British chiefs of staff committee as a model for the Combined Chiefs of Staff raised an awkward complexity in that the Army Air Forces was a part of the U.S. Army, whereas the Royal Air Force was a separate service. Arnold was nevertheless recognized as a member of the Combined Chiefs of Staff and of the Joint Chiefs of Staff. Replacing the old Joint Army and Navy Board, the Joint Chiefs of Staff informally came into being at Arcadia and held its first formal meeting on 9 February 1942.[6]

Sweeping changes in the organization of the War Department and the Army Air Forces closely followed the Arcadia agreements. Effective on 9 March 1942, the War Department was consolidated into three coordinate forces each under a commanding general: the Army Air Forces, the Army Ground Forces, and the Services of Supply (later the Army Service Forces). General Headquarters, the Office of Chief of Air Corps, and the Air Force Combat Command were abolished. The War Department General Staff was shaken up and approximately 50 percent of its personnel were to be from the air arm. The War Plans Division, soon renamed the Operations Division (OPD), became a central command post and planning authority for the War Department. Under the reorganization the mission of the Army Air Forces was specified as being "to procure and maintain equipment peculiar to the Army Air Forces, and to provide air force units properly organized, trained, and equipped for combat operations." Headquarters, Army Air Forces, thus became a supply and training agency, not primarily concerned with actual combat operations or strategic planning.[7]

As a part of the changes in the War Department, Headquarters, Army Air Forces, was rebuilt effective on 9 March 1942 on two levels of staff activity. At the policy staff level, the functions of planning and establishing policies were lodged in A-1 (Personnel),

A-2 (Intelligence), A-3 (Training), A-4 (Supply), and Plans. The Plans Division was viewed as a coordinating agency for the other four policy staff divisions, since in theory it was not to be concerned with war planning. Three major directorates--Military Requirements, Technical Services, and Management Control--were the principal components of the operating staff level. At this level, Major General Muir S. Fairchild's Directorate of Military Requirements was described as a group of functional specialists whose research was to be the media through which combat lessons were to be reflected in training and procurement programs. General Fairchild had under him Directorates of Air Defense, Bombardment, Ground Support, War Organization and Movement, Base Services, and Individual Training. The directors of Air Defense, Bombardment, and Ground Support (which were usually called "type" directorates, because they were concerned with types of aviation) were to be experts in their respective classes of aviation and were charged with development of tactics and techniques for their specialties. The Director of Individual Training was charged with directing, supervising, and giving final approval to Army Air Forces training literature.[8] Since so much experience was now concentrated in the Directorate of Military Requirements, the Air Corps Board at Eglin Field was inactivated when the Army regulation that authorized it was rescinded on 20 May 1942. The Air Corps Tactical School was suspended as an active unit on 24 June 1942, and the people in its Training Literature Unit were integrated into the Training Aids Division of the Directorate of Individual Training.[9]

Although the War Department reorganization removed responsibility for operational planning from the Army Air Forces, President Roosevelt asked General Arnold on 24 August 1942 to submit his judgment as to the combat aircraft which should be produced in 1943 in order to gain complete air ascendancy over the enemy. Such a judgment could not be divorced from operational planning, although it had to follow approved strategy and thus define the air mission in terms of cooperation with surface campaigns. Brigadier Generals Kuter, now Deputy Chief of Air Staff, O. A. Anderson, Chief of Air Plans, and Hansell, who had been named Deputy Commander of the Eighth Air Force, undertook the study, which, when completed on 9 September 1942, was entitled AWPD-42, "Requirements for Air Ascendancy."[10] Requirements were based on air operations visualized for 1943 and early 1944 to include: an air offensive against Europe to deplete the Luftwaffe, destroy the sources of German submarine construction and undermine the German war-making capacity; air support for a land offensive in Northwest Africa; air support for land operations to retain the Middle East; air support for surface operations in the Pacific and Far East to regain base areas for a final offensive against Japan proper; and hemispheric defense, including antisubmarine patrol. To meet such a schedule of operations, the planners calculated the Army Air Forces would require 281 combat groups by 1 January 1944, including 76 heavy bomber, 43 medium bomber, 26 light and dive bomber, 70 fighter, 20 observation, 12 photo reconnaissance, and 34 troop carrier groups. The

study proposed that 130,906 aircraft should be produced in 1943--75,416 for the Army, 33,050 for the Navy, and 22,440 for the Allies.

While it was prepared by several of the same officers who had written AWPD-1, AWPD-42 revealed something of the change in doctrinal thinking which was taking place in 1942. The former study had posed large requirements for B-29 and B-36 aircraft, but AWPD-42 expected few B-29's and no B-36's to come from production in 1943. It was also evident that it would be possible to base more bombers in Great Britain than had been thought earlier. The strategic philosophy of the two studies was virtually the same, but a new study of Germany's target systems was included in AWPD-42. The priority targets were stated to be airplane assembly plants, aircraft engine plants, submarine yards, transportation, power, oil, aluminum, and rubber. The air campaign would thus be designed to prepare the way for surface attack. While the changed target priorities reflected a growing demand for the establishment of air superiority over Germany, AWPD-42 confidently predicted that "our current type bombers can penetrate German defenses to the limit of their radius of operation without excessive losses."

Both AWPD-1 and AWPD-42 visualized that a land invasion of Europe would probably follow the strategic bombing campaign, but the timing of the air offensive had been changed. AWPD-1 had expected six months of intensified bombing to begin in mid-1942 but AWPD-42 necessarily postponed it until late 1944. The failure to receive overriding priorities for aircraft production, plus the diversion of heavy and medium bombers to the U.S. Navy for patrol and antisubmarine warfare, had forced a postponement of the strategic bombing offensive. In order to conserve strategic bomber resources, AWPD-42 proposed that there should be no allocations of heavy or medium bombers to the Navy from 1943 production.[11] This provision, together with the competition that the proposed aircraft production program would have posed to the building of ships, aircraft carriers, and naval aircraft, caused the Navy to reject AWPD-42 out of hand. In a compromise on 26 November 1942, President Roosevelt finally approved a 107,000 aircraft program and substantial portions of the Navy shipbuilding program.[12]

The decisions made in the winter of 1942-43 as to the final force objectives of the United States marked great changes in the internal composition of the Army. In the summer of 1940, the U.S. Victory Program had called for a ground army of 215 divisions and an air force of 84 groups, but in the winter of 1942-43 the U.S. Army changed its force plans to include 89 divisions and 273 air force groups, the 273 groups being considered to be the "saturation point" in the development of Army air power. Looking toward the accomplishment of the 273 group objective, the Army Air Forces activated a total of 269 combat groups by December 1943. Some of these groups were paper units and not a few of them were pledged to hemispheric defense. An agreement between the Army and Navy on 10 June 1943 led the Navy to take charge of antisubmarine defense, thus

reducing Army requirements for hemispheric defense air groups. As air planners had earlier predicted, moreover, the acquisition of more efficient B-29 Superfortress bombers permitted reductions in the number of bomber units needed. In a readjustment of the Army Air Forces program, most of the paper units among the 269 combat groups were inactivated in the spring of 1944. Thereafter the Army Air Forces built upward toward the maximum combat strength of 243 groups which it would attain in February 1945. This maximum combat strength included 25 very heavy bombardment, 72 heavy bombardment, 20 medium bombardment, 8 light bombardment, 71 fighter, 13 reconnaissance, 29 troop carrier, and 5 composite groups.[13] Neither the peak strength of 269 groups nor the maximum combat strength of 243 groups equalled the 281 combat groups which AWPD-42 had predicted would be required for air supremacy over the Axis, but reduction in requirements for hemispheric defense and the arrival of the B-29 very heavy bombers in the combat inventory permitted reductions in total group requirements.

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During the frantic months in which the Army Air Forces was mobilizing for war, General Arnold obviously considered it appropriate that the largest concentration of experienced air officers should be situated in Headquarters, Army Air Forces. The organization of the Headquarters also reflected Arnold's notions about how a staff should work. Arnold often remarked that laborious staff review procedures tended to emasculate bold air concepts and decisions: "termites" in a staff could eat up good ideas before they could get through to the top. Arnold accordingly saw nothing wrong in the division of his headquarters into a policy and operating staff wherein 31 individuals had direct access to him and authority to sign action papers by his authority.[14] Air Force field commanders, on the other hand, complained of conflicts in orders and directives. The same thing was true of doctrinal and policy statements. While the Director of Military Requirements was chiefly concerned with the formulation of doctrine and employment policies, his status was essentially advisory and other directorates issued instructions in various forms. Numbers of miscellaneous publications, each containing specialized fragments of air force ideas, were sent out to field commanders. These collections became too voluminous for any commander to study, and the whole collection did not form a consistent and complete statement of air doctrines and employment policies. Colonel Charles G. Williamson, a division chief in the Directorate of Bombardment, pointed out these facts in a discussion of air policies and doctrines written on 3 March 1943. "In military matters, especially those of the magnitude of the operations of the present war, where mistakes and inconsistencies cost thousands of lives and millions of man-hours," Williamson warned, "it is all the more important that there be

clearly expressed guiding principles which are clearly understood by all planners, as well as by all who are charged with the handling of the forces in the field."[15]

Heavily concerned with day-to-day operations which allowed little time for reflective thought, the type directorates of Air Defense, Bombardment, and Ground Support within the Directorate of Military Requirements began to employ different means for the evaluation and preparation of the doctrine that they were expected to provide. In the March 1942 reorganization of the Army Air Forces, the Directorate of Ground Support, headed by Colonel David M. Schlatter, superseded the Army Air Support Staff Section which had been jointly manned by General Headquarters and the Air Force Combat Command. Colonel Schlatter inherited a virtually complete draft manual which had been drawn up on the basis of experience with the new air support commands in the Louisiana and Carolina maneuvers of 1941, and this manual was published as War Department Field Manual 31-35, Aviation in Support of Ground Forces, on 9 April 1942. This manual was heavily concerned with organization and had little to say about operations. It provided that the air support commander would function under the Army commander: it stated that an air support command, as one of several air force commands in a theater of operations, was "habitually attached to or supports an army in the theater." Aviation units, moreover, could be "specifically allocated to the support of subordinate ground units." The commander of a supported unit was given the authority to make the final decision as to target priorities: "the most important target at a particular time," the manual stated, "will usually be that target which constitutes the most serious threat to the operations of the supported ground force." At best, the air support command would provide a centralized control for observation groups, transport groups, or other combat air units assigned or attached to it. Both Colonel Schlatter and Colonel William E. Lynd, who had shared in drawing up the manual, considered that Field Manual 31-35 was highly tentative and subject to change.[16] As a matter of fact, ground force officers did not like the centralized control of support aviation inherent in the air support command, for they frankly favored the attachment or assignment of air units directly to the ground units they would support. Beginning on 7 December 1942, a special Air Support Board with ground and air members met in Washington to make revisions in the manual, but, even though this board proposed no radical changes in the manual, the revised manuscript was not approved by either the Army Air Forces or the Army Ground Forces.[17]

Recognizing that the Army Air Forces had much to learn about air defense and electronic fighter control, the Air Force Combat Command shortly before its demise laid plans for the establishment of a special school to deal with these matters, and on 26 March 1942 the Third Air Force accordingly established an Air Defense Operational Training Unit at Orlando, Florida. When the reorganization of the Army Air Forces was completed, the Orlando activity was

designated as the Fighter Command School and placed directly under Headquarters, Army Air Forces. In its mission statement, Colonel Gordon P. Saville, Director of Air Defense, charged the school to train air defense personnel to develop doctrines, tactics, and techniques of air defense, to test air defense equipment and operational procedures, and to recommend the organization of air defense for the United States and overseas theaters. A pursuit group, an aircraft warning regiment, a searchlight battalion, and other necessary troops were assigned to the school. In order to accomplish its research missions, the Fighter Command School established an operational requirements department and a tactics and technique development department, and it established an Air Defense Board, with the directors of the school's academic and research departments serving as members. As a first project, the Air Defense Board revised the draft air defense manual which Saville had prepared in the winter of 1941-42. The product was published as War Department Field Manual 1-25, Air Defense, on 24 December 1942. By this time, the Air Defense Board had either completed or had under test 74 other air defense projects.[18]

By the spring of 1942 the Air Staff in Washington began to recognize that the closing of the Air Corps Tactical School--while doubtlessly necessary--had been essentially short-sighted. In June 1942, Colonel Don Z. Zimmerman, the Director of Weather, called attention to the great lack of tactical experience among new Air Force officers and recommended that the Army Air Forces should reopen the Tactical School, using returned combat veterans as an instructional staff. General Fairchild enthusiastically received the proposal, and the Training Aids Division was charged to lay the ground work for the new school. Decision was soon made to recreate an expanded tactical school at Orlando and to use the Fighter Command School as one of the departments of the new school.[19]

After a summer of planning, the Army Air Forces School of Applied Tactics was established at Orlando on 27 October 1942 and charged both to "train selected officers under simulated combat conditions" and to "develop, prepare, and standardize training literature and . . . other training material."[20] In an additional development on 12 November, the Army Air Forces established, within the School of Applied Tactics, the Army Air Forces Board, the Directorate of Academic Training, the Directorate of Tactical Development, the Directorate of Operations and Facilities, and the Directorate of Training Aids. Within the Directorate of Academic Training were established Departments of Air Defense, Bombardment, Air Support, and Air Service. The AAF Board was to consist of a chairman, an executive, and additional members to be appointed by General Arnold as well as the commandants of the school departments. It was charged to "determine major questions of policy and doctrine for all activities of the school and such other matters as may be assigned to it by competent authority." The Director of Tactical

Development was charged with conducting test operations of aircraft and equipment and with improving the strategy, tactics, and techniques of air warfare. The Army Air Forces undertook to exercise control over the School of Applied Tactics through the Directorate of Military Requirements, and the Directors of Air Defense, Bombardment, Air Support, and Base Services were to approve the doctrines, tactics, and techniques taught in the departments of the school.[21]

The terse language of Army Air Forces regulations give the impression that the AAF Board was to be a school activity, but on 16 November 1942 General Fairchild instructed Brigadier General Hume Peabody, the Commandant of the AAF School of Applied Tactics, that the AAF Board ought to be developed as an Army Air Forces activity. "The purpose of the Army Air Forces Board," Fairchild wrote, "is to study the over-all picture of Air Force matters with a view to making recommendations to the Commanding General, Army Air Forces, on such matters as Air Force strategy, technique, organization, equipment, training, etc., of all units making up an Air Force and of the Air Forces as a whole."[22] Since the Air Defense Board was already active, General Peabody directed the Air Support, Air Service, and Bombardment Departments to form similar boards of key officers to conduct research, development, and tests of techniques, organization, and equipment as directed by the AAF Board, the directorates in Washington, or other authorized governmental agencies. In addition to the four sub-boards, Fairchild directed Peabody to form an Equipment Board as a fifth sub-board. This board received directives for testing from the AAF Materiel Command and usually reassigned its projects to one of the other departmental sub-boards, depending on the type of equipment to be tested.[23] General Peabody assumed the duty as chairman of the AAF Board, and he planned that it would function in a supervisory capacity. The AAF Board held its first recorded meeting on 2 February 1943, and it was soon meeting at regular intervals to review completed projects and to forward them after approval to Headquarters, Army Air Forces.[24]

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The organization of the Headquarters, Army Air Forces, adopted in March 1942 had been designed to build quickly the world's most powerful air force. An operating echelon had been established to perform typical functions found in an air task force, and the directors of the operating echelon had been authorized to act with broad discretion on behalf of General Arnold. By the winter of 1942-43, however, the expansion program was firmly in hand. Upon his return home from the meeting of the Combined Chiefs of Staff in Casablanca in January 1943, General Arnold stated that AAF Headquarters "must stop operating" and spend its time thinking "in order that we can correctly tell our commanders what to do and maybe sometimes when to do it" but not how to do it. As a result of

continuing study, Headquarters, Army Air Forces, was greatly consolidated on 29 March 1943. Most staff functions were concentrated in six Assistant Chiefs of Air Staff: Personnel; Intelligence; Training; Materiel, Maintenance, and Distribution (MM&D); Operations, Commitments, and Requirements (OC&R); and Plans. The old sub-directorates were abolished. The functions of the Air Defense, Bombardment, and Air Support Directorates were divided between OC&R and Training, and the Directorate of Individual Training was transferred to Training. Among the responsibilities assigned to OC&R were those for determining proper tactics and techniques of aerial warfare, maintaining observers in theaters of operations, and supervision of the AAF School of Applied Tactics and the AAF Proving Ground Command. Within OC&R, the Requirements Division was made responsible for tactical development, and it was equipped with Air Defense, Bombardment, Air Support, and Tactical Service Branches.[25]

Even though he stated that the Army Air Forces ought not to tell subordinate commands how to perform their jobs, General Arnold was sensitive to the charge that the Air Force had no compact body of doctrine to guide the thinking of its thousands of newly-commissioned officers. In the staff study completed within the Directorate of Bombardment on 3 March 1943, Colonel Williamson noted that "the most important single adverse factor, the condition which is the greatest cause of general failure of the Air Forces to attain proper results, is the lack of an authoritative and concise statement of AAF doctrine and employment policies. A ready guide is not available, and each combat zone is improvising its own doctrine or interpreting older doctrines that have not been kept up to date." Recognizing early in March that "seasoned and experienced officers are spread far and wide" and that there was a need for a "tool of instruction whereby every officer may acquaint himself with both an over-all and a particularized view of Air Force structure and objectives," General Arnold charged Brigadier General Byron E. Gates, Chief of AAF Management Control, to direct the preparation and publication of a volume that would "present . . . a comprehensive picture of the objectives of Air Forces in Theaters of Operations and of the organization available to attain those objectives." As laid out by Management Control, the volume which would be published on 1 June 1943 under the title of The Air Force in Theaters of Operations: Organization and Functions included six booklets with a total of 27 chapters that completely described the organization and missions of the Air Force as they existed in the spring of 1943. "The volume," Arnold stated, "represents Air Force doctrine. It is not rigid doctrine. It is subject to change when change is indicated. It points out what can be done with the means at our disposal, but it must not prevent us from utilizing those means fully in other ways and for other purposes."[26]

In many ways The Air Force in Theaters of Operations was the most ambitious and comprehensive doctrinal publication ever issued by the Air Force, and it was conveniently organized as a series of

looseleaf pamphlets which could in theory be revised and kept up to date. Unfortunately, however, the volume appeared at the very moment when air organization and doctrine were profoundly changing and most of it was almost immediately out of date. Despite a statement in the introductory chapter on "Air Force Mission and Organization" that some air forces could be considered "strategic" and others "tactical," the principal pamphlet of the book described an operational air force as comprising the traditional air defense, bombardment, air support, and air service commands. This pamphlet was the product of the AAF Board and the four departments of the School of Applied Tactics in Orlando. The chapter on "The Air Support Command" was forward-looking in its implications--it noted, for example, that the new North American A-36 (P-51) aircraft would be a substantial advance over dive bombers since it could both deliver bombs and serve as either a fighter bomber or a fighter escort plane--but it was completely conservative in its wording and conformed to the approved air-ground doctrine established in Field Manual 31-35. Although the booklet which described the functions of squadrons in an air force was kept in print, and another pamphlet which described the functions of air force groups was published, the main portion of The Air Force in Theaters of Operations was soon obsolete and few AAF officers apparently ever knew that it had been issued.[27]

Early in 1943, while it was seeking a headquarters organization suitable to its mission and was attempting to prepare a comprehensive doctrinal manual, the Army Air Forces also began to take a searching look at the results of combat operations in North Africa--the first major American air-ground offensive of World War II. Organized into standard air defense, bombardment, air support, and air service commands, the Twelfth Air Force enjoyed very little flexibility in its operations in Northwest Africa. In February 1943, the XII Air Support Command failed to give good results when it was attached to the U.S. II Corps for the support of its operations in Tunisia. While the Americans sought new ideas, General Bernard L. Montgomery, commander of the British Eighth Army, issued in January 1943 a small pamphlet describing his experience in war and entitled "Some Notes on High Command in War." As a result of his experience in cooperation with the British Western Desert Air Force, Montgomery emphasized that the greatest asset of air power was its flexibility and he maintained that this flexibility could be realized only when air power was centrally controlled by an air officer who maintained a close association with the ground commander. "Nothing could be more fatal to successful results," Montgomery wrote, "than to dissipate the air resources into small packets placed under command of army formation commanders, with each packet working on its own plan."[28] In February 1943 in North Africa, Major General Carl Spaatz organized the Northwest Africa Allied Air Force and gave it command over a Strategic Air Force, a Coastal Air Force, and a Tactical Air Force. Writing to Arnold on 7 March 1943, Spaatz emphasized that "the air battle must be won first. . . . Air units must be centralized and cannot be divided into small packets among several armies

or corps. . . . When the battle situation requires it, all units, including medium and heavy bombardment must support ground operations."[29]

In the United States, General Marshall and other influential Army officers accepted General Montgomery's basic principles relative to the control of air power.[30] Air Force leaders liked Montgomery's basic thinking, but there was some feeling that the air striking force ought not to be divided into a strategic air force and a tactical air force. As Assistant Chief of Air Staff for Plans, Brigadier General Orvil Anderson urged that offensive air power ought not to be divided and maintained that the same air weapon system which fought through the decisive phase of a war ought to be available for subsequent exploitation operations, including all-out support of land operations. General Arnold, on the other hand, wished to insure a freedom of action for the strategic air force, and he was willing to provide the tactical air force in order to free the strategic air force from a routine requirement to support ground forces.[31] Brigadier General Laurence Kuter, who returned from a tour of duty as American Deputy Commander, Northwest African Tactical Air Force, and became Assistant Chief of Air Staff for Plans on 15 May 1943 actively supported the concept of a tactical air force. "It is the pattern of the future," Kuter wrote, "the way in which air power in collaboration with armies in the field will beat the enemy and win the war."[32]

Acting in response to an Air Force request, the War Department on 9 June 1943 named Colonel Morton H. McKinnon, Commandant of the Air Support Department of the School of Applied Tactics, Colonel Ralph F. Stearley, commander of the I Air Support Command, and Lieutenant Colonel Orin H. Moore, Armored Force liaison officer at AAF Headquarters, as a board to revise official doctrine in the light of theater-proven operations. Working intimately with the General Staff G-3 Division, this board of officers produced in three weeks' time the draft of War Department Field Manual 100-20, Command and Employment of Air Power, which was published on 21 July 1943. "The inherent flexibility of air power," stated the manual, "is its greatest asset. This flexibility makes it possible to employ the whole weight of the available air power against selected areas in turn; such concentrated use of the air striking force is a battle-winning factor of the first importance. Control of available air power must be centralized and command must be exercised through the Air Force commander if this inherent flexibility and ability to deliver a decisive blow are to be fully exploited. Therefore, the command of air and ground forces in a theater of operations will be vested in the superior commander charged with the actual conduct of operations in the theater, who will exercise command of air forces through the air force commander and command of ground forces through the ground force commander." The manual also stated that land power and air power were coequal and that the gaining of air superiority was the first requirement for the success

of any major land operation. It described the mission and composition of a strategic air force, a tactical air force, an air defense command, and an air service command.[33]

As soon as Field Manual 100-20 was published, General Arnold directed that a copy of it should be distributed to every Air Corps officer. In a letter to each AAF commander, he emphasized that: "The interrelated role of air power must be constantly impressed upon all airmen through the medium of command."[34] Since the War Department had published Field Manual 100-20 without soliciting its concurrence, the Army Ground Forces viewed the manual with "dismay" and described it as the "Army Air Forces' 'Declaration of Independence.'"[35] Within the Air Force, moreover, General Orvil Anderson would continue to deplore the division of air power represented by the tactical air force. At least one other old-line Air Corps officer--Brigadier General Robert C. Candee--would suggest that the Air Force had "swallowed the RAF solution of a local situation in Africa hook, line and sinker, without stopping to analyze it or report it in 'Americanese' instead of British speech." Candee agreed that air power should not have been divided into tactical and strategic forces.[36]

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The reorganization of Headquarters, Army Air Forces, and the publication of Field Manual 100-20 caused substantial changes at the AAF Board, AAF School of Applied Tactics, and the AAF Proving Ground Command. At the time of the reorganization, the Assistant Chief of Air Staff for Training took control over the Training Aids Division, and in May 1943 it was physically moved from the School of Applied Tactics to New York City, where it was closer to commercial publishing and motion picture resources.[37] On 17 April, Brigadier General Saville, who had been Director of Air Defense, was assigned at Orlando as Director of Tactical Development. With characteristic energy, Saville began a reorganization of the AAF Board, leading to the issuance of an AAF regulation on the subject on 2 July 1943. The Assistant Chief of Air Staff OC&R was named president of the Board and the Director of Tactical Development was made ex officio executive. The Commandant of the School of Applied Tactics and the commander of the Proving Ground Command were named as members of the Board. The Board was expected to coordinate the activities of the School, the Proving Ground, and of the Director of Tactical Development, the latter being described as directly responsible to the Assistant Chief of Air Staff OC&R and specifically responsible for preparing programs, reviewing standards, and recommending appropriate actions to the Board. In its essentials, the new regulation made the AAF Board a review agency and held the Directorate of Tactical Development responsible for much of the planning which had been formerly done in Washington by the Directorate of Military Requirements. General Saville was beginning to

secure personnel for the Directorate of Tactical Development, when late in July 1943 he was ordered to North Africa where he would take command of the XII Fighter Command.[38]

The new strategic and tactical concept of the Army Air Forces antiquated the four department organization of the School of Applied Tactics, and General Peabody and Brigadier General Eugene L. Eubank, who reported to Orlando as Director of Tactical Development in September 1943, faced this fact as they began to reorganize the School and the AAF Board. Peabody's announced object was to secure an organization which would accomplish "deep thinking."[39] Earlier in the year, Dr. Robert L. Stearns, the educational advisor at the School of Applied Tactics, had pointed out that the research--or tactical development--function ought to be separated from the academic function, since both were full-time tasks,[40] and the reorganization authorized in AAF regulations on 8 October 1943 and effected three weeks later accepted this objective. The AAF Tactical Center was established under the command of General Peabody as the superior headquarters over a consolidated School of Applied Tactics and a Demonstration Air Force, whose tactical units and field installations were organized into model strategic and tactical air forces and an air defense wing.[41]

The reorganization of the AAF Board was the work of General Eubank, who had earlier served as AAF Director of Bombardment. By a revised AAF regulation published on 8 October 1943, the AAF Board was declared to be an agency of Headquarters, Army Air Forces, and was empowered to develop tactics, techniques, and doctrines, and to determine all military requirements for the Army Air Forces. The Assistant Chief of Air Staff OC&R, the commander of the AAF Tactical Center, the commander of the AAF Proving Ground Command, and the Executive Director of the Board (Eubank's new position following the discontinuation of the Director of Tactical Development) were members of the AAF Board. Since the AAF Board was domiciled away from Washington, an AAF Board Control Office was established within OC&R. With the elimination of the departmental structure of the School of Applied Tactics and the old sub-boards, General Eubank was authorized to secure sufficient qualified personnel to discharge the AAF Board's responsibilities.[42]

As the reorganized AAF Board began to operate, Colonel William F. McKee, Deputy Assistant Chief of Air Staff OC&R announced on 13 December 1943 that it would be expected to perform a substantial portion of the work of OC&R's Requirements Division. "If there is any question as to whether a project should be carried out here or at the Board," he stated, "the issue should be resolved in favor of sending it to the Board."[43] For his own part, General Eubank, who became president of the AAF Board with a change in regulation on 26 April 1944, wanted the Board to grow in stature from what was in effect a projects board for OC&R into an agency which would serve as an advisory body to General Arnold on all general policies.[44] Enjoying high priorities for experienced officers rotated home from

overseas, the Board built up to a strength of 98 officers, 65 enlisted men, and 53 civilians in September 1944 and kept this strength approximately during the remainder of the war. Five liaison officers were assigned to the Air Forces in the major combat theaters and these men proved to be an important source of information for the Air Operations Briefs which were published beginning on 30 November 1944 to disseminate combat lessons throughout the Air Force. Over Europe in the autumn of 1943, bomber formations devised by the AAF Board helped cut down Eighth Air Force combat losses, and another study--"Development of Tactics and Techniques for the Destruction of the German Air Force"--was a guiding doctrine in the establishment of American air superiority over Europe. General Spaatz stated that Board reports and lectures by its liaison officer, Lt Colonel Robert C. Richardson, III, were of great assistance in overcoming the menace of German jet fighters. The massed B-29 fire raids over Japan begun in March 1945 were initiated in accordance with a plan visualized in an AAF Board project entitled "Incendiary Attack on Japanese Cities."[45]

Although it was active in testing aircraft and equipment and in developing and disseminating tactics and techniques for the employment of air power, the AAF Board made slow progress in revising doctrinal manuals and in preparing new doctrinal publications. After some delay caused by high priority given to a study on the "Initial Post-War Air Force," the AAF Board approved and forwarded to Washington on 4 May 1944 a study entitled "The Tactical Air Force: Organization and Employment" which it considered to be an adequate revision of the obsolete Field Manual 31-35. With the completion of another study entitled "Combat Fighter Formations" the Board considered that it had provided an adequate revision of the old Field Manual 1-15, Tactics and Techniques of Air Fighting, and it believed that it had accomplished all outstanding manual projects. This optimism was premature on two counts. While the Board had been working on the tactical air force study, Colonel Stearley had been assigned to the Office of the Assistant Chief of Air Staff for Training in Washington, and he had assembled a committee in March 1944 that had prepared a draft paper on air-ground cooperation. The Army Air Forces submitted the paper on air-ground cooperation and the study on the tactical air force to the War Department G-3 for approval and publication as War Department training circulars, but the G-3 refused to approve the tactical air force study until the air-ground cooperation paper was coordinated with the Army Ground Forces. On 22 June, moreover, Brigadier General Mervin E. Gross, chief of the Requirements Division of OC&R, called attention to the fact that "all Field Service Regulations and Field Manuals dealing with air force subjects, with the exception of FM 100-20, are abominably obsolete and confusing." Gross proposed to designate the AAF Board as the single agency responsible for preparing all AAF doctrinal publications and to augment its strength to permit it to handle the complete task of reviewing, writing, and compiling

manuals which would be approved and published by the Army Air Forces. General Gates, however, offered a counterproposal that the AAF Board would be responsible for the substance of operational manuals, Management Control for administrative manuals, and Materiel and Services for supply and maintenance manuals, and that the Training Aids Division would prepare all manuscripts for final publication. General Gates' recommendations were accepted by a meeting of representatives from the interested agencies held during June, and the AAF Board was accordingly directed to institute a continuing project to prepare, review, and revise all field service regulations, field manuals, and publications which established AAF operational and training doctrine.[46]

Because of the added responsibilities for the preparation of the doctrinal publications and the new Air Operations Briefs, General Eubank organized an Evaluation Division within the AAF Board, and the Policy Branch of this division received the task of reviewing and determining requirements for doctrinal manuals. Having determined the need for a manual, the Policy Branch was expected to establish committees made up of qualified personnel from the AAF Board, the School of Applied Tactics, the Proving Ground Command, and any other interested command to make a draft of the manual. While the Policy Branch outlined a comprehensive series of air manuals which should be written, it was not notably successful in producing manuals. For one thing, the Policy Branch had difficulty committing qualified personnel to its project committees and the preparation of a draft manual required the examination of a mass of pertinent reports and the solicitation and evaluation of suggestions from many different headquarters. It was also very difficult to get anything coordinated with the Army Ground Forces. Headquarters, Army Ground Forces, for example, would not approve the draft training circular entitled "Air-Ground Cooperation" which was forwarded to it in April 1944: it complained that it was theoretical and contained far too much of the thinking incorporated in Field Manual 100-20. As the debate continued, Headquarters, Army Ground Forces, broadened the discussion to include attacks on Field Manual 100-20. In January 1945, for example, it challenged the statement that the gaining of air superiority should be the first requirement for the success of any major land operation and the proposition that in the absence of air supremacy the initiative passed to the enemy by citing the success of the German army in launching its Ardennes offensive without possessing air superiority. As a result of the delays in the negotiations, the several theaters of operations were compelled to adopt their own techniques for air-ground cooperation. After more than a year had passed, the War Department G-3 patched up compromises which enabled it to issue definitive of doctrine required in preparation for the invasion of Japan. On 20 April 1945, the War Department published Training Circular No. 17, "Air-Ground Liaison," and on 19 June 1945 it released Training Circular No. 30, "Tactical Air Command: Organization and Employment."

Another project at the AAF Board indicated the long amount of time required for coordination: on 11 February 1944, the Board initiated a manual project entitled "Tactical Doctrine of Troop Carrier Aviation," but it did not complete the text in final form until 21 August 1945.[47]

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Especially under the leadership of General Eubank, the Army Air Forces Board became a respected and valuable agency for making evaluations and devising solutions to far-reaching problems encountered in the theaters of operations, but the Board never attained the authority to recommend air policy to General Arnold to the same degree that the Navy Board possessed. As World War II progressed, moreover, other agencies began to undertake a large part of the work that might have fallen within the province of a more powerful AAF Board.

Having recognized the close relationship between scientific development and warfare during the 1930's, the Royal Air Force had gotten good results from the employment of groups of highly-qualified civilians who possessed unusual scientific or analytic talents for operations analysis--a function which was described as the study of operations within a command for the purpose of improving tactics, equipment, methods of training, or methods of supply. In the United States in 1940, President Roosevelt named Dr. Vannevar Bush, who was then chairman of the National Advisory Committee on Aeronautics, to be chairman of the National Defense Research Committee in order "to coordinate, supervise, and conduct scientific research on the problems underlying the development, production, and use of mechanisms and devices of warfare, except scientific research on the problem of flight." In May 1941, Roosevelt expanded the committee into the Office of Scientific Research and Development. As early as April 1942, a group of about 20 civilian analysts began to work with the Navy and the Army Air Forces in search of solutions to the problem of antisubmarine warfare, and Dr. Edward L. Bowles, the head of the group, ultimately devised the system of radar and related techniques which effectively checked the Nazi submarine menace during the latter half of 1943. At the request of General Spaatz, eight civilian operations analysts joined the Eighth Air Force in the United Kingdom on 15 October 1942. A few days later, on 24 October, General Arnold authorized the establishment of operations analysis sections throughout the Army Air Forces.[48]

In the course of a conversation on the afternoon of 3 December 1942 in the office of General Gates, Chief of AAF Management Control, General Fairchild recalled some of the perplexities that had confronted him since he had begun to serve on the Joint Strategic Survey Committee of the Joint Chiefs of Staff. The Joint Intelligence Committee had made many criticisms of the air target list included

in AWPD-42 and some of the criticisms appeared fully justified. When Gates' executive, Colonel Guido R. Perara, joind the conversation, Fairchild suggested that he might like to find the answer to the fundamental matter in question: "How can Germany be so damaged by air attack that an invasion of the continent may be possible within a relatively short period, say one year?" After thinking about the matter overnight, General Gates addressed a memorandum to Fairchild pointing out that nowhere in the War Department was there a group of analysts or research workers who were capable of assembling raw data and drawing conclusions from it. In search of a solution to the problem, Colonel Perara and Major W. Barton Leach, who had been recruiting operations analysts for air force commands, proposed that a high-level Committee of Operations Analysts should be formed to study Germany and to recommend target systems to General Arnold. Receiving Arnold's prompt approval, General Gates assembled a small group of distinguished scholars and industrialists in a first meeting of the Committee of Operations Analysts on 10 December 1942. By the early spring of 1943, the Committee of Operations Analysts would make its first report on German target systems to Arnold, and, after this, it would address itself to a determination of the strategic vulnerabilities of Japan to air assault.[49]

While the Committee of Operations Analysts provided recommendations to General Arnold, Leach, who was promoted to colonel and would serve both as a member of the Committee and as chief of the AAF Operations Analysis Division, provided general guidance to the build-up of some 17 operations analysis sections throughout the Air Force. By the end of the war more than 400 civilian and military analysts were serving in the Air Force. These operations analysts, most of whom were civilian specialists, followed "a considered policy of keeping very quiet--not asking for recognition, not claiming credit for accomplishments, not getting publicity." In general, the operations analysis sections lent their peculiar skills to such command problems as bomb and fuze selection, bombing accuracy, battle damage and loss, and general mission analysis. The memorandum reports of each operations analysis section were forwarded to Washington and were circulated to other interested commands. At the IX Bomber Command in Europe, for example, three operations analysts prepared a basic aerial gunnery manual called "Get That Fighter," which was eventually adopted for use in the Army Air Forces, the Navy, and the Chinese Air Force. The operations analysts dealt with many of the same problems that the AAF Board was charged to consider, but the principal difference was that the operations analysis sections were prepared to solve problems on the spot in combat theaters. On some occasions the findings of the operations analysis sections disagreed with those of the AAF Board. On 18 October 1944, for example, the AAF Board issued what it considered to be a definitive doctrine on weapons selection entitled "Selection of Bombs and Fuzes for Destruction

of Bombardment Targets," but Air Force commanders preferred to follow the recommendations of their operations analysis sections, which were in serious conflict with the Board recommendations.[50]

In its initial report on the strategic vulnerability of Germany to air attack, the Committee of Operations Analysts recommended on 8 March 1943 that a continuing analysis of the successes and failures of air operations ought to be maintained. The Army Air Forces did not act on this recommendation until the spring of 1944, and then it made two approaches to the problem of evaluating air operations. In response to a request for such authority, the War Department directed General Arnold on 29 June 1944 to establish AAF Evaluation Boards in the several combat theaters and charge them to make "a critical evaluation of the effectiveness of air attack." "It is essential," the War Department stated, "that we determine now the merits of our past use of air power so that we may, with economy, direct and employ air power to the attainment of maximum results during the war and in the future." Each of the boards would be expected to forward evaluations with supporting data to the Army Air Forces at 30-day intervals, and the reports were to be screened by OC&R and Plans and sent to the AAF Board for thorough analysis. Within a few weeks, the evaluation boards departed for the combat theaters, each headed by an experienced air officer: Major General Jacob E. Fickel for the European Theater of Operations, Major General John F. Curry for the Mediterranean Theater of Operations, Major General William E. Lynd for the Southwest Pacific Area, Brigadier General Shepler W. Fitzgerald for the China-Burma-India Theater, and Brigadier General Martin F. Scanlon for the Pacific Ocean Areas. The boards were given a list of suggested topics for investigation, but they had complete freedom in selecting the exact subjects they investigated, the only criteria being that the subject was to be of sufficient importance "to permit intelligent redirection of policy and effort in attaining maximum economy of forces in the employment of air."[51] In the theaters, the AAF Evaluation Boards generally undertook to prepare evaluations of air actions by campaigns rather than by months. As a result their often voluminous reports would provide an important source of documentation about air operations in World War II, but the reports were not as valuable as they might have been for a current evaluation of the war effort. At the end of hostilities, the European Theater and Southwest Pacific AAF Evaluation Boards had not completed all of their reports, and after September 1945 a part of the personnel of these two boards was returned to Orlando to finish their tasks.

When the matter of evaluating air operations was under discussion in the Air Staff in March 1944, General Fairchild suggested that a separate analysis should be made of strategic bombing, and he recommended that General Spaatz would have the U.S. Strategic Air Forces in Europe submit a plan for a comprehensive evaluation. In a letter to Arnold on 5 April, Spaatz endorsed the proposal for a survey of American strategic bombing effort, and he suggested

that the survey be headed by a civilian of high caliber and reputation. Although the British wanted to make a joint bombing survey, Spaatz argued against this because he wanted to get plain facts from a committee headed by an impartial chairman, because he feared that the Soviets might be offended at being excluded from a combined undertaking, and because he wanted a quick survey that would be concluded in time to be of use in planning for the strategic air campaign against Japan. While preliminaries to the establishment of a strategic bombing survey were underway, the arrival of General Fickel's Evaluation Board threatened some duplication of effort, but Fickel agreed to confine his studies to the tactical air warfare effort.[52]

When the necessary groundwork had been laid, President Roosevelt directed Secretary Stimson on 9 September 1944 to form a qualified and impartial group to make a study of the effect of strategic aerial attack against Germany. On 3 November, Stimson requested Mr. Franklin D'Olier, president of the Prudential Insurance Company, to serve as chairman of the U.S. Strategic Bombing Survey. Various civilian experts were selected as directors of proposed divisions. The research activities of the survey were divided into three large units of military studies, economic studies, and civilian studies, each broken down into divisions. At the end of hostilities in Europe, Major General Orvil Anderson came to the survey as chief of the Military Analysis Division and chairman of a panel of military advisors which included General Omar N. Bradley and Vice Admiral Robert L. Ghormley. As finally constituted, the U.S. Strategic Bombing Survey in Europe consisted of some 300 civilian experts, analysts, technicians, and production men, assisted by 350 officers and 574 enlisted men. Getting underway in November 1944, teams of investigators followed Allied military forces into Germany and secured the basic information required for 208 published reports. The investigators secured their data from inspections and examinations of target areas, from captured records of the German government and industrial corporations, and from interviews and interrogations of thousands of Germans, including practically all of the surviving German political and military leaders.[53]

When the U.S. Bombing Survey was completing its field work in the European theater, President Harry S. Truman asked D'Olier to continue to head a survey which would conduct a joint Army-Navy analysis of the conduct of the air war against Japan. Truman directed that the Japanese survey would be given help by the Secretary of the Navy, thus making it a joint function, although still to be controlled by the civilian chairman and his associates. Mr. Paul Nitze, who had directed the equipment and utilities division of the survey, became acting vice-chairman under D'Olier. Many of the same civilian directors agreed to serve in the Pacific, and the military advisors included General Anderson, Rear Admiral Ralph A. Ofstie, Major General Leslie R. Groves, and Brigadier

General Grandison Gardner. Some 485 individuals were on the roster of the Pacific survey, and by 3 October 1945 the survey and its detachments were located in Tokyo and in other places throughout Japan.[54]

In analyzing the Pacific War, the U.S. Strategic Bombing Survey depended heavily upon interrogations of more than 700 Japanese government, military, and civilian leaders, and, while many records had been destroyed, the survey was able to secure reasonably accurate statistics on Japan's economy and war production. After a hard-hitting, fast-moving field investigation, D'Olier and Nitze returned to Washington on 5 December and the key survey personnel assembled there early in January 1946 to complete the 108 volumes of evaluation on the Pacific war which would be published. In view of the great public interest in atomic warfare, Truman decided to receive and to release the survey's principal reports personally, and the three principal reports were coordinated with the State Department. During July 1946 Truman released the three main reports: Summary Report (Pacific War), Japan's Struggle to End the War, and The Effects of Atomic Bombs on Hiroshima and Nagasaki.[55]

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During the course of expansion and rapid growth of the Army Air Forces there had been a tendency to multiply both the number of Headquarters, Army Air Force, functions and the number of Army Air Forces field commands. When the Army Air Forces reached its maximum strength, General Arnold thought that it would be proper that many of the details of operations that had burdened the Air Staff should be handled at appropriate field commands. This program for decentralization and consolidation began on 31 August 1944 with the combination of the Air Materiel Command and the Air Service Command into the Air Technical Service Command, which would be expected to administer operating programs in the fields of materiel and supply. On 1 April 1945, the Continental Air Forces was organized to assume jurisdiction over the four domestic air forces and the I Troop Carrier Command. In another move designed to clear up lines of authority, the AAF Center was established on 1 June 1945 to exercise command over the AAF School (the former AAF School of Applied Tactics) and the AAF Proving Ground Command. The Army Air Forces Board--whose members would be the Board president, the commander of the AAF Center, and the commanding general of the AAF Proving Ground Command--was authorized to report directly to General Arnold rather than to the Assistant Chief of Air Staff OC&R, and it would continue to be responsible for the development of tactics, techniques, doctrines, and other military requirements of the Army Air Forces.[56]

For a few months it appeared that the AAF Board might achieve a status similar to that of the Navy General Board, but the end of World War II brought a sudden decrease in its work. Publication of the Air Operations Briefs was terminated. At the peak of its

wartime activities on 15 March 1945, the Board had 514 active projects underway, but on 15 September 1945 it had only 230 projects in work, mostly operational suitability tests on new items of equipment which were in the production pipelines at the war's end.[57] In the hope that it would be possible to record operational experience while it was still fresh, the Army Air Forces on 7 September 1945 directed the AAF Board to prepare a field service regulation which would incorporate all of the proven air-ground doctrine of World War II. On 8 October, it further directed the Board to revise Field Manuals 100-5 and 100-20 and then to bring all Air Force field manuals in the 1- series into conformity with the two basic manuals. Drawing both upon the great body of Air Evaluation Board data that had been sent to Orlando and upon the assistance of ground force liaison officers, the AAF Board completed a draft of a combined air-ground operations manual on 14 March 1946. Representing the best thought to come out of World War II, the manual was coordinated through the War Department G-3 and the Army Ground Forces, and it was published as War Department Field Manual 31-35, Air-Ground Operations, on 13 August 1946.[58] In view of the fact that General Eubank was unable to obtain experienced personnel to undertake the other manual projects, the revision of these manuals would have to await the period of readjustment that would mark the establishment of the postwar air force.

Thus as World War II ended it was doubtlessly the best reported and most thoroughly documented conflict of all time. The great volume of the documentation which recorded the experience meant, however, that few persons--military or civilian--would have the time or the incentive to master it. One natural result, according to the civilian scholar Bernard Brodie, was "the divorcement of doctrine from any military experience other than that which has been intensely personal with its proponents."[59] Under such circumstances, the operational experience of World War II could be cited to "prove" almost any preconception. In 1946, for example, reports by ranking Army officers such as General Omar Bradley, General George S. Patton, and Lieutenant General L. K. Truscott were offered as a justification of a continuing requirement for horse cavalry in the postwar Army.[60] "If you will only let experience be your teacher," warned Major General Orvil Anderson, "you can have any damn lesson you want." Anderson believed that the lessons of the past had to be interpreted in terms of the potentialities of the future. "Progress in the development of military science and strategy," he said, "is vitally dependent upon the soundness of the evaluations of past battle experience and upon the boldness, inspiration and depth of the projected thinking which creates the solution for the future."[61]

2. Examination of the Strategic Air War

"Because the last war saw the weapons of all services employed in profusion," wrote General Spaatz, who had commanded the U.S.

Strategic Air Forces (USSTAF) in Europe and the U.S. Army Strategic Air Forces in the Pacific, "one may argue the exact degree of contribution made by strategic bombing to the final decision." As Spaatz saw it, "the war against Germany was fundamentally an infantry war supported by air power, much as the war against Japan was fundamentally a naval war supported by air."[62] Writing in 1948, an Air University instructor noted that the "Douhet Theory did not receive a thorough test in World War II." "That the Douhet Theory was somewhat less than an unqualified success in World War II," the same officer added, "was due to the inability of the equipment of the times to fulfill Douhet's expectations."[63] Bernard Brodie, on the other hand, considered World War II to have been a "fair test" of Douhet's ideas. "If we disregard the over-all vision and consider only specific assertions," Brodie wrote, "it is clear that in World War II Douhet was proved wrong on almost every important point he made. . . . But it is also true that he was able to create a framework of strategic thought which is considered by many responsible airmen to fit the atomic age astonishingly well."[64]

"No useful purpose would be served now," Spaatz wrote in 1948, "by refighting these wars [against Germany and Japan] as the airman might have wished to fight them."[65] In their effort to establish a conceptual basis for forward thinking, other Air Force officers nevertheless sought to draw what lessons they could from World War II. To General George C. Kenney, who had commanded the Allied Air Forces Southwest Pacific Area and the U.S. Far East Air Forces, one of the major lessons of the war against Japan was the value of air power for keeping the peace. "I believe that air power," he said in November 1945, "is this Nation's first line of defense and that only in air power can we find a weapon formidable enough to maintain the peace." In a lecture several years later, Kenney developed the same theme: "If the value of air power in the defense had been recognized a few years earlier our national policy would not have accepted the inevitability of losing the Philippines at the outbreak of a war with Japan. Fairly strong bomber and fighter forces in the Philippines and in Hawaii, with the warning services available at that time, could have prevented the disasters at Pearl Harbor, Bataan and Corregidor. It is extremely doubtful that Japan would even have challenged us at all."[66] In a Senate hearing in October 1945, General Arnold emphasized that responsibility for the defense of the United States rested upon the Air Force. "The defense," he said, "has got to be an offensive mission against the source [of enemy power] . . . . But, better still, the actual existence of these weapons of our own in sufficient quantities and so located that a potential aggressor knows we can use them effectively against him, will have a very deterring effect, particularly if the aggressor does not know the whole story and only knows part of the story."[67] General Marshall agreed that "the future peace of

the world will largely depend not only on the international policies of the United States but even more on our practical ability to endow those policies with the strength to command international respect." He insisted, however, that "the national security is measured by the sum, or rather the combination of the three great arms, the land, air, and naval forces."[68]

The Anglo-American military strategy for the defeat of the Axis that emerged in 1941-42 contemplated early initiation of sustained air offensives against Germany and later against Japan, but it did not accord overriding production priorities to the air forces for undertaking these offensives. Instead, the strategic planners posed requirements for the development of land, sea, and air forces to accomplish a series of surface campaigns designed eventually to culminate in invasions of the German and Japanese homelands. According to Brigadier General George A. Lincoln, chief of the War Department General Staff Plans and Policy Group, Anglo-American political objectives required for the guidance of military planning were available in the form of the Atlantic Charter, the master U.S. lend-lease agreement which pledged recipients to encourage freer postwar trade, and the United Nations declaration of 1 January 1942 that pledged that the Allies would work for a postwar world political organization, but General Lincoln nevertheless noted that these political objectives were stated in such broad language that they give little precise guidance to military strategy.[69] Lieutenant General Albert C. Wedemeyer recalled that he as a military planner was "vague about the national aims of our own country."[70] One result of the broad political guidance was Major General Hansell's recollection that American military planners eventually tended to ignore the fact that the war should be fought "from the standpoint of continuing international relations to which the war was an unhappy interlude." "My military bosses and my associates and I," Hansell recollected, "were consumed with one overpowering purpose: How to win the war with assurance and fewest American casualties. We had little concern for what happened afterward."[71]

In the early months of 1942 the Allies were on the defensive, but, at Casablanca in January 1943, the Anglo-American heads of state and combined military staffs undertook to define their war aims and to visualize offensive operations against Germany. On 7 January, prior to leaving Washington for the conference, President Roosevelt met with the Joint Chiefs and told them that he intended to secure an agreement that the Allies would not end the war until they had attained the "unconditional surrender" of the Axis nations. No military staff work had been done on "unconditional surrender," and Roosevelt did not invite military discussion of the matter. To Roosevelt, the statement of unconditional surrender as the war aim simplified the political complexities of Allied alliance diplomacy. "We have the British, DeGaulle, the Russians, and several other elements," he would explain in private, "all of whose war aims are

totally divergent. If we, the United States, now state our war aims, we will split asunder the allied war effort which will result in squabbling over the particular interests."[72]

The unconditional surrender formula was useful in rallying popular support and effecting cohesion in the Grand Alliance. Moreover, it could be attained by military operations. American military planners nevertheless viewed it as an unfortunate war aim which would make the people of Germany and Japan resist to the bitter end. At Casablanca as assistants to Generals Marshall and Arnold, Brigadier General Wedemeyer and Colonel Jacob E. Smart insisted that the Allies should direct their war aims against the Axis governments and not their people, but their reasoning was not accepted and the Allied objective of unconditional surrender was announced on 23 January 1943. Viewed after the fact, the unconditional surrender objective not only prolonged the resistance of Germany and Japan, but, in the case of Germany, resulted in a complete military and political disintegration which opened central Europe to the entry of Soviet Russia. Japan, moreover, refused to surrender until the unconditional surrender formula had been relaxed.[73] "During World War II," General Lincoln observed in 1947, "we had driven home to us the accepted principle that military power and military policy are related to political policy, and that these two policies must be closely integrated. We realize very clearly what this inextricable relationship between political and military policies means, that our military policies and actions are based on international political policies and that these two policies must be closely integrated."[74]

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"Had the revolutionary potentialities of the strategic air offensive been fully grasped," General Spaatz concluded, "some of the fateful political concessions made to hold the Russians in the European war and to draw them into the Japanese war might never have been made."[75] Because the Allied strategy was directed toward unconditional surrender, the Casablanca conferees logically laid out a strategic air campaign against Germany in terms of the eventual physical capture of that nation by surface forces. On 21 January 1943, the Casablanca combined bomber directive stated that the ultimate objective of the air campaign would be "the progressive destruction and dislocation of the German military, industrial and economic system, and the undermining of the morale of the German people to a point where their capacity for armed resistance is fatally weakened." Addressed to "the appropriate British and United States Air Force commanders," the Casablanca directive established no definite command authority for the combined bomber offensive but it assumed that the Army Air Forces would conduct daylight attacks and that the RAF Bomber Command would continue its night attacks against area targets. The function of the strategic bomber

offensive would be to soften the enemy nation preparatory to surface invasion. "The air weapon system," General Kuter would comment, "was assigned a supporting role to facilitate the implementation of this conventional surface stracegy."[76]

Where General Arnold advocated the establishment of an over-all air command for Europe and Africa in December 1942, the Casablanca conference merely charged Sir Charles Portal, Chief of Air Staff RAF, with the "strategical direction" of British and American bomber operations from the United Kingdom. This responsibility did not include decisions on matters of tactics or techniques which remained the province of Lieutenant General Ira C. Eaker, commander of the U.S. Eighth Air Force, and of Sir Arthur Harris, commander of the RAF Bomber Command. In view of the impending "Overlord" ground invasion of Europe, the Allied Expeditionary Air Force was established on 17 November 1943 under the command of Air Marshal Sir Trafford Leigh-Mallory, with operational control over the RAF Tactical Air Force, the Air Defence of Great Britain, and the U.S. Ninth Air Force. At this same time, the U.S. Joint Chiefs of Staff proposed to establish a strategic air commander in the United Kingdom to control the operations of the Eighth and Fifteenth Air Forces, the latter being based in Italy. The British Chiefs of Staff did not favor the plan, but it was nevertheless effected on 1 January 1944 when Lieutenant General Spaatz assumed command of the U.S. Strategic Air Forces in Europe (USSTAF). Since the RAF Bomber Command remained outside this framework, Sir Charles Portal continued to be the coordinating agent of the Combined Chiefs of Staff for strategic bombing until 14 April 1944 when USSTAF passed to the control of General Dwight D. Eisenhower as Commander, Allied Expeditionary Forces. Following completion of "Overlord," the Combined Chiefs reassumed control of the strategic bomber forces on 14 September 1944.[77]

Looking backward at the air command effected for "Overlord," Major General Orvil Anderson, who served as chairman, Combined Operational Planning Committee, England, from June 1943 to January 1944 and as assistant chief of staff for operations of the VIII Bomber Command from January to June 1944, was critical of the division of "fighting air" and "exploitation air" represented in the command arrangements. Anderson thought that all air power should have been concentrated for coordinated attacks against Germany until the strategic air campaign had been accomplished and that all air power then could have been employed to support exploitative surface operations. The Eighth Air Force would possess 15 fighter groups and the Ninth Air Force 18 fighter groups by the time of the Overlord invasion. When the Ninth Air Force established itself in Great Britain on 16 October 1943 it took control of those fighter groups designated for it which had arrived in Great Britain. This was said to be necessary in order that the groups might receive fighter-bomber training, but the Eighth Air Force was actively in combat and retained the right to request fighter support from the

Ninth Air Force. Anderson recollected that it was often difficult to coordinate requirements for fighter support. On the other hand, when he was asked about Anderson's statements on command arrangements, General Spaatz held a different viewpoint. "There was no difficulty in using Ninth Air Force fighters when we needed them," he said. "If we had a mission we could always get them."[78]

While the combined bomber offensive against Germany was designed to prepare the way for a surface invasion of the continent, the build-up of Anglo-American bomber forces was relatively slow, and, in the end, the major weight of the strategic bombing attack followed rather than preceded the invasion of Europe. Weak at the war's beginning, the RAF Bomber Command did not begin strategic bombing attacks against Germany until May 1940. After a slow build-up, the Eighth Air Force conducted its first daylight bombing mission from bases in the United Kingdom on 17 August 1942, but much of the strength of this small air force was soon drained away to support the Allied land campaign in North Africa. In January 1943, the Army Air Forces had only 12 heavy bombardment groups deployed in theaters against Germany, and the maximum strength of 62 heavy bomber groups was not attained against Germany until May 1944, less than a month before the invasion of Normandy on 6 June 1944. The total of first-line B-17's and B-24's deployed against Germany increased from 413 in January 1943 to a maximum of 5,072 in March 1945.[79] The RAF Bomber Command's strength increased from a miscellany of 515 light, medium, and heavy bombers in January 1943 to a total of 1,609 Halifax, Lancaster, and Mosquito bombers in April 1945.[80] Of the total of 2,770,540 tons of bombs dropped by AAF and RAF aircraft against Germany, only 17 percent fell prior to 1 January 1944 and only 28 percent prior to 1 July 1944.[81] By mid-1944 the limited strategic air campaign had fatally weakened Germany's capacity to counter the Allied ground invasion, but the maximum military benefits did not accrue to the invading forces because the greatest weight of the strategic air attack had not yet been felt by the German people or the German military forces.[82]

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One of the basic premises of Army Air Forces doctrine was that its heavy bomber aircraft, flown in massed and self-defending formations, could successfully penetrate enemy defenses and perform precision-bombing attacks in daylight hours. In confidential talks with General Arnold in December 1941, moreover, Air Marshal Portal had asserted that British bases were going to be saturated with aircraft and that the Army Air Forces ought to concentrate on moving bombers to Britain and to delay the deployment of fighters there until they were needed to support a ground invasion of Europe.[83] While it was decided to limit the deployment of American fighters to the United Kingdom to a few groups required for local air defense, AAF programs nevertheless gave a reasonable priority to

the activation and training of the fighter groups that would be needed to provide a canopy for the invasion of Europe.[84] Although penetrations were relatively shallow, early Eighth Air Force bomber attacks seemed to indicate that the bombers could defend themselves. The Casablanca directive nominated the German aircraft industry for destruction and directed the Eighth Air Force "to impose heavy losses on the German day fighter force and to contain German fighter strength away from the Russian and Mediterranean theaters of war," but it made no requirement for the establishment of air superiority over Germany.[85]

During the first half of 1943, General Eaker employed Eighth Air Force P-47's and RAF fighters to assist the heavy bombers in penetrating the German fighter belt inward from the Channel Coast, but he remained convinced that his main requirement was for larger bomber forces which would permit the planes to fly more effective defensive formations and additional deception missions. But opposition began to build up to Eaker's position. As early as 23 March 1943, Eaker's plans section argued that "our primary objective should be the German Fighter Force in the air, on the ground, and the industry which supports it. . . . A sufficient depletion of the German Fighter Force is the one essential preliminary to our imposing our will by the use of air power on any portion of the German war effort which may be subsequently selected, be it submarines, oil, transportation or morale." Back in the United States, following the old Air Corps Board's idea for the development of a "bomber-destroyer" aircraft, the AAF Board tested several YB-40's--heavily-armed B-17's designed to provide tremendously augmented firepower to a bomber formation. A similar modification of the B-24 called the YB-41 was also tested at Eglin Field. These experiments indicated methods of increasing the armament on basic B-17's and B-24's, but when the YB-40's were employed in combat in May 1943 they were too heavy to stay in formation with B-17's and the whole concept proved impracticable.[86]

Alarmed by the increasing success of Luftwaffe fighters (which were now armed with cannon and could out-range the bombers' defensive fire), the Combined Chiefs of Staff directed in June 1943 that the "first priority in the operation of British and American bombers based in the United Kingdom shall be accorded to the attack of German fighter forces and the industry upon which they depend." On 28 June, Arnold gave the Army Air Forces six months to provide some escort aircraft which would be able to accompany bombers to targets deep within Germany, but the heavy losses suffered by Eighth Air Force bombers on the long-range missions to Schweinfurt and Regensburg on 17 August and on the repetitive attack on Schweinfurt on 14 October gave warning that escort planes would be required well before 1 January 1944. In Washington, Kuter pointed out to Arnold that the invasions of Europe--"Overlord" on the Normandy coast and "Anvil" in southern France--tentatively set for May or June 1944, might not be possible unless immediate efforts were made to establish air superiority.[87]

In the United Kingdom, General Eaker was under a good bit of pressure to abandon daylight bombing and to convert to night attacks, but he believed that a climax was approaching in the air war, and--abandoning the idea of unescorted bombers--he asked Arnold to send him every available fighter. Eaker also asked the AAF Board to study his problem and recommend solutions. By December 1943, the AAF Board recommended that immediate efforts be made to provide pressurized, droppable fuel tanks to extend the range of P-51 Mustang and P-38 Lightning aircraft. Developed on its own initiative by the North American Aviation Company, some Mustangs had been sold to the British, and the Army Air Forces had bought some of them for employment as A-36 dive bombers. Other agencies had liked the P-51 before this, but the attention focused on it by the AAF Board speedily resulted in its development and quantity procurement as a high-performance, long-range fighter which would be able to accompany bombers to any target in Germany.[88] Effective on 1 January 1944, General Spaatz was given command of both the British-based Eighth Air Force and the Italian-based Fifteenth Air Force, and, between October 1943 and February 1944, the number of heavy bombardment groups operating against Germany increased from 26 to 48. The strategic air forces thus gained in mass at the same time that they got P-47 and P-51 fighters for escort.

"It is a conceded fact," General Arnold told the Commanders of the Eighth and Fifteenth Air Forces on 27 December 1943, "that Overlord and Anvil will not be possible unless the German Air Force is destroyed. Therefore, my personal message to you--this is a MUST--is to, '<u>Destroy the Enemy Air Force wherever you find them, in the air, on the ground and in the factories</u>.'" On 13 February 1944, the Combined Chiefs of Staff issued a new directive for the combined bomber offensive which ordered: "The progressive destruction and dislocation of the German military, industrial and economic systems, the disruption of vital elements of lines of communication and the material reduction of German air combat strength, by the successful prosecution of the combined bomber offensive from all convenient bases."[89]

Because of vagaries of weather, which on given days closed some strategic targets while others of another category were open, both the U.S. Strategic Air Forces and the RAF Bomber Command found it difficult to give overriding priority to sustained attacks against any one category of targets. Taking advantage of a short period of good flying weather beginning on 20 February 1944, USSTAF nevertheless directed six extremely heavy bombardment attacks at German fighter aircraft production plants, and the RAF Bomber Command flew night attacks against area targets related to aircraft production. Benefiting from fighter support flown by the Eighth, Ninth, and Fifteenth Air Forces and the RAF Fighter Command, the USSTAF bombers incurred a lower percentage of losses in daytime operations than did the RAF Bomber Command. The "Big Week" broke the back of the Luftwaffe fighter force, and in effect it established

Allied air superiority over Germany. As a result of the experience, the usual interpretation was going to be that bombers required fighter escort in order to operate. General Orvil Anderson, however, would point out that the attainment of Allied air superiority over Europe was in no small part attributable to mistakes made by Hermann Goering. For one thing, the German fighters never attempted significant morning attacks over Great Britain when the American bombers were taking off and laboriously forming up for missions and would have been most vulnerable. For another, the German fighters could have met the P-47's and P-51's near the Channel Coast and forced them to drop their wing tanks, thus making it impossible for the Americans to continue their missions. Instead, the German fighters preferred to meet the American formations deep within Germany, usually over the bomber target. But in Anderson's opinion, Goering made his greatest mistake at the end of December 1943, when he ordered his fighter pilots to avoid Allied fighters and concentrate their attack on the bombers. This order ignored the basic fact of air fighting that when aircraft of roughly equal performance meet, the one that seeks to avoid combat is automatically at an almost certainly fatal disadvantage. After some argument, Anderson was able to persuade Major General James H. Doolittle to issue orders on 4 January for Eighth Air Force fighters to take the offensive--"to pursue the Hun until he was destroyed"--rather than to continue to provide position defense to friendly bombers. Goering's mistake and the Eighth Air Force's quick recognition of what it meant apparently had a good result in the attainment of Allied air superiority.[90]

A close reading of Air Force correspondence of the Schweinfurt-Regensburg time period reveals a confidence that strategic bombers, employed in force, could still perform their missions over Germany but that an early attainment of Allied control of the air was necessary if the surface invasions of Europe were to succeed. The U.S. Strategic Bombing Survey, however, would state that the establishment of Allied domination of the air over Europe had proven "essential" to the strategic bombing campaign. Without domination of the air, the Bombing Survey reported, "attacks on the basic economy of the enemy could not have been delivered in sufficient force and with sufficient freedom to bring effective and lasting results."[91] After its description of the Schweinfurt-Regensburg losses the official Air Force history of World War II concluded: "The fact was that the Eighth Air Force had for the time being lost air superiority over Germany. And it was obvious that superiority could not be regained until sufficient long-range escort became available."[92] When questioned in October 1949 about the validity of this statement and about the history's general conclusion that the Eighth Air Force had sustained "unacceptable" losses late in 1943, General Hoyt S. Vandenberg pointed out that, in spite of strong enemy defenses, bombers had been able to get through to their targets "No bombing mission set in motion by the Army Air Forces in World War II," Vandenberg pointed out, "was ever stopped short of its

target by enemy opposition." He further explained that the question of "acceptable" or "unacceptable" losses to a bomber force depended upon "the destructive effect of bomber weapons and the value of the strategic target."[93]

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Army Air Force doctrine in the 1930's displayed little concern for the effect that hostile antiaircraft artillery fire might have on strategic bomber missions. Ground fire had not been effective against aircraft in World War I or in the Spanish Civil War. When American heavy bombers began to make daylight strikes against enemy targets in France in the autumn of 1942, however, it suddenly appeared that hostile flak might be more of an obstacle to the bomber mission than enemy fighters. When Colonel Curtis E. LeMay was enroute to England with the 305th Bombardment Group in October, he and his key officers happened to be in Prestwick at the same time that Colonel Frank A. Armstrong, Jr., was heading back through there to Washington. Armstrong had led the first daylight bomber mission to Rouen-Sotteville on 17 August, had flown two additional missions after this, and was as much of an expert as the fledgling airmen had ever seen. Armstrong told LeMay and his staff that a heavy bomber crew would not be able to survive over a gun-defended target if it maintained a straight course for more than 10 seconds. "This," LeMay recalled, "was pretty discouraging information." Even good peacetime bombardiers could hardly hit a target precisely with such a short run. LeMay knew that his crews would need to fly a straight-in bomb run in order to get enough aiming time, but the question was whether they could survive with such tactics. Using an old ROTC manual on the French 75-millimeter Field Artillery gun, LeMay worked out a fire problem on the number of rounds that a gun crew would require to hit a target the size of a B-17, sitting still on a hillside at a distance of 25,000 feet. He computed that the gun crew would have to fire 372 rounds. These looked like good odds, and LeMay convinced his group that it would go straight-in and make its attack without evasive action. Over St. Nazaire on 23 November 1942, with LeMay leading, the 305th encountered intense flak which damaged six of the 16 B-17's on the mission (including LeMay's lead plane), but no planes were lost and the target was well covered with bombs. "We never did take any evasive action from then on," LeMay recalled, "and within three weeks no one else was taking evasive action either."[94]

Operating over France and Germany, American heavy bombers and other aircraft met exceedingly strong antiaircraft artillery defenses. From the start of the war Germany had accorded flak equipment an equal production priority with aircraft, and in December 1944 she gave it an even higher priority. By the end of 1944, German flak defenses included 16,000 heavy guns, 50,000 light and mobile guns, 7,500 searchlights, and 1,500 barrage balloons, manned by more than

1,000,000 men. Important targets were defended by all-around emplacements of heavy guns--the principal gun being the 88-millimeter piece that could fire 20 rounds per minute. The great Ruhr defenses were capable of hurling 200 tons of metal and explosives into the air every minute; the Cologne defenses, 80 tons; the Berlin defenses, 70 tons. The total German flak defenses, firing for one minute, could have put 5,000 tons of shells into the sky.[95] Within the Ninth Air Force flak evaluation intelligence and counter-flak tactics helped tactical aircraft maintain the element of surprise that they needed to survive fire from very-mobile, always-moving light flak.[96] The Eighth and Fifteenth Air Forces also used flak intelligence in the planning of their missions, but, in view of the all-around defenses at most strategic targets, about the best that could be said was that a mission approaching a hypothetical target from the north might be expected to draw 372 rounds while one from the east would receive 374. In the last months of the war some bombs would be directed at flak emplacements for flak suppression purposes, but, for the most part, strategic bomber mission planners usually ignored flak and picked target approaches for some other tactical reason such as a course that would have a good initial point or that would keep the sun at the backs of the bombardiers. The best tactic against heavy flak was to get as many bombers over a strategic target as quickly as possible in order to saturate the defenses.[97]

In the early years of the war in the European theater, hostile flak and fighters worked together effectively; many of the bombers shot down by the Luftwaffe were first crippled by flak and forced to straggle. When the back of the German air force was broken early in 1944, antiaircraft artillery became the major combat risk. On combat missions in the European theater from August 1942 through May 1945, the Army Air Forces lost 4,274 aircraft in air-to-air combat (2,452 heavy bombers, 131 medium and light bombers, and 1,691 fighters) and 5,380 aircraft to hostile antiaircraft fire (2,439 heavy bombers, 492 medium and light bombers, and 2,449 fighters). Figured in terms of total effective combat sorties flown in the European theater (274,921 by heavy bombers, 96,523 by light and medium bombers, and 527,314 by fighters) the loss rate of American aircraft that met these most effective of World War II defenses were less than 2 percent. Interestingly enough, when the Army began to test modern methods of war gaming shortly after the war ended, it played the B-17's and B-24's against the German fighter and 88-millimeter gun defenses of World War II: the war gamers concluded that the heavy bombers could not live in such an environment, this despite the fact that the loss rates in the actual war had been less than 2 percent. "Experience, I think," General LeMay observed when he was told about these conclusions, "is more important than some of the assumptions you make."[98]

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The Anglo-American strategic air campaign against Germany marked the first significant effort to do something drastic to an enemy other than to defeat his combatant forces. In this pioneer effort, planners sought to describe air target systems, whose destruction would accomplish desired objectives. One of the major problems facing these planners was a lack of basic information about German industry when the war began. As strategic bombing commenced, German industries were dispersed, adding to the complexity of the target identification process. Hitler, moreover, did not order full-scale German mobilization for war until 1942, and the German economy thus had a cushion of capability that could be employed to expand production in 1943-44.[99]

Thinking in terms of a survey of the strategic vulnerability of U.S. industry to strategic air attack which had been made at the Air Corps Tactical School in the early 1930's, the air officers who drew up AWPD-1 recommended strategic air attacks against Germany's electric power, transportation, oil and petroleum, and civilian morale. AWPD-42 specified the order of priority of air targets as being: aircraft and aircraft engine factories, submarine building yards, transportation, electric power, oil, aluminum plants, and rubber plants. The major difference between the two target lists was that AWPD-1 assumed that an air offensive might eliminate the necessity for a subsequent ground invasion while AWPD-42 looked toward the establishment of an air ascendancy necessary to subsequent surface operations. The strategic target systems suggested in AWPD-1 much more closely approximated the findings of the U.S. Strategic Bombing Survey as to what the optimum target system for the destruction of Germany's industrial life would have been than did either AWPD-42 or the attack program which, under orders from higher authority, was actually implemented.

Under directives from the Combined Chiefs of Staff, the Eighth Air Forces was required to direct much of its effort against target systems which were selected in context with surface warfare requirements. Because of heavy Allied ship losses in the Battle of the Atlantic, the Casablanca directive of January 1943 required the strategic bombers to give first priority to attacks against German submarine bases and construction yards. Tons of bombs were dropped on the heavily fortified submarine pens without material effect: the ultimate solution for the German submarine menace proved to be their detection and destruction at sea after May 1943.[100] Lacking sufficient force to handle decisive target systems, General Eaker attempted to discover a "long-chance objective" whose destruction would produce very important results greatly out of proportion to the effort involved. In Washington on 8 March 1943, General Arnold's Committee of Operations Analysts recommended that the destruction of three plants at Schweinfurt which produced ball-bearings would eliminate 43 percent of a most essential ingredient to the Axis war effort. "On the basis of American experience, as well as in the opinion of responsible authorities in the United Kingdom,"

stated the Committee, "ball bearings represent a potential bottleneck in German industry, particularly in the manufacture of war material."[101] Although about 12,000 tons of bombs were dropped on the ball-bearing plants in a series of attacks beginning on 17 August 1943, the U.S. Strategic Bombing Survey later reported that "there is no evidence that the attacks on the ball-bearing industry had any measurable effect on essential war production."[102]

By the time of the organization of USSTAF in January 1944, General Spaatz had a growing capability to destroy selected strategic target systems in Germany. In the months which followed "Big Week," however, USSTAF strategic bombing capabilities were diverted to attacks against German V-weapon sites and to missions in direct or general support of Allied ground troops in Europe. Even though Spaatz was permitted to begin attacks against Germany's oil resources on 12 May 1944, it is fair to state that a massive sustained air campaign against strategic air targets in Germany did not begin until after D-Day, when Allied ground troops were safely ashore on the Normandy coast. By December 1944, German reserves of fuel were insufficient to sustain effective military operations. Undertaken intensively in September 1944, the strategic air campaign against Germany's transportation was described by the U.S. Strategic Bombing Survey as "the decisive blow that completely disorganized the German economy." Contrary to the intention of early AAF planners, the German electric power system was never a principal target. "Had electric generating plants and substations been made primary targets. . .," the U.S. Strategic Bombing Survey stated, "the evidence indicates that their destruction would have had serious effects on Germany's war production." Under the full force of strategic bomber attack and with war requirements multiplying more swiftly than production could handle, the economic life of Germany virtually collapsed by December 1944. "The German experience," stated the U.S. Strategic Bombing Survey, "suggests that even a first-class military power--rugged and resilient as Germany was--cannot live long under full-scale and free exploitation of air weapons over the heart of its territory."[103]

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In the Pacific the pattern of Allied operations and commitment of forces was different from that employed in Europe, but the strategy relative to the employment of air power was essentially the same. Because of Japanese expansion in the first year of the war, Air Force planners recognized that even the very-long-range B-29's would be unable to reach the Japanese homeland until the enemy's perimeter had been reduced. "Our armed forces in the Far Eastern Theater," stated AWPD-42, "are not within effective striking distance of the vital sources of Japanese military policy. . . . Hence from the standpoint of air requirements, the Far Eastern operations may be divided into two phases: (1) Air operations in

support of our land and sea forces to regain bases within striking distance of Japan. . . . (2) Air operations against Japan proper to destroy her war making capacity." During 1942 defensive battles at the Coral Sea and Midway contained Japan's efforts to extend her perimeter, and limited American offensives in the Solomon Islands and eastern New Guinea added security to Allied bases. In Washington early in 1943, the Joint Strategic Survey Committee favored a carrier-aircraft supported drive across the Central Pacific to the China Coast, where air bases could be established to permit an extended air campaign against Japan. In the Southwest Pacific Area, however, General Douglas MacArthur urged the wisdom of an advance along the New Guinea-Philippines axis to the China Coast. At the Quadrant conference in Quebec in August 1943, the Combined Chiefs of Staff authorized limited operations along both lines of advance. Between Quadrant and the Sextant conference, which would be held in Cairo in November-December 1943, the Washington Joint Staff Planners debated two controversial ideas at length and with some heat.[104]

Easiest to resolve of the two controversies was the concept of operations to be set forth in a Joint War Plans Committee overall plan for the defeat of Japan. The initial draft of the concept included a statement to the effect that it had been clearly demonstrated in Europe that air forces by themselves were incapable of decisive action and that as a result an invasion and conquest of the Japanese home island would be necessary to conclude the war. When he returned from Europe and became chief of the Combined and Joint Staff Division of AAF Plans in November 1943, Brigadier General Hansell could not get the basic thought in the concept paper eliminated, but he managed to get it materially modified. The new concept noted that it had not been demonstrated thus far in Europe that air power could of itself bring a powerful modern nation to defeat, but that the circumstances in the island nation of Japan were quite different from those in Europe and it had not been proved that such an achievement could not be attained in the Japanese case. In any event, whether or not Japan could be brought to surrender by air attack, Japanese resistance would have to be drastically reduced through a sustained bombing effort if an invasion of the Japanese homeland was to be feasible. Hence, whether or not an ultimate landing might be necessary, a preliminary air offensive would be essential. Thus a first priority would have to be given to the development and employment of air forces to conduct a sustained offensive against the Japanese homeland.[105]

The second part of the planning controversy had to do with the prospective employment of the new B-29 Superfortress bombers, which had been bought from blueprints and would be service-tested in combat beginning in 1944. With General MacArthur's support, Lieutenant General George C. Kenney wanted to station the B-29's at Darwin, Australia, and to employ them against strategic targets in the Netherlands East Indies, but General Arnold was determined

that the B-29 force would be used against targets in or adjacent to the Japanese home islands. In March 1943, AAF Plans had begun to study a project for the employment of B-29's against Japan from bases in south-central China, and Arnold had asked the Committee of Operations Analysts to prepare an analysis of potential strategic targets in Japan. This planning got approval at the Sextant conference in December 1943: it was agreed that the "Matterhorn" project would include the construction of bases near Calcutta in India and at Chengtu in south-central China for the employment of the USAAF XX Bomber Command and two wings of B-29's. The Committee of Operations Analysts recommended that the B-29's be employed against merchant shipping, steel production, urban industrial areas, aircraft plants, the anti-friction bearing industry, and the electronics industry as preferred target systems. The committee believed that it would be possible to immobilize Japan's steel production by the destruction of a few coke plants in Manchuria and Japan. It also pointed out that Japan's urban industrial areas were few, concentrated, and very vulnerable to incendiary attack.[106]

Because of logistical problems the XX Bomber Command would be able to operate only a few B-29 groups from bases in isolated south-central China. From Chengtu, moreover, the B-29's would not have enough range to reach Tokyo and other industrial targets on Honshu. Quite early AAF planners favored the Mariana Islands as potential bases for B-29's, but they had no real information as to the number of bases that could be built in these islands, which were held by the Japanese. Bases were accordingly constructed in the Aleutians at Adak and Shemya to accommodate four B-29 groups; an existing airfield on Ceylon was enlarged to permit B-29 staging for attacks against the oil fields in the Netherlands East Indies; and consideration was given to the eventual establishment of a B-29 command in the Philippines. At the Sextant conference in Cairo, however, Arnold urged that B-29 operations ought to be begun from China in May 1944 and also from the Marianas before the end of that year. Once again, the Combined Chiefs of Staff authorized continued advances through the Central and Southwest Pacific, without definitely accepting either line of attack as being better than the other. In Washington, during February 1944 the Pacific strategy was more fully debated by representatives of General MacArthur and of Admiral Chester W. Nimitz, Commander-in-Chief of the Pacific Fleet and Pacific Ocean Areas. Siding with Nimitz's representative, General Hansell presented the AAF concept of the Pacific war, which stressed the importance of the Marianas and the bomber offensive which could be conducted from them, to the Joint Chiefs of Staff on 15 February. After hearing all parties, the Joint Chiefs on 12 March 1944 ordered Admiral Nimitz' Pacific Ocean Areas forces to invade the Marianas beginning on 15 June 1944. Since a new XXI Bomber Command would be based in the Marianas, the Joint Chiefs limited the size of the XX Bomber Command to a single wing of four B-29 groups.[107]

If the B-29 forces had been assigned to the European Theater of Operations they doubtless would have been organized into the same USSTAF command structure under the general direction of the Combined Chiefs of Staff as was used to control the heavy bomber strategic forces. The conduct of a strategic air war against Japan, however, posed different command problems. Only after the end of European hostilities could British air forces expect to be employed in the Pacific, and in the Pacific the B-29's would be based in several different theaters of operations. Arnold would later remember that a visit to the Pacific in the autumn of 1942 had made him realize that he would have to retain command of the very long range B-29's: "There was nothing else I could do," he remarked, "with no unity of command in the Pacific." In the first thinking about Matterhorn, the AAF staff favored the establishment of a strategic air force headquarters in Washington, similar in concept to the old GHQ Air Force, which would be directly responsible through Arnold to the Joint Chiefs of Staff. When the Joint Chiefs accepted this concept, the U.S. Twentieth Air Force was activated on 4 April 1944. Arnold assumed personal command as the executive agent of the Joint Chiefs; Hansell was designated chief of staff; and members of the Air Staff doubled in duty as the staff of the Twentieth Air Force. Commanders of the theaters in which the Twentieth Air Force's XX and XXI Bomber Commands were based were directed to coordinate B-29 operations with other air operations in their theaters; to construct and defend B-29 bases; and to provide logistical support and common administrative control of the B-29 forces. Should strategic or tactical emergencies arise requiring the use of the B-29 forces for purposes other than the missions assigned to them by the Joint Chiefs, the theater commanders were authorized to use the B-29 forces, immediately informing the Joint Chiefs of such action. As will be seen, the B-29 command organization would be revised again in 1945, but several years later an Air Force officer would describe the wartime establishment of the Twentieth Air Force as "one of the most important events in United States Air Force history. If that had not occurred," he thought, "we might still be parcelling out our big punch in penny packets to numerous theaters and lower commands."[108]

Except for the fact that the Japanese army and navy air forces had already been reduced to low effectiveness by earlier theater air battles, the early operations of the Twentieth Air Force's XX Bomber Command were similar to the early indecisive results of the Eighth Air Force in Europe. Like the fledgling Eighth Air Force, the XX Bomber Command was a piecemeal commitment of too little capability to perform effective strategic air attacks, and, once again, the available force was employed against "long chance" objectives. Called upon to operate the new B-29 planes on very long range missions against priority iron and steel targets in Japan and Manchuria, the XX Bomber Command faced the additional problem of providing logistical support across the Himalayas to the forward operating bases at Chengtu. In final analysis, only about 14 percent of the command's

capability could be employed against the enemy, the remaining 86 percent being absorbed by the use of B-29's as tankers to haul fuel from India into China. At the initiation of its operations on 15 June 1944, the XX Bomber Command nevertheless sent 47 B-29's to attack the Yawata iron and steel works on Kyushu. By January 1945, the command would have dropped about 800 tons of bombs on targets in the Japanese home islands, but the raids were of insufficient weight and accuracy to produce significant results. Several daylight precision attacks were flown against coke ovens at Anshan, Manchuria, but these attacks were later determined to have had little strategic significance since Japanese iron and steel production had already been severely curtailed because of a loss of shipping needed to transport raw materials.[109]

In an effort to get results from the XX Bomber Command, Arnold sent Major General LeMay to take command of it on 29 August 1944. In the months that followed, LeMay substantially improved the operating record of the B-29's, but there was little that he could do to increase the effectiveness of attacks against Japanese targets that were physically too far distant from the Chengtu bases. In the autumn of 1944, the XX Bomber Command was used to attack targets on Formosa, in Burma, at Singapore, and in the Netherlands East Indies. In January 1945, LeMay was transferred to the Marianas, and in the following months the XX Bomber Command was also moved to Pacific bases. Looking backward at the XX Bomber Command experience, Brigadier General John B. Montgomery, who had been the deputy chief of staff for operations of the XXI Bomber Command, concluded that the piecemeal employment of the B-29's had provided a psychological boost for China's sagging morale, but from a military standpoint he suggested that the B-29 effort flown from China and India might just as well have been saved until facilities were ready to permit the B-29's to be marshalled and employed as an effective striking force. "Had we done that," Montgomery thought, "we would have saved airplanes and crews . . . and I think the war would have been over at about the same time."[110]

* * * *

Only three days after Admiral Nimitz' forces invaded the Marianas on 15 June 1944, construction of a B-29 base began at Isley Field on Saipan. When General Hansell, who had taken command of the XXI Bomber Command, landed the first B-29 at Isley on 12 October, however, he found that only a single unpaved airstrip had been built. In the Marianas, the B-29 command would find it difficult to obtain adequate logistical support from a theater command which was primarily intent on building a fleet base and other facilities to support continuing surface operations.[111] Back in Washington, while facilities were being built in the Marianas, Twentieth Air Force target planners were making a new appreciation of the strategic vulnerability of Japan to air attacks that could be flown

by the XXI Bomber Command. During the summer the target planners lost their enthusiasm for Japanese iron and steel targets and favored predominant attacks against Japan's aircraft plants. At Arnold's request, the Committee of Operations Analysts submitted a fresh appreciation of Japan's strategic vulnerability based on the separate assumptions that Japan might either be defeated by an air and sea blockade or by those means plus a surface invasion. On the first premise, the Committee recommended a general air campaign against shipping including extensive aerial mining operations, an attack against the aircraft industry, and saturation bombing of six urban industrial areas. In the event of a surface invasion, the Committee recommended priority attacks against the aircraft industry, with effort also against industrial targets and intensification of the antishipping campaign. In the European theater, AAF commanders had not favored the area bombing attacks that were flown against cities by the RAF Bomber Command. In its earliest analyses of Japan, however, the Committee of Operations Analysts had brought out the fact that Japan's cities were highly flammable and that a substantial part of Japan's war production was done in small factories dispersed throughout urban areas. On 24 April 1944, General Kuter had called the Twentieth Air Force's attention to incendiary tests against simulated Japanese city targets which were being conducted at Eglin Field, and the AAF Board soon completed two reports recommending the proper admixture of incendiaries and fragmentation bombs and the tactics and techniques of B-29 incendiary missions which might prove most effective against Japan's cities.[112]

Although the Joint Target Group of the Joint Chiefs of Staff accepted the report of the Committee of Operations Analysts, it discounted the possibility that the Japanese war might be ended by any means short of surface invasion and recommended that an emphatic priority be given to the destruction of Japan's air power and that urban attacks and mining operations be delayed. Acting for the Joint Chiefs, the Twentieth Air Force accordingly directed the XXI Bomber Command to attack Japan's major aircraft plants. Following delays caused by weather, the XXI Bomber Command sent its first bombing mission on a high-level attack against Tokyo's Nakajima aircraft plant on 24 November 1944. Against the high-flying B-29's Japanese fighter interceptors had little real effect, but in the months which followed the precision bombing effort appeared rather unsuccessful. Adverse winter weather scattered bomber formations, obscured targets, and reduced bombing accuracy. The long flights to Japan and the need to lift heavy bomb loads to more than 25,000-foot bombing altitudes strained engines and brought about substantial losses of aircraft at sea. Impatient with the performance of the XXI Bomber Command, General Arnold moved General LeMay to its command on 20 January 1945, but neither the new commander nor the commitment of another bomb wing to combat from North Field on Tinian on 4 February appeared to give better results. Actually the B-29 attacks against the Japanese aircraft factories proved to be more effective than was

realized. The U.S. Strategic Bombing Survey would discover that the damages caused by the B-29's were enough to convince the Japanese of a need to disperse their aircraft plants. The destruction inflicted, plus the confusion resulting from frantic dispersal efforts, reduced the pre-attack capacity of aircraft engine plants by 75 percent, of airframe plants by 60 percent, and of electronics and communications equipment plants by 70 percent.[113]

Apprehensive concerning reports that the Japanese were building a new and heavily armed fighter interceptor that might inflict heavy losses upon the B-29's and mindful of the need for fighter escort in the European theater, General Arnold had sent a memorandum to the Joint Plans Section in July 1944 recommending the seizure of the island of Iwo Jima midway between the Marinanas and Japan to serve as a base for long-range escort fighters. That same month Arnold committed some five long-range P-47N and P-51 fighter groups to the XXI Bomber Command. As it happened, Japanese air defenses would never be a serious threat to the B-29's, but in November 1944 the Japanese began to stage a few heckling attacks through Iwo Jima against the airfields in the Marianas, and in the early months of B-29 operations against aircraft factories the Japanese were able to concentrate their fighters on occasion and to shoot down a few B-29's. Actually, Japan's air defenses were rapidly losing their effect and the heckling attacks had ceased before Nimitz' forces invaded Iwo Jima on 19 February 1945. After very severe ground fighting had cleared the island, the VII Fighter Command deployed three fighter groups to Iwo Jima in March. Long-range Mustangs escorted B-29's to Tokyo on 7 April, but they would not often be called upon for such support. The XXI Bomber Command had begun to operate mostly at night, and, after 5 June 1945, the Japanese made their last effective air opposition against day-flying B-29's. Yielding complete air supremacy, the Japanese elected to hoard their remaining aircraft for suicide attacks against an expected surface invasion.[114]

Up until 6 March 1945, General LeMay considered that the XXI Bomber Command had not "really accomplished a hell of a lot in bombing results." The command, however, was gaining strength, for a third bombardment wing began operations from North Field on Guam on 25 February. With the impending arrival of this third B-29 wing, Arnold issued a new target directive on 19 February which continued to give first priority to precision attacks against aircraft engine factories but moved incendiary attacks against urban industrial concentrations in Tokyo, Nagoya, Osaka, and Kawasaki into a strong second priority. While the fire raids were thus desired by Washington, General LeMay kept his own counsel on the tactics that he would employ on the great Tokyo fire raid which would be mounted on the night of 9/10 March 1945. He called for a stream of bombers from the three wings to come in low (4,900 to 9,200 feet) and to drop their incendiaries on fires started by pathfinder crews. Since gunners who would be unused to night attack

might shoot at each other's planes in the dark, LeMay ordered both guns and gunners removed from the B-29's. The weight saved by the removal of armament and the low attack altitude would permit the B-29's to carry very heavy loads of fire bombs. Many aircrewmen were confident that LeMay's radical tactics could do nothing but get them killed, but, over the target in a steady stream in the early morning hours of 10 March, the B-29's sustained only moderate losses as they kindled fires which destroyed about one-fourth of metropolitan Tokyo. LeMay had staked his professional career on the decision to operate the bombers at low level. "This decision, combining technical acumen with boldness of execution," General Hansell said later, "was one of the classic air decisions of the war."[115]

With 385 B-29's available in his combat wings, General LeMay was able to order combat missions every fourth to sixth day, depending on the weather, which would be the most serious obstacle affecting operations. Daylight precision-bombing attacks against industrial targets would be conducted from medium levels, and fire raids would continue against Tokyo, Kobe, Osaka, and Yokohama. At the end of March, however, the XXI Bomber Command found itself diverted from strategic air warfare to support the American invasion of Okinawa. Preparatory to this campaign, the XXI Bomber Command began to mine Japan's shipping channels and harbors on 27 March. On the same day, other B-29's struck Japanese airfields of Kyushu, and, as he was authorized to do in an emergency, Nimitz required approximately 75 percent of the XXI Bomber Command's combat effort to be flown against airfields on Kyushu and Shikoku in the period between 17 April and 11 May. Recognizing the gravity of the situation caused by Japanese suicide air attacks against the American forces at Okinawa, LeMay did not strongly resist this commitment of his forces even though he suggested that bomber attacks could not completely neutralize the hostile airfields. The Iwo-based long-range fighters of the VII Fighter Command also made sweeps over Japanese airfields on Honshu and Kyushu, without scoring very good results. Hostile planes were widely dispersed, and the enemy pilots would not come up and fight.[116]

Believing that all-out air attack could force Japan to surrender prior to a surface invasion, LeMay was willing to commit his command to maximum operations, even at the risk of exhausting all available crews. In the waning weeks of May and the early days of June, the XXI Bomber Command returned to strategic air attacks and completed the conflagration of Japan's five principal urban industrial areas. Arriving from India, the 58th Bombardment Wing began missions from Tinian on 5 May, and another B-29 wing which had been especially equipped to make radar attacks against oil storage facilities rounded out the XXI Bomber Command's strength when it arrived on 26 June. By the late spring of 1945, Brigadier General Emmett O'Donnell, Jr., commander of the 73d Bombardment Wing, which had been first into action from the Marianas, noted a general conviction throughout the bomber command that the Japanese could not stand up under the

terrific amount of damage that the B-29's were placing upon them. "I thought personally," recalled O'Donnell, "in a couple of weeks it would be all over." When Arnold visited Guam early in June, LeMay told him that 30 to 60 of Japan's cities and every industrial target in the home islands would be destroyed by 1 October. In the air, the B-29's were virtually unopposed. "The record will show," LeMay later commented, "that in the last two months of the war it was safer to fly a combat mission over Japan than it was to fly a B-29 training mission back in the United States."[117]

* * * *

As early as March 1945 the Japanese government began to give serious consideration to ending the war, and on 20 June Emperor Hirohito told his council that it would be necessary to have a plan to close the war at once. Early in July the Japanese government requested the Soviet Union to intercede with the United States to stop the war, but the Soviets refused to relay the proposal, and, in any event, Japan's militarists continued to play for time. These men believed that if Japan could somehow survive the air attacks she might be able to inflict such a high rate of casualties on American surface invaders as to be able to get a negotiated peace. The reiteration of the unconditional surrender formula in the Potsdam Declaration on 26 July 1945 gave new strength to the Japanese militarists.[118]

In Washington top-level American officials knew of Japan's desire to end hostilities, but in September 1944 the Combined Chiefs of Staff had committed the United States and Great Britain to the seizure of "objectives in the industrial heart of Japan." This surface strategy was reaffirmed at Yalta in February 1945, and the Soviet Union obtained territorial concessions in East Asia in return for promises to join the war against Japan when hostilities were concluded in Europe. In the spring of 1945, the question was not so much whether Japan would be invaded, but how the effort would be ordered and commanded. Arnold thought that a supreme commander should be appointed, with coequal status for ground, naval, and air force subordinates--an arrangement which would permit all AAF units in the Pacific to serve under one top air commander. Not willing to accept this proposal, the Joint Chiefs on 3 April 1945 instead approved a directive which designated General MacArthur as Commander-in-Chief, Army Forces in the Pacific, and named Admiral Nimitz as Commander-in-Chief Pacific, with command over all naval forces. While MacArthur would command all theater air forces in the Pacific, the Joint Chiefs agreed on 2 July to authorize the establishment of the United States Army Strategic Air Forces (USASTAF), under the command of General Carl Spaatz, with a headquarters on Guam. Under this plan, the XXI Bomber Command was redesignated as the Twentieth Air Force, and the Eighth Air Force was to be redeployed from Europe to command new B-29 wings based on Okinawa. The Joint Chiefs of Staff would direct USASTAF operations, and Arnold would act as their executive agent for USASTAF.[119]

Under the new command organization, the Twentieth Air Force was established in the Marianas on 16 July, with the five wings and 21 B-29 groups plus the Iwo-based fighters that had previously been assigned to the currently inactivated XXI Bomber Command. Employing 923 B-29's the Twentieth operated virtually at will over Japan during July, and after 4 July General Kenney's Far East Air Forces began to strike targets on Kyushu from bases on Okinawa. During the Okinawa crisis, General LeMay had supported naval operations without demur, but he had other thoughts when Admiral William F. Halsey requested on 14 July that the B-29's would fly maximum effort strikes against airfields in the Tokyo area on 24-25 July and again on 1-2 August to support Third Fleet carrier air strikes into the Tokyo-Nagoya areas. LeMay protested that it was foolish to expend 6,500 tons of B-29 bombs in order to protect the carriers while their aircraft would be dropping 500 tons of bombs; he agreed, however, to use Iwo-based fighters in support of the Third Fleet strikes. Thinking differently, the Joint Chiefs ordered LeMay to employ the B-29's as Halsey requested. On 24 and 25 July, Iwo-based P-51's were sent out against airfields in the Tokyo area, but bad target weather somehow prevented B-29 attacks, which were diverted to their original strategic targets.[120]

Arriving on Guam on 29 July, General Spaatz commenced work on the organization of the United States Army Strategic Air Forces (which would not be completed before the war's end). If the organization had been fully accomplished, the Eighth and Twentieth Air Forces would have controlled a total of 49 B-29 groups. As it was, Lieutenant General Doolittle established the Eighth Air Force on Okinawa on 19 July, but its first B-29 wing was in process of getting into place when Japan surrendered. Before reaching the theater, Spaatz had been briefed on the terrible secret of the atomic bomb, which the 509th Composite Group on Tinian would be prepared to drop on a target designated by Washington as soon as it could be delivered from laboratory production. Escorted only by photo planes, a 509th Group B-29 dropped the first atomic bomb against Hiroshima. Three days later, another of the group's planes dropped the second atomic weapon over Nagasaki. Apparently now in some haste, the Soviet Union declared war on Japan. On 10 August, the Japanese government officially announced its decision to accept the Potsdam surrender terms, provided the surrender would not alter the institution of the emperor. Although Japan thus did not surrender unconditionally, the United States and its Allies accepted Japan's offer and terminated active hostilities on 12 August 1945.[121]

The revolutionary employment of nuclear air weapons and the entry of the Soviet Union into the war tended to obscure the contributions of the sustained conventional strategic air offensive to the defeat of Japan. Looking backward, Spaatz could not see how the entry of Russia into the war had any effect on Japan's decision to surrender. He also believed that conventional bombing could have ended the war, but he thought that the employment of the atomic

bomb had been justified as a means of insuring without doubt that many Americans would not have to lose their lives in a tremendously costly surface invasion.[122] "Without attempting to minimize the appalling and far-reaching results of the atomic bombs," Arnold observed, "we have good reason to believe that its actual use provided a way out for the Japanese government. The fact is that the Japanese could not have held out long, because they lost control of their air. They could not offer effective opposition to our bombardment, and so could not prevent the destruction of their cities and industries."[123] Based upon a thorough investigation, the U.S. Strategic Bombing Survey stated its opinion that "certainly prior to 31 December 1945, and in all probability prior to 1 November 1945, Japan would have surrendered even if the atomic bombs had not been dropped, even if Russia had not entered the war, and even if no invasion had been planned or contemplated."[124]

3. Thoughts on Air Power and Air Force

"The air power of a nation," the Air Corps Tactical School had taught as early as 1935, "is its capacity to conduct air operations; specifically, the power which a nation is capable of exerting by means of its air forces. Air power is actual and not potential. Air power is measured by the immediate ability of a nation to engage effectively in air warfare."[125] In the view of the Air Corps Tactical School, air power was synonymous with the military air striking force in being, but to many observers the experience of World War II indicated that this definition was much too restrictive.[126]

When he published his widely-read Victory Through Air Power in 1942, Alexander de Seversky drew upon his experience as a Tsarist military pilot and as an inventor, airplane designer, and aircraft producer in the United States and boldly predicted that aircraft would be developed with global ranges, thus ending the isolation of the Western Hemisphere. "Range deficiency," Seversky wrote, "has been the curse on Hitler's aviation." The United States would soon be open to air attack from every point of the compass. "It is sheer waste," he concluded, "to maintain advance bases instead of hurling the full aerial potential directly against the adversary. The entire logic of aerial warfare makes it certain that ultimately war in the skies will be conducted from the home grounds, with everything in between turned into a no-man's land." Seversky's concept of global air warfare paralleled the naval warfare ideas which he had obtained from study of Mahan. He also followed Mahan, as he later admitted, in offering a wide conception of the nature of air power, which included a striking air force, a defense air force, cooperation air forces, as well as the industries, the personnel, the materials, or, in short, everything that produced the power to navigate in the air.[127]

When General Arnold made his official report to the Secretary of War on 12 November 1945, he accepted the same extrapolation of Mahan's classic definition of naval power. "Air power," Arnold stated,

"includes a nation's ability to deliver cargo, people, destructive missiles and war-making potential through the air to a desired destination to accomplish a desired purpose. Air power is not composed alone of the war-making components of aviation. It is the total aviation activity--civilian and military, commercial and private, potential as well as existing."[128] This definition was accepted by General Spaatz, when he had become chief of staff of the U.S. Air Force in 1947,[129] and the Congressional Aviation Policy Board stated in 1948 that: "Air power is the total ability of a nation to capitalize on the medium of flight. . . . National air power is an entity not fundamentally divisible as a weapon, or as a carrier. Materials, organization, and craftsmanship which go to make a great aviation industry are as readily turned to the combat plane as to the transport."[130]

Prior to World War II, Air Corps thinkers had visualized the air force as a striking arm quite separate and distinct from the auxiliary aviation which supported surface action, although the separate air striking arm could be used as necessary to support ground action. By 1945, however, General Arnold equated the "air force" with "military air power," and a few years later Spaatz emphasized that Congress had assigned the nation's "primary air power role to the Air Force."[131] Again in 1945, Arnold described the air force as comprising a global striking force employed from strategically located bases which would be able to meet and overpower an aggressor's air threat as near as possible to its source, a tactical air force which would work closely with the army, air transport and troop carrier aviation, and an up-to-date training establishment fully supplied with the latest aircraft and equipment.[132]

Addressing the first class in the new Air Command and Staff School in September 1946, an Army Air Forces instructor stated: "Air power is a force in itself capable of being used alone or in cooperation with other forces. The early prophets of air power, careless of their terminology, claimed that air power rendered obsolete all other weapons and armed forces. Though these men were led to false prophecy, their vociferous claims no doubt helped to hasten the development of air power."[133] Although this lecture was not authoritative, it manifest an apparently prevalent opinion springing from the highest levels of authority that World War II had been a composite victory of cooperative air, ground, and naval forces. "The elementary lessons which we have learned from the hard experience of World War II," stated Secretary of War Robert P. Patterson in October 1945, "is that there must be a single direction of the Nation's land, sea, and air forces . . . these arms must operate as a single team under single direction, which has final responsibility and final power of decision over all."[134] "Air power tipped the scales for victory in the war," Patterson wrote in January 1947, but in November 1947 he stated: "World War II was not won in the air alone. It was won by the combined effort of ground forces, sea forces and air forces, working as members of a single team."[135]

The "team" concept of Allied victory in World War II was strongly supported by high-ranking Army officers. "The national security is

measured by the sum, or rather the combination of the three great arms, the land, air, and naval forces," General Marshall stated in October 1945.[136] "In my opinion," said General Omar Bradley in November 1945, "no one service won this war or is going to win any future war of any magnitude. It takes all our services together, plus the industrial effort of our Nation to win any major war." Illustrating his point, Bradley granted that air attacks cut down the employment of German V-2 rockets against England, but he invited attention to the fact "that not until the Navy and the Army forces got together and went over and captured the launching sites did the V-2 attacks completely come to a stop."[137] As Chief of the War Department Plans and Policy Group in February 1947, Brigadier General George A. Lincoln argued that World War II had demonstrated that air power was "a dominant factor" in war and peace but that it had also taught that a tremendous hidden Army and Navy effort was required "to make air power effective over the target." This included air-ground battles required to seize and hold air bases needed to put air power over its target.[138] "The war also illustrated," stated Secretary of the Army Kenneth C. Royall in December 1947, "that final victory had to be won by tanks, guns and men, on the ground." Allied forces, Royall continued, "never stopped the launching of the V-bombs, and never engaged in any material damage to them or to the submarine pens, until the infantry did so from the ground, despite the enormous bombing and almost unopposed bombing of Europe for a considerable period of time, and in great volume."[139] "Although I am personally convinced that Air Power will again be the dominant factor," said General J. Lawton Collins in October 1948, "I'm equally convinced that Air Power alone cannot win the war. . . . It took, and it will again take, in my opinion, the combined operations of land, sea and air forces to reach a conclusion."[140]

Although the Navy appeared somewhat less enthusiastic about the "team" concept than did the Army, the theater commanders of the Pacific war--General MacArthur and Admiral Nimitz--saw the defeat of Japan as a victory of combined forces. "The victory was a triumph for the concept of the three dimensions of war--ground, sea and air," MacArthur stated in October 1945. "By a thorough use of each arm in conjunction with the corresponding utilization of the other two, the enemy was reduced to a condition of helplessness. By largely avoiding methods involving the separate use of the services and by avoiding methods of frontal assault as far as possible, our combined power forced the surrender."[141] Admiral Nimitz thought in 1945 that without the atomic bombs the surrender of Japan "would have taken a longer time," but he thought that the victory resulted from "the strangulation of her industry, her being cut off from all supplies, her lack of gasoline, her inability to get raw materials from China. . . . Such gasoline as they had was stored in places from which it could not be distributed, because the transportation systems had been destroyed by the air attacks; the very efficient

destruction carried on by the B-29's. It was just a question of time before the Japanese would have been forced to this same surrender. The atomic bomb undoubtedly hastened that surrender."[142]

Army Air Forces leaders also accepted the point of view that World War II had been won by combined arms. Thus in April 1944, Major General Follett Bradley could urge that the "true expositor of military things to come must . . . evaluate correctly the effect of air power in combination with land and sea power on a battle, a campaign and a war, and he must know something of the technique by which that effect is produced."[143] In October 1945, Arnold hailed the command decisions of February 1943 by which "the air had been consolidated under an air command, coordinate with similarly concentrated land and naval forces. . . . With this change it became possible to exploit fully the versatility and weight of air power and to exert fully the over-all commander's strategic will in the air."[144] In November 1945, he wrote that the doctrine of the Air Force comprehended the fact "that it is the team of the Army, Navy and Air Forces working in close cooperation that gives strength to our armed services in peace or war."[145] Speaking of the termination of hostilities in the Pacific, Lieutenant General Doolittle said in November 1945: "The Navy had the transport to make the invasion of Japan possible; the Ground Forces had the power to make it successful; and the B-29 made it unnecessary." In its broad aspects, however, he pointed out that "the recent war was won by teamwork. . . . No single service won the war. The Navy fought magnificantly as did the Ground Army and the Air Army. . . . The smooth functioning of the team was the direct result of having unity of command--one supreme commander in each theater of war."[146]

The emphasis upon combined forces was accompanied by a subtle downgrading of the significance of the role of strategic bombardment in World War II. "The hammering that German industry and transportation took from the American and British air forces so seriously crippled the mobility of the German army that it was unable to withstand the combined assaults from the East and from the West," summarized Robert P. Patterson.[147] Speaking of strategic bombing, General Jacob L. Devers, commander of the Army Ground Forces, said that "the Ground Forces recognize this strategic battle role of the air which must be successfully conducted before the Infantry and Artillery can close with the enemy."[148] General Bradley concluded that strategic bombing in Europe "was ultimately an effective deterrent to the success of the enemy on the battlefield. . . . It had a decisive effect on the ultimate ability of the Allies to defeat Germany in a shorter time, saving many, many lives and dollars."[149]

In the immediate aftermath of World War II, Air Force officers were inclined to agree that a "second phase" of ground conflict would characterize a future war. "Japan," General Spaatz said in March 1947, "was a peculiar situation, being an island empire. . . . But when you are up against a continental empire you have the problem of winning against great masses of people with great internal

resources. . . . We had established almost complete air superiority over Germany at the time of the invasion, but it took a considerable amount of fighting to subdue Germany after air superiority had been established." Speaking in August 1949 after he had become chief of staff of the Air Force, General Hoyt S. Vandenberg announced: "My opinion of the effectiveness of strategic bombing in both Europe and in the Pacific was that it contributed in large measure to the success in the conclusion of the war and saved a great many lives that otherwise would have been lost."[150] "We of the Air Force," Vandenberg stated in a speech in August 1952, "have never claimed that air power, in alliance with mass destruction weapons, could decide a war alone."[151]

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In the 1930's, the Air Corps had regarded the establishment of control of the air to be essential only in support of surface operations. Based upon his observations of the Battle of Britain and other early World War II operations, however, Seversky boldly asserted, using italics for emphasis: "We cannot and must not dream of conquering the enemy without first capturing dominance in the air--but once we have clear-cut dominance in the air, all else becomes a secondary subordinate, auxiliary operation." And he stated the further rule: "Only air power can defeat air power."[152] In view of the experience of the Eighth Air Force over Germany, the Army Air Forces found it easy to abandon Douhet and to adopt a doctrine of "air superiority" or "control of the air," which--like the definition given to air power--was an extrapolation from Mahan. "The significance of full domination of the air over the enemy--both over its armed forces and over its sustaining economy--must be emphasized," stated the U.S. Strategic Bombing Survey's summary report of the European war. "That domination of the air was essential. Without it, attacks on the basic economy of the enemy could not have been delivered in sufficient force and with sufficient freedom to bring effective and lasting results."[153] Looking backward at World War II in October 1945, Arnold stated: "The Air Force's primary mission the world over was to knock out enemy air power--to win the air war. . . . All types of aircraft shared in this task in many different roles."[154] Doolittle pointed out that the United States had to have control of the air over Japan before it could deliver the atomic bomb. "The first lesson," he said, "is that you can't lose a war if you have command of the air, and you can't win a war if you haven't."[155] "You know, at first hand," Spaatz told a convention of air veterans in November 1947, "the penalty paid by Germany and Japan for their failure to control the air over their own territories. You know the inevitable outcome of any failure to control the air over our own country."[156] Writing in 1950, Colonel Dale O. Smith and Major General John DeF. Barker, noted: "It has long been held as Air Force doctrine that air superiority should be the primary mission of air power."[157]

The Air Force doctrine of air superiority or control of the air was quite acceptable to War Department and Army spokesmen. Robert P. Patterson stated: "World War II drove home the lesson that a nation lacking in air power has no chance of winning a war. . . . In every campaign fought out on the surface, success went to the side that had local command of the air. . . . Without command of the air, the launching of a military operation on land or sea was virtually unthinkable."[158] "There is no question in a soldier's mind," said Lieutenant General Manton S. Eddy in March 1949, "that air power is as indispensable to the national security as bread and water are to life. Land forces cannot fight decisively unless the air is controlled by its sister services."[159] "In spite of the fact that air power can never be decisive in total war," General Bradley told an audience in November 1951, "the air battle must be won if a war is to be won."[160]

While the doctrine of control of the air was firmly implanted in Air Force thinking as a result of conventional air operations in Europe, some second thoughts about the influence of nuclear bombing capabilities indicated a trend back toward Douhet. Largely written by Major General Orvil Anderson and published in 1947 as the concluding report of the U.S. Strategic Bombing Survey, Air Campaigns of the Pacific War offered the observation: "Air superiority is not an end in itself. Air superiority was necessary in the past war in order that surface operations could be successfully undertaken and in order that decisive bombing of the enemy's vital components could be accomplished. If science and technology produce an air weapon which can, unaided, penetrate enemy defenses and accurately deposit its bombs, it may not be necessary to fight the conventional air battle and obtain conventional air superiority before the decisive attacks on an enemy's economy are mounted. Any force, having successfully made such attacks, however, probably would quickly inherit air domination for the exploitation phase of the war."[161] In a lecture in June 1949, Anderson warned that conventional ideas of air superiority would not always hold good: "You will reach the point in the distant future when you won't even think of opposing air in the air. It will be moving too fast. . . . You'll fight them at the launching site or you won't fight them."[162] "Future defense and future security," Colonel David A. Burchinal pointed out in the autumn of 1949, "would seem to stem from the basic premise that successful air defense must be capable of destroying an attacking force or an aggression potential before the attack can be launched or the potential realized."[163]

In his book Air Power: Key to Survival published in 1950, Seversky continued to attach great importance to air dominance. "We can undertake nothing through military force," Seversky also told an Army War College audience in March 1952, "unless first we have secured command of the air. To gain command of the air, we must win the air battle. . . . The idea that we can send a lot of bombers, either from bases abroad, or from bases at home or from

aircraft carriers, and destroy everything in Russia without first winning command of the air is, in my estimation, sheer bunk. . . . Therefore, the battle for command of the air is just as much in the cards today as it was in the last war. . . . Just the same as it would have been impractical in the last century to control a part of the ocean--just a patch of the ocean. . . . So the air battle will be widespread, and will be fought for the command of the entire air space, clear around the globe."[164]

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In a talk with one of his assistants on 22 August 1945, Major General Lauris Norstad, who was then the chief of Army Air Forces Plans, stated that the conception of the tactical air force was "one of the greatest developments" of World War II, but he immediately added that the atomic bomb might have made a tactical air force "as old-fashioned as the Maginot line."[165] The Air Force would continue to debate the effect of nuclear weapons on air power at the same time that it was recording the doctrinal lessons of World War II applicable to tactical air power.

The experience of World War II left no doubt as to the impact of air power on land battles. "The Normandy invasion," General Dwight D. Eisenhower explained on 16 November 1945, "was based on a deep-seated faith in the power of the air forces, in overwhelming numbers, to intervene in the land battle. That is, a faith that the air forces, by their action could have the effect on the ground of making it possible for a small force of land troops to invade a continent, a country strongly defended, in which there were 61 enemy divisions and where we could not possibly on the first day of the assault land more than 7 divisions. . . . Without that air force, without the aid of its power, entirely aside from its anticipated ability to sweep the enemy air forces out of the sky, without its power to intervene in the land battle, that invasion would have been fantastic. . . . Unless we had that faith in the air power to intervene and to make safe that landing, it would have been more than fantastic, it would have been criminal."[166]

One of the major ironies of World War II was that, when operating against a first-class adversary on a continental land mass, air units assigned or attached to ground forces proved incapable of providing effective support to the ground forces. As has been seen, such "penny packets" of air power were unable to accomplish missions of importance to the ground forces, which the Allied experience in North Africa demonstrated to be the attainment of air superiority, the interdiction of the movement of hostile troops and equipment to or within the battle area, and the close support of friendly ground troops by aerial attack of battlefield objectives which could not be handled by friendly artillery. While War Department Field Manual 100-20, Command and Employment of Air Power, prescribed the tasks of a tactical air force as being air superiority,

interdiction, and close support, it did not attempt to describe the exact organization to be used in combat theaters. In Italy the Fifth Army and the XII Tactical Air Command attained unity of purpose by maintaining adjacent headquarters and holding nightly planning conferences. Call-type requests for close air support went back from front-line units to the army air section. They were monitored by corps air section, and if the corps remained silent it was assumed that the mission could not be handled by corps artillery or other means. The request was reported at once by the army air section to ground liaison officers at the airdromes, while G-3 and tactical air command officers determined whether the mission should be flown. About 50 percent of call-type missions were refused, and about 75 percent of the refused missions were disapproved by G-3 as not in conformity with army plans and the remainder by the tactical air command on technical grounds. At the front-lines, experienced pilots served tours of duty as forward air controllers to direct support aircraft to their targets. When necessary, especially in the mountainous terrain of Italy, a "Rover Joe" or "Horsefly" airborne tactical air controller flying a liaison plane would lead support aircraft to their targets.[167]

The organization for tactical air control adopted in the European theater was an expansion of the system employed in Italy. In the battles of France and Germany, the Ninth Air Force cooperated with the 12th Army Group while its subordinate commands developed very close relationships with various armies: the IX Tactical Air Command with the First Army, the XIX Tactical Air Command with the Third Army, the XXIX Tactical Air Command with the Ninth Army. Each of these tactical air commands possessed microwave ground control interception radars, and their fighter-bomber groups were employed alternatively as required either for air defense or for air support. With the demise of the dive bomber concept, the P-47 fighter, although originally designed as a high altitude interceptor, proved to be a superb fighter-bomber. The radial air-cooled engine on this plane made it less vulnerable to hostile ground fire than was the P-51, which had an in-line liquid-cooled engine. In order to permit flexibility, medium bombers and tactical reconnaissance aircraft were retained under the direct command of the Ninth Air Force. The reconnaissance aircraft flew missions requested by army and air force units: they also proved invaluable in leading fighter-bombers directly to targets of opportunity. While many Army officers questioned the inherent wisdom of such a centralization of reconnaissance capabilities, Lieutenant Generals Courtney H. Hodges, George S. Patton, Jr., and W. H. Simpson, the commanders of the First, Third, and Ninth U.S. Armies expressed their individual approval of the tactical air reconnaissance system.[168] By March 1945, Lieutenant General Walter Bedell Smith, the chief of staff to General Eisenhower, noted that "the tactical coordination of air and ground forces has become an instrument of precision timing."[169]

In Europe all air force capabilities were available for the support of the surface campaign. While heavy bombardment was employed on occasion to augment tactical bomber forces (most notably on 25 July 1944 when 1,508 heavy bombers softened the German lines at St. Lo preparatory to the First Army's breakthrough out of Normandy) the outstanding contribution of the heavy bombers to the over-all ground campaign was the elimination of the Luftwaffe as an effective fighting force. Although the Ninth Air Force stood ready to maintain friendly air superiority, it was routinely committed to interdiction and close support operations. In these endeavors, roughly 15 percent of the tactical air effort was routinely committed to close air support, but in static periods such as existed prior to the St. Lo breakthrough and while the armies were building up before the Siegfried Line the proportion of air effort allotted to targets along the front-lines did not exceed 10 percent of the tactical air forces capability. The remaining tactical air effort was committed to armed reconnaissance and to attacks against interdiction targets behind the enemy lines.[170] A flexible employment of tactical air groups on varied missions ensured that no one unit suffered debilitating losses. Fighter-bombers, for example, suffered their highest rate of loss to flak on the dive-bombing missions commonly required for bridge attacks and close air support: armed reconnaissance, area support, and fighter-sweep missions were only about two-thirds as dangerous as dive-bombing missions.[171] What could happen when a group was solely committed to the most hazardous type mission was illustrated during the Ardennes offensive. Because it was based closest to the area, the 406th Fighter-Bomber Group provided the burden of the close air support to the 101st Airborne Division, which was besieged at Bastogne. Between 23-28 December, the group flew 529 close-support sorties into this area; out of 60 operational P-47's at the beginning of the period, it lost 17 shot down and had more than 40 damaged by flak.[172] While the evidence was not conclusive, such experience indicated that an air unit committed solely to close air support in the European theater would have encountered disproportionately high casualty rates that would have adversely effected its continuation in operations.

In the Pacific theaters of World War II, American forces accepted the same tasks of tactical air power as were recognized in Europe, but organizational patterns were different. In General MacArthur's Southwest Pacific Theater, the entire Fifth Air Force cooperated intimately with the Sixth Army, and, after June 1944, the Thirteenth Air Force usually worked with the Eighth Army. While General Kenney began to organize tactical air commands for employment in the planned invasion of Japan, he elected to use standard bombardment and fighter wings to provide cooperation with individual ground task forces during the war.[173] In the early days in the Pacific Ocean Areas theater, Marine and Thirteenth Air Force aircraft were organized in the same naval task group to support ground fighting on Guadalcanal. As a matter of fact, Marine F7F Wildcats usually

flew air patrols overhead while Air Force P-39 squadrons (which lacked ability to intercept high-flying enemy aircraft) performed close-support missions. In the island invasions of the Central Pacific, Navy and Marine carrier-based air units provided air superiority, interdiction, and air support as necessary. Some years later, after he had become Commandant of the Marine Corps, General David M. Shoup would recall that "the finest close air support for ground troops that I experienced in World War II came from Navy squadrons at Saipan." Working from fast aircraft carriers, however, Marine airmen were virtually losing their service identity, and a serious defect in fast carrier support for ground operations came to light on 17 June 1944 when the Fifth Fleet suddenly had to withdraw from Saipan to fight the naval battle of the Philippine Sea. Lightly-gunned Marine infantry was left ashore without close air support. Rather than allow this to happen again, Lieutenant General Holland M. Smith, the Marine officer in command of Expeditionary Troops, recommended and the Navy accepted the proposition that Marine air groups would be designated as air support specialists and would be assigned to escort carriers, which would not be withdrawn from an invasion objective for a fleet engagement. According to the organization worked out and employed by the Marines at Peleliu and Okinawa, a Marine air wing became an integral part of a Marine division. Since Marine ground commanders could normally expect only flat trajectory fire of naval guns during critical phases of ship-to-shore amphibious operations and since they would usually go ashore with limited amounts of organic artillery, Marine air wings would be organized, trained, and employed as a substitute for Marine artillery.[174]

In the winter of 1945-46, when the War Department began to refine the air-ground lessons of World War II for the purpose of determining future organization, Army officers generally preferred the system which had been employed in the European theater of operations to that which had been devised by the Marines in the Pacific. General Eisenhower, who became Army Chief of Staff on 19 November 1945, would subsequently explain the reasons why he believed that the Army should not attempt to develop its own organic air support in these words:[175]

> The Army concept of the land, sea and air principle of organization of the armed forces is well-known; this Service accepts without reservation the concept of complementary roles--air, ground and sea--and consequent mutual dependence of the three components of the armed services. Under this three service concept it is axiomatic that no single service should acquire forces or equipment necessary to accomplish joint missions single-handed, if such forces or equipment unnecessarily duplicate those characteristic of and fundamental to either of the other two services. The experiences of this war have indicated that in many operations, if not

in the majority, the task was of necessity accomplished by contributions from two or three services acting under the principle of unified command. Furthermore, the welding of the forces resulted in the greatest possible concentration of combat power at the decisive point while at the same time permitting the greatest economy of force on lesser tasks.

Employment of tactical air in World War II is an outstanding illustration of the application of this concept to a specific problem. Battle experience proved that control of the air, the prerequisite to the conduct of ground operations in any given area, was gained most economically by the employment of air forces operating under a single command. This assured a maximum of flexibility, providing a command structure under which all forms of available air power could be concentrated on tactical support missions or on strategic missions, as the situation demanded--in other words, it permitted the maximum concentration of combat air power at the decisive point at the decisive time. Throughout the war, the Army depended on the necessary tactical air support from a practically autonomous Air Force. This type of close, accurate, and effective support of the front-line fighting units was provided and proved an essential element in the achievement of the Army objectives.

The case for the concept that tactical air units belong under the Air Force rather than under the Army is supported by the abundant evidence of World War II, but does not rest on this evidence alone. Basically, the Army does not belong in the air--it belongs on the ground. Planes are but a facet of the over-all problem, which is basically much broader and includes responsibilities now involving approximately one-third of the Air Force. Control of the tactical Air Force means responsibility, not merely for the fighters and medium bombers themselves, but, as well, for the entire operating establishment required to support these planes. This includes the requisite basic air research and development program necessary to maintain a vital arm and the additional specialized service forces to support the arm; for example: air maintenance units, aircraft warning units (radar, DF stations), tactical air communications nets, etc. In short, assumption of this task by the Army would duplicate in great measure the primary and continuing responsibilities of the Air Force and, in effect, would result in the creation of another air establishment.

Some other factors also evidently bore on the Army's rejection of the Marine air support system. The Marine Corps was designed, equipped, manned, and trained to engage in "shock" type action which would be limited in time, magnitude, and scope. Army

divisions, on the other hand, were intended to operate in sustained ground campaigns on broad theater fronts. While Marine commanders would have to depend upon air support as a substitute for artillery firepower, Army commanders preferred to rely upon the supporting fire of their own organic artillery within the first thousand yards beyond the front-lines.[176]

As has been seen, Army and Army Air Forces officers were so generally satisfied with the tactical air system employed in Europe that it was in effect engrossed into War Department Field Manual 31-35, Air-Ground Operations, with little difficulty in August 1946. There were, however, evidences that at least some influential Army officers did not like the cooperative air support system. Writing in 1949 about his experiences as commander of the U.S. Fifth Army in Italy, General Mark Wayne Clark was willing to admit that his forces had received "splendid air support of all kinds by both British and American planes." "Nevertheless," he continued, "the command setup was never satisfactory from my point of view and it still is not satisfactory. . . . I believed then, and my experiences in Italy did not change my view, that ground troops cannot be successful in battle unless adequately supported by combat aviation, and that such planes as are used for this purpose are necessarily auxiliary weapons, as is the artillery, and that they should come under the direct orders of the ground commander."[177] The Army's chief historian found that satisfaction with air-ground cooperation was greatest at the higher command levels and less pronounced at the lower levels. "The air and ground forces of the Army. . .," he wrote, "did not develop an effective air-ground battle team in World War II. The Marines did, in cooperation with naval aviation and their own."[178]

At the same time that some Army officers wished a closer command subordination of tactical air units to ground control, some Army Air Forces commanders visualized a much more decisive role for tactical air power. Major General Elwood R. ("Pete") Quesada, commander of the IX Tactical Air Command paired with the U.S. First Army in Europe, drew high praise from General Bradley. According to Bradley, Quesada "had come into the war as a young and imaginative man. . . . To Quesada the fighter was a little-known weapon with vast unexplored possibilities in the support of ground troops."[179] Late in 1944, Quesada made a suggestion that got back to Washington in a round-about manner that a concentration of available Allied fighter strength in Europe in low-level attacks against Germany could win the war during the winter of 1944-45. After World War II, when he had been promoted to lieutenant general and given command of the Tactical Air Command, Quesada was willing to accept the relationships of the air-surface force team as it existed at the cessation of hostilities only as a point of departure for future doctrine. Writing in 1948, he thought it axiomatic that the first prerequisite for a successful major campaign would be air supremacy or control

of the air. He suggested, however, that World War II had only superficially indicated the "inherent ability of Tactical Air Power to be a decisive force in a strangulation campaign." In World War II air doctrine had envisaged the isolation of a hostile force from its means of support but it had not looked toward preventing an enemy force from engaging in battle. By a vigorous interdiction campaign Quesada thought that tactical air power could "paralyze the enemy's means of communication" and "sources of industrial support" and "prevent opposing armies from coming into contact." If such a concept of the employment of tactical air power was effectively pursued in a future conflict, direct support of ground troops in a zone of contact might well constitute only a small portion of the total tactical air effort. Only if tactical air power did not perform its primary functions in a convincing manner would friendly ground troops evidence a requirement for close air support.[180]

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"I would say," stated Major General Robert M. Webster, who had headed both tactical and transport commands in Europe in World War II, "that we went into the last war with only two basic types of military aircraft, the bomber and the fighter. I feel that we have come out of that war with an additional type, the transport plane, and that we should think in terms of bomber-fighter-transport--since they are all equally important--and they must be properly balanced to each other if we are to be prepared to conduct successful war operations."[181] Back in the 1930's the Air Corps, prodded relentlessly by Major Hugh J. Knerr who insisted that air striking forces could not depend upon ground lines of communications for logistical support, established a requirement that both the GHQ Air Force and the Air Corps Materiel Division ought to possess transport aircraft. Both because of shortages of procurement funds and because of the Baker Board's recommendation that civilian airliners could be requisitioned for a war emergency, the Army Air Forces had possessed only six air transport groups with 124 aircraft on hand in December 1941. Lacking any firm basis of experience with the air transport, the officers who drew up AWPD-1 estimated that the ascendant air force would require only 19 troop carrier groups with 1,520 planes for airborne troop employment and only 13 transport groups with 1,040 planes for air logistical support. Early in 1942, the Army Air Forces established the Air Transport Command and the I Troop Carrier Command, the former to provide worldwide air transport services and the latter to train troop carrier organizations for service in oversea theaters. At its maximum strength in February 1945, the Army Air Forces possessed 32 troop carrier groups and nine air transport divisions with a total of 10,138 aircraft.[182]

As it developed, the Air Transport Command became responsible for the transportation by air of personnel, materiel, mail, strategic materials, and other cargoes for all War Department agencies (and

other authorized government agencies) except those served by troop carrier units.[183] The primary mission of troop carrier units was found to be: "To carry troops and auxiliary equipment to effective locations in combat zones from which to begin active combat operations." The control and employment of troop carrier organizations was hardly the same in any two theaters. In each theater, however, logistical services found continuing demands for the employment of troop carrier planes for intratheater movement of essential personnel and freight, but the combat employment of troop carrier planes and gliders for airborne operations always was given a higher priority. Resolution of the competing demands of the logisticians and the airborne commanders was never completely accomplished.[183]

Since there were never enough transport planes to permit them to be parceled out among using organizations, the Anglo-American organization of theater airlift forces accordingly placed central control of most such units under some form of theater troop carrier headquarters, which could employ the transport planes interchangeably for airlift or air-assault operations. The organization in the European theater included the establishment of a Combined Air Transport Operations Room (CATOR) in the Air Staff, Supreme Headquarters Allied Expeditionary Forces, the assignment of the IX Troop Carrier Command to the First Allied Airborne Army, and the activation of the 302d Transport Wing under the Air Service Command, USSTAF. Lieutenant General Lewis H. Brereton, commander of the First Allied Airborne Army subsequently complained that CATOR emphasized the logistical employment of his troop carrier crews to the detriment of their preparations for airborne operations. Other commanders, however, stated that the removal of aircraft from airlift operations for intensive air-assault training and for the execution of airborne missions adversely deprived them of badly needed air-transported logistical support."[184]

"We have learned and must not forget," Arnold informed Secretary Stimson on 27 February 1945, "that from now on air transport is an essential of air power, in fact, of all national power. . . . We must have an air transport organization in being, capable of tremendous expansion."[185] In spite of this positive statement, the Army Air Forces was not too certain about the manner in which troop carrier and air transport aviation ought to be organized, and there was a considerable sentiment that the two functions ought to be combined. At this time, Brigadier General William D. Old, commander of the I Troop Carrier Command, vigorously dissented from the proposals for combination and instead suggested that Army Airborne Forces should be established under the War Department on a parity with the Army Air Forces, Army Ground Forces, and Army Service Forces. Based in part upon studies conducted in OC&R and at the AAF Board, Arnold decided on 5 December 1945 that the Army Air Forces would retain the Air Transport Command to support the strategic air forces and would keep troop carrier aviation as a part of the tactical air forces.[186]

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In his final report to the Secretary of War on 12 November 1945, General Arnold recalled the course of the successful air war that had been waged against the Axis. While he expressed satisfaction, he warned against complacency. "National safety," Arnold emphasized, "would be endangered by an Air Force whose doctrines and techniques are tied solely to the equipment and processes of the moment. Present equipment is but a step in progress, and any Air Force which does not keep its doctrines ahead of its equipment, and its vision far into the future, can only delude the nation into a false sense of security. . . . The basic planning, development, organization and training of the Air Force must be well rounded, covering every modern means of waging air war, and the techniques of employing such means must be continuously developed and kept up to date. The Air Force doctrines likewise must be flexible at all times and entirely uninhibited by tradition."[187]

CHAPTER 5

THE AIR FORCE IN NATIONAL DEFENSE: ORGANIZATION AND STRATEGY, 1944-1949

1. Armed Service Unification and the Air Force

"Those of us who have seen this war fought. . . realize that there is no place in modern war for a separate air force, for a separate army, or for a separate navy," Brigadier General Haywood S. Hansell told the House Select Committee on Post-War Military Policy in March 1944. "The Army Air Forces advocate, and strongly recommend," he continued, "the integration of the nation's fighting forces into a single unified organization. Hence, our conviction demands unity rather than separation."[1] The Army's air arm had traditionally sought a separate air force, but the experience of World War II had caused its leaders to believe that the nation needed integrated rather than separate armed services. The War Department, traditional opponent of a separate air force, would now be the main driving force for armed service unification. Only the Navy, whose top-ranking officers proposed to General Arnold that AAF strategic bombardment ought to be joined with naval air forces to provide a national striking force,[2] was going to oppose a close unification of the armed services.

As a background policy for the beginning of postwar planning, General Arnold approved a statement on 25 February 1944 which advocated the establishment of a single Secretary of War with four undersecretaries heading the ground forces, the air forces, the naval forces, and a combined bureau of war resources. The plan visualized that a single chief of staff to the President, with a compact general staff, would preside over a supreme war council consisting of the military commanders of the four major services. It assumed that the air force would be coequal with the other services and would possess its own air commander and air general staff. The air force would include "all military aviation except shipborne units operating with the Navy, and those artillery-control and 'liaison' units operating with the Army."[3] In regard to the assignment of organic aviation to the Army, the Army Air Forces policy announced on 10 October 1944 was to favor such assignment only if the aircraft would be put to sustained use, if the separation of such aircraft from the mass of air power would not seriously reduce that power, if the function to be performed would not duplicate functions already being performed by AAF units, and if no need would arise for separate and extensive airdrome, maintenance, or training facilities.[4] On 1 October 1945, General Arnold officially informed his subordinate commanders that he favored the establishment of a Department of Armed Forces under a military commander "who will command the Army,

the Navy, and the Air Force and any combined task forces in existence."[5]

"The greatest lesson of this war," Arnold stated in his last report to the Secretary of War on 12 November 1945, "has been the extent to which air, land and sea operations can and must be coordinated by joint planning and unified command." Therefore, Arnold called for the establishment of "one integrated, balanced United States military organization that will establish, develop, maintain and direct at the minimum expense the forces. . . required for peace enforcement and for national security with the capability for the rapid expansion in case of all-out war." Arnold wished to retain the Joint Chiefs of Staff, with a Chief of Staff to the President. He also emphasized that a permanent national intelligence organization would be essential to the future conduct of strategic air warfare.[6] General Carl Spaatz, who would assume command of the Army Air Forces on 1 March 1946, told the Senate Committee on Military Affairs that "unity of direction" and "equality for the Air Force which will insure unification of our air potential" were "absolute imperatives which stem from the lessons of this last war."[7] On 24 October 1946, Spaatz informed his subordinate commanders that the Army Air Forces "supports without reservation" the War Department position on unification which comprehended a single secretary heading a single department of national defense with three branches of equal standing--Army, Navy, and Air.[8]

In the three years that defense unification was being studied and debated, the Navy posed different objections to plans that were offered and submitted counterproposals. As a matter of continuing policy, the Navy objected to the high degree of consolidation inherent in the War Department plan for a single chief of staff for the armed services. The Navy also desired guarantees that would preserve naval aviation and the Marine Corps, together with its integral aviation. On a visit to the Pacific in the winter of 1944-45, a Joint Chiefs of Staff study committee headed by Admiral J. O. Richardson found senior naval officers not averse to unification. Rear Admiral Forrest P. Sherman, who was Admiral Nimitz' chief planner, later explained, however, that a general change in feeling toward unification occurred in the pring of 1945. Admiral Sherman said that the establishment of the independent Twentieth Air Force and the decision to divide the command of American army and navy forces between MacArthur and Nimitz "disrupted unified command in the Pacific and disillusioned naval officers who had given support to theories of a single department." Sherman also recalled that General Marshall had told him in September 1944 that he would not tolerate further command of Army troops by Marine officers.[9]

In its report on 11 April 1945 Admiral Richardson's special committee proposed the organization of a department of armed forces, a single commander of the armed forces, and a joint staff, all to be supraimposed on coordinate army, navy, and air branches. It also proposed that the secretary of the armed forces was to serve as a

member of the Joint Chiefs of Staff, and that both the Army and Navy would retain their special aviation components. Rather than merely to oppose unification, Secretary of the Navy James V. Forrestal asked Mr. Ferdinand Eberstadt in June 1945 to head a study on national defense organization. When completed in September 1945, the Eberstadt report recommended that three coequal departments of war, navy, and air be recognized and that coordination between them would be achieved by the statutory establishment of the Joint Chiefs of Staff, of a National Security Resources Board, and of a Military Munitions Board. It recommended the establishment of a National Security Council, which would be able to correlate the military and foreign policies of the United States.[10]

First presented to the public in October by Lieutenant General J. Lawton Collins, the War Department's reorganization plan provided for the estabiishment of a department of armed forces, a chief of staff of the armed forces (who would provide guidance to coequal army, navy, and air force chiefs), and a director of common supply and hospitalization. The chief of staff of the armed forces and a chief of staff to the President, together with the three chiefs would comprise the Joint Chiefs of Staff. On 19 December 1945, President Harry S. Truman submitted a proposal for defense reorganization to Congress which made some concessions to the Eberstadt report but drew most heavily upon the proposals made by Admiral Richardson's special committee and the War Department's plan. Under the President's proposal, the Navy would retain its carrier-and-water-based air and the Marine Corps. While Congress prepared for hearings, Truman established the National Intelligence Authority by executive order on 22 January 1946. In his judgment all of the services had agreed that there was a need for the coordination of foreign intelligence activities.[11]

During 1946 lengthy hearings before Congressional committees and numerous Army-Navy conferences enabled the services to develop their respective positions and also allowed them to know what Congress was likely to approve in the way of armed service reorganization. Speaking with candor, Admiral Richmond K. Turner stated the Navy's opposition to unification: "Because the Navy has had and should retain in the future its position as the first line of military security for the United States," he said, "I believe the Navy will never willingly agree to a consolidation of national military forces in any manner that will silence the Navy's voice in military affairs or materially restrict its present responsibilities." General Alexander A. Vandegrift, Commandant of the Marine Corps, feared that "the single Sectetary for Common Defense and the all-powerful National Chief of Staff are entirely free either to abolish the Marine Corps outright or to divest it of all its vital functions." Admiral John H. Towers bluntly charged that the new air force meant to take over naval aviation, saying in part: "I fear--and I have good reason to fear--that the Army Air Force advocates of a separate air force have well established in mind the

plan, upon realization of a separate service, to absorb naval aviation. . . . Approximately 40 percent of our postwar Navy is aviation. Its loss would be completely disastrous to the Navy." On 15 May 1946, Senator David I. Walsh and Congressman Carl Vinson informed Secretary Forrestal that Congress was not likely to approve the creation of one department of defense under the administration of a single secretary, the appointment of a single supreme commander of the armed forces, a curtailment of the Marine Corps, a transfer of vital naval aviation functions to a separate air force, or the elimination of the responsibilities of the Secretaries of War and Navy to initiate and support their budgets before Congress.[12]

Held during May 1946 a series of conferences between Secretary Forrestal and Secretary of War Robert P. Patterson developed fundamental points of disagreement between the Navy and Army. The War Department position of aviation had been suggested by Arnold's testimony before the Senate Committee on Military Affairs in October 1945. Arnold had said: "I think there is a definite place for the air arm of the fleet, to work in conjunction with the fleet. . . . I do not think that the flat-top planes have the power to deliver the blows that are necessary for our primary air force." In May 1946, the War Department thought that the separate air force should develop and operate all military air resources except for carrier-and-water-based aircraft deemed essential for Navy and Marine Corps operations and for such land-type aircraft as were necessary for the internal administration of naval affairs, for training, or for air transportation over routes of sole interest to naval forces where such requirements could not be met by normal air transport facilities. The Army Air Forces was already performing long-range reconnaissance, and the War Department proposed that it could provide such reconnaissance to the Navy and also meet surveillance requirements for antisubmarine warfare. As for the Marine Corps, the War Department agreed upon the requirement for a "balanced fleet marine force including its supporting air component," but it wished to limit the Marines to service with the fleet in connection with the seizure of enemy positions not involving sustained land fighting and with phases of amphibious warfare relating to waterborne aspects of landing operations. In rebuttal to these positions, the Navy insisted that its aviation needs included a certain number of land planes, completely under naval control and manned by naval personnel trained in naval warfare, in order to perform fleet reconnaissance, antisubmarine warfare, and the protection of ocean shipping. The Navy insisted that the fleet marine force should participate with the fleet without limitations in the seizure or defense of advanced naval bases, in the conduct of limited land operations, and in amphibious warfare.[13]

In a letter to Patterson and Forrestal on 15 June 1946, President Truman agreed to the elimination of the single armed service chief of staff, but he insisted that there would be a single Department of Defense, with coequal Army, Navy, and Air Force branches. The President stated that naval aviation should be given

every "opportunity to develop its maximum usefulness." He believed, however, that land-based planes for long-range reconnaissance, anti-submarine warfare, and protection of shipping should be manned by air force personnel. Truman approved Forrestal's plan for the continued functioning of the Marine Corps. Finally, he expressed a hope that unification legislation might be speedily enacted on the basis of the Army-Navy agreements as supplemented by his decisions on the controversial matters. Congress, however, refused to be prodded and took no substantial action on the desired unification legislation during the remainder of 1946.[14] Acting again by executive order, Truman vested in the chairman of the Army and Navy Munitions Board the final authority over military procurement, and on 17 October he established the President's Scientific Research Board to insure a supervision over military research and development activities.[15]

At an informal conference in his home early in November 1946, Secretary Forrestal urged that the Army and Navy must make some new efforts to arrive at a mutually acceptable unification plan. According to agreement, Major General Lauris Norstad, who was serving as the Director of Plans and Operations on the War Department General Staff, and Vice Admiral Forrest P. Sherman, now the Deputy Chief of Naval Operations, would work together to secure agreements. As a first effort, Norstad and Sherman sought to draft a directive which would provide uniform instructions to unified theater commanders who would be charged with operations of land, naval, and air forces. In 1941 and 1942, Army and Navy planners had debated procedures for the command of joint operations without reaching final conclusions. One idea was that a theater commander should depend upon his subordinate air, ground, and naval commanders for advice and could have a staff comprising men from his own service. The other was that a theater commander ought to have a joint staff of officers from all services, who, after collaboration with subordinate service commanders, would draw up agreed plans which would secure unity of action while leaving a good degree of freedom to the subordinate commanders. Of all the theater commanders of World War II, only Admiral Nimitz organized and used a joint staff. General MacArthur's staff was entirely composed of Army officers. In Europe, General Eisenhower's staff had officers from the several services, but it was nevertheless dominated by Army and AAF officers. While Eisenhower organized theater air and naval commands, he chose personally to command the theater ground forces and did not establish a theater ground command. While Norstad and Sherman recognized that they could not make rigid rules for the exercise of unified command in the theaters, they recommended that each theater commander employ a joint staff. The Joint Chiefs of Staff accepted this proposal and issued a directive on 14 December 1946, which required unified commanders to establish "a joint staff with appropriate members from the various components of the services under this command in key positions of responsibility."[16]

Following the agreement on unified theater command staffs, Norstad and Sherman resumed consideration of the higher-level problems of armed service unification. They announed their agreements on these subjects to President Truman on 16 January 1947, and they continued to work in the President's office where a draft of a proposed national security act was drawn up and submitted to Congress on 27 February. In the late spring, Senate and House committees held hearings and made amendments to the bill, many of them designed to guarantee against any change in the status of the Marine Corps or of naval aviation. Following passage of the act, President Truman signed the National Security Act of 1947 on 26 July.[17]

As enacted, the National Security Act of 1947 made substantial changes in the nation's defense organization to include a separate Air Force, but it represented federalization rather than unification of the armed services. In order to coordinate national security efforts, the act established the National Security Council which would advise the President on the integration of domestic, foreign, and military policies. The Central Intelligence Agency (which superseded the National Intelligence Authority) would coordinate all governmental intelligence activities and report to the National Security Council. The National Securities Resources Board was established to advise the President concerning the coordination of military, industrial, and civilian mobilization problems. Within the National Military Establishment, the Secretary of Defense was authorized to establish general policies and programs, exercise general direction, take steps to eliminate duplication, and to supervise and coordinate the budget estimates of the Departments of Army, Navy, and Air Force. Each Service Secretary, however, was accorded direct access to the President and to the Director of the Budget, and the law provided that each department should be administered as an individual executive department. With its membership to comprise the Chiefs of Staff of the Army and the Air Force, the Chief of Naval Operations, and the Chief of Staff to the President, the Joint Chiefs of Staff was provided a joint staff of not more than 100 officers and was principally charged "to prepare strategic plans and to provide for the strategic direction of the military forces." The act also provided for the organization of a Munitions Board and a Research and Development Board within the National Defense Establishment.[18]

On the same day that he signed the National Security Act of 1947, President Truman nominated James Forrestal as the First Secretary of Defense and issued an executive order prescribing the functions of the several armed forces. Guarantees for the unchanged status of the Marine Corps and for land-based naval aviation had already been added to the basic law, but Truman's executive order charged the United States Air Force to organize, train, and equip air forces for air operations including joint operations; gaining and maintaining general air superiority; establishing local air superiority where and as required; strategic air force and strategic

air reconnaissance operations; airlift and support for airborne operations; air support to land and naval forces including support of occupation forces; and air transport for the armed forces except as provided by the Navy for its own use.[19]

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Speaking of 26 July 1947, retired Lieutenant General James H. Doolittle exclaimed: "This is the day Billy Mitchell dreamed of." Toward the end of a transition period provided in the law, James S. Forrestal assumed the duties of Secretary of Defense on 17 September 1947, and on 18 September 1947 W. Stuart Symington took the oath of office as the first Secretary of the Department of the Air Force. While it also hailed the National Security Act of 1947 as a substantial achievement, Air Force magazine, voicing the sentiments of the new Air Force Association, pointed out that important matters still remained to be decided: "Still to be decided is the irritating question of where naval air authority ends and Air Force responsibility begins. . . . Still to come are the increased economies which can only be achieved through the avoidance of duplication, multiple use of equipment, and a combined training program--and the even greater economies which will be realized only when it is possible to draw on one air force for the requirements of all other services."[20]

It is difficult to determine from available records exactly what opinions Air Force leaders held on the matter of integrating all military aviation into the United States Air Force. While his opinion was not official, Seversky had suggested in Victory Through Air Power that naval aircraft carriers would become unnecessary in view of the fact that "ultimately war in the skies will be conducted from the home grounds, with everything in between turned into a no-man's land." He had also argued that for purely aerodynamic and engineering reasons, naval carrier-based aircraft--which had to be designed to operate from the restricted areas of carrier flight decks--would always be inferior in performance to land-based aircraft of similar types.[21] On the basis of wartime lessons that carrier aircraft should be jet powered and able to carry heavier bombs, the Navy had initiated design of a 65,000-ton aircraft carrier in 1945, and construction of the supercarrier to be known as the CVA-58, or the U.S.S. United States, was begun prior to unification. The Navy conceived that the prototype flush-deck CVA-58 would be employed in a task group, along with a Midway (CVB) carrier, two Essex class (CV's) carriers, and supporting and screening ships. Launching while the task group was still some 500 to 600 miles at sea, the CVA-58's long-range aircraft would neutralize hostile air bases ashore, permitting the task group to run within 200 miles of an enemy coast and launch its strike aircraft to accomplish naval missions.[22]

Shortly after he took office as Secretary of Defense, Forrestal

remarked that the Navy believed that the Air Force wanted to get control of all military aviation, while the Air Force believed that the Navy was trying to encroach upon the strategic air prerogatives of the Air Force.[23] On 1 March 1948, the Congressional Aviation Policy Board reported that there were basic differences of opinion between the Air Force and the Navy as to the mission of naval aviation set forth in Truman's executive order and in the provisions of the National Security Act of 1947. "As an example,"the Aviation Policy Board reported, "the Navy interprets the law to permit it to develop any type of weapon and to base its plans and requirements on the utilization of any weapon. The Navy contends that it is complying with the law in disregarding the executive order on this point because the law and executive order are in conflict."[24]

Secretary Forrestal told General Omar N. Bradley, shortly after the latter became Army Chief of Staff in February 1948, that the large aircraft carrier had already been approved and would be built.[25] Forrestal nevertheless concluded that the time had come to decide "who will do what with what," and he assembled the Joint Chiefs of Staff at Key West, Florida, on 11 March 1948 to thrash out roles and missions. As basic guidance, Forrestal demanded that the three services each recognize the need for mutual support to each other's legal missions. According to Forrestal, the Joint Chiefs reached basic agreement that the Navy would proceed with the developments of weapons that it considered essential to its functions (including the 65,000-ton aircraft carrier and nuclear bombs which could be transported on naval aircraft), provided that the Navy would not develop a separate strategic air force. The Air Force recognized the right and need for the Navy to participate in an all-out air campaign and to attack inland enemy targets; for example, airfields from which hostile aircraft might be launched to attack a fleet. The formal agreements of the Joint Chiefs of Staff were subsequently approved by President Truman on 21 April 1948 and issued under the title of "Functions of the Armed Forces and the Joint Chiefs of Staff."[26]

Following historical patterns, the Key West agreement specified that the Army had primary interest in operations on land, the Navy in operations at sea, and the Air Force in operations in the air. Forces developed to meet the requirements of primary functions were to be employable in collateral functions which supported and supplemented the other services in carrying out their primary functions. The primary functions of the United States Air Force were: to be responsible for the defense of the United States against air attack, to gain and maintain general air supremacy, to defeat enemy air forces, to control vital air areas, to establish local air superiority, to be responsible for strategic air warfare, to organize and equip air forces for joint amphibious and airborne operations, to furnish close combat and logistical air support to the Army, and to provide (with exceptions) air transport for the

Armed Forces. In coordination with the other services, the Air Force was charged to develop doctrines and procedures for the defense of the United States from air attack, for joint amphibious and airborne operations, and for air defense from land areas. Specific collateral functions of the Air Force included a responsibility to interdict enemy sea power through air operations, to conduct antisubmarine warfare and protect shipping, and to conduct aerial minelaying operations. Among its primary functions, the Navy was authorized to conduct air operations as necessary in a naval campaign, to establish local air superiority in an area of naval operations, and to be responsible for naval reconnaissance, antisubmarine warfare, protection of shipping, and mine laying, including the air aspects of such tasks. The Navy's collateral functions required it to interdict enemy land, air power, and communications through operations at sea, to provide close air support for land operations, to furnish aerial photography for cartographic purposes, and to be prepared to participate in the over-all air effort as directed by the Joint Chiefs of Staff.[27]

Speaking for the Navy, Vice Admiral Arthur W. Radford would subsequently describe the Key West agreements as "one of the most remarkable documents that has ever been produced along those lines."[28] In a conversation with Forrestal on 16 March 1948, however, General Spaatz objected to a proposed press release to the effect that agreements in all major areas had been reached at Key West. Spaatz said that the question of whether there were to be two air forces or one air force had not been resolved.[29] General Hoyt S. Vandenberg, who succeeded Spaatz as Air Force Chief of Staff on 30 April 1948, assured Forrestal on 28 July that the Air Force was not trying to get control of all aviation but suggested that the nation could not continue to spend scarce funds on two duplicating programs--long-range bombers and supercarriers. "I said," Forrestal recorded in his diary in regard to the conversation with Vandenberg, "I was against the development of a new fleet of supercarriers by the Navy but I felt it was most important that one such ship, capable of carrying the weight of a long-range bombing plane, go forward."[30] In an article appearing in Life magazine on 16 August, Spaatz charged that the Navy's 65,000-ton carrier represented an attempt to create a second air force for industrial bombing, when much still needed to be done to provide a truly balanced structure around the core of one air force.[31]

Noting on 9 August that the Key West agreements apparently had not provided a solution of disputes in the field of strategic air warfare, Forrestal asked General Spaatz and Vice Admiral Towers to return from retirement for a few days and to set down their concepts of strategic air warfare as it might have to be waged in defense of the United States. In a memorandum on 18 August, Spaatz and Towers were said to have agreed that the Key West decisions were sound but in need of interpretation, that "no sharp line can be drawn between strategic bombing and tactical bombing," and that the Navy's

ability to perform its primary missions would require it "to provide for the delivery of atomic bombs."[32] In an effort further to clarify the Key West agreements, Forrestal assembled the Joint Chiefs of Staff at the Naval War College in Newport, Rhode Island, on 20 August 1948. Here it was agreed that each service, in the fields of its primary missions, must have exclusive responsibility for programming and planning, and the necessary authority," but that "in the execution of any mission of the armed services, all available resources must be used to the maximum over-all effectiveness."[33] At a meeting of senior officers in the Pentagon on 24 August, Forrestal expressed optimism that problems of roles and missions had finally been resolved. "I am convinced that at the top command levels," he said, "there is a clear understanding of the exclusive role of the Air Force in the field of strategic air warfare and. . . the intent of the Air Force not merely to permit but to seek all the help it can get from Naval Air in the use of air power, either strategically or tactically. Likewise, the Navy is assigned the exclusive role in the field of anti-submarine warfare; and. . . the intent of the Navy is also to invite all the help it can get from the Air Force in carrying out this mission."[34]

Although progress was being made in the determination of armed forces roles and missions, at least two retired Air Force officers continued to believe that all military aviation should be consolidated. In December 1948, Lieutenant Doolittle criticized the National Security Act of 1947 as "an unfortunate compromise" which had failed to accept Army and Air Force recommendations that there be one separate autonomous Air Force, complete coordination of the three Armed Forces, a head to the Joint Chiefs of Staff, and roles and missions designated by executive order rather than by legislation. Doolittle wishes to concentrate all military aviation in the U.S. Air Force: "one specialized branch of the Air Force," he said, "would operate with the Navy just as a specialized branch, the Tactical Air Force, now cooperates with the Army."[35] In October 1949, General Spaatz wrote: "The Navy now spends more than half its total appropriation in support of naval aviation. The result is that the Nation is dissipating its wealth and wasting aviation talent in supporting two air forces." Specifically queried about the Spaatz article, Secretary Symington emphasized that the view that there should be one air force was not an official Air Force position. "I know of no officer in the Air Force," he said, "who agrees with the position that there should be one Air Force for the country."[36]

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While roles and missions remained in dispute, the Secretary of Defense and the Joint Chiefs of Staff successfully provided command and control arrangements for unified and specified commands. When the unified theater commands were offically formed in December 1946

the Joint Chiefs of Staff continued to exercise command over them, with an individual chief of staff being designated as the "executive agent" for a particular unified command. When the strategic Air Command was established there was a general understanding that it would be centrally controlled and directed by orders of the Joint Chiefs of Staff, but Air Force mission statements nevertheless provided that the Strategic Air Command would operate in accordance with directives and policies received from the Commanding General, Army Air Forces, and later the Chief of Staff of the Air Force. The Strategic Air Command could not be handled as a unified command (which included Army, Navy, and Air Force forces) since it was composed only of Air Force forces. Making a solution to this problem, the Key West agreements authorized the Joint Chiefs of Staff to designate one of their members as their executive agent for unified commands and also for "certain operations, and specified commands." A "specified command" thus came to be a single-service command under the Joint Chiefs. While the Joint Chiefs would ultimately state that the Strategic Air Command had been responsible to them since 14 December 1946, they did not officially assign the mission of conducting strategic air warfare operations to the Strategic Air Command until 13 April 1949. At this time they provided that the Strategic Air Command--functioning under the Joint Chiefs of Staff with the Air Force Chief of Staff serving as their executive agent--was authorized to direct the strategic air offensive; to assign targets, weight of effort, and timing of air operations; and to coordinate the strategic strikes with theater air activities to prevent interference between forces and secure maximum tactical advantages.[37] As the first fruits of tangible unification, Secretary Forrestal issued on 3 May 1948 a final directive uniting the Air Transport Command and the Naval Air Transport Service in a new command to be known as the Military Air Transport Service. Made effective on 1 June 1948, the Military Air Transport Service was charged to provide air transport for the National Military Establishment, under the command and direction of the Air Force Chief of Staff.[38]

2. Building the Air Force's Internal Structure

Definitive planning for the organization of the air force in the postwar structure of the Armed Forces began within the War Department in the autumn of 1943. The establishment of a structure of a separate postwar air force necessarily involved assumptions as to the fundamental purposes of military forces, the basic missions of the air force in national defense, and the probable nature of future hostilities. Closely related to each of these matters was the question about the amount of financial support that could be expected for military preparedness in the years of peace which were expected to follow the ending of World War II.

"The primary function of the armed forces is, when called upon to do so, to support and, within the sphere of military effort, to enforce the national policy of the nation," stated Major General Thomas T. Handy's War Department Operations Division planning paper which went forward to General Marshall on 28 October 1943. "There must," Handy continued, "be a complete correlation of national policy with military policy; of the political ends to be sought with the military means to achieve them. Such correlation must be flexible; adaptable to changing conditions and changing needs."[39] Although the expressed idea that military force should support national policy was relatively new in the United States, Marshall readily approved Handy's basic statement. In his final war report, Marshall would additionally define his own conception of the relationship of force to diplomacy. "Our diplomacy must be wise and it must be strong," he warned. "If our diplomacy is not backed by a sound security policy, it is, in my opinion, forecast to failure."[40]

Since the purpose of military force was to support national policy, Handy proposed that a force in being, not a potential one, was required "for prompt attack in any part of the world in order to crush the very beginnings of lawless aggression, in cooperation with other peace-loving nations."[41] General Marshall, however, would not approve the concept of a large standing Army because its cost would be prohibitive, the men needed to fill its ranks would not be obtained by recruitment in time of peace, and because it would be repugnant to the American people. Marshall wanted to develop a system and an organization that would endure for years rather than be organized against the expectation that war might begin at some arbitrary date. "We were trying to avoid war," he would explain, "but at the same time we carefully had to avoid a financial effect on our economy which would be as disastrous as a war might well be." With these basic beliefs, Marshall placed his faith in combat-ready air power rather than a large ground army. He endorsed Handy's paper with a marginal notation: "I think maintenance of sizeable ground expeditionary force probably impracticable except on a basis of allotment of fillers after six months. Having air power will be the quickest remedy."[42]

When Major General Barney M. Giles, Chief of Air Staff of the Army Air Forces, laid the basic ground rules for planning the postwar air force on 11 December 1943, he specified that the air force would be autonomous and would maintain "an 'M' day force, instantly ready to repel attack or to quash any incipient threat to world peace." Giles assumed that the air force would consist of a GHQ, six air forces, and air units stationed on a chain of permanent bases from the Philippines eastward to the west coast of Africa.[43] Brigadier General H. A. Craig, Chief of OC&R, immediately protested the plan because it appeared to parcel out the air striking force between six commands. "Forty very heavy bomber groups," Craig argued, "could be moved from Kansas to prepared bases anywhere in the world in a matter of hours. This precious striking force should be

retained centrally available for concentration against the enemy, safe from sabotage, treachery, or the dangers native to piecemeal distribution."[44] Major General Westside T. Larson, commander of the Third Air Force, agreed with Craig: "The powerful very heavy air arm. . ., like a fleet 'in being,' must not be strategically disposed of in the Pacific or Atlantic areas on fixed or permanent location but on the contrary should remain a compact force, free to move and be temporarily based in any of the numerous strategic areas--strategy being a continuing element dependent upon the vacillating policy of foreign countries." Larson also urged that the postwar plan "should incorporate the operation of the Air Force directly under the Commander U.S. Air Forces and not as a part of any task force organization that may be set up in the various strategic theaters."[45]

While the establishment of the Twentieth Air Force on 4 April 1944 established the precedent for the unified command and employment of strategic air striking forces, the postwar status of tactical air forces continued to be a problem. In December 1944, Brigadier General F. H. Smith, Jr., Deputy Chief of the Air Staff, stated that a proposal to establish a postwar tactical air force to handle air-ground training was "fallacious in principle and dangerous in implication." Smith argued that only two oversea theaters had established tactical air forces, and he urged: "Strategic Air Forces must when the situation demands be employed in tactical operations and vice versa."[46] As has been seen, Major General Norstad was initially sympathetic to the tactical air force, but nuclear weapons caused him to change his mind. Since tactical air units obviously could not be employed until the strategic air offensive had been completed, Norstad favored the maintenance of a nucleus for a tactical air force which could be expanded after M-day.[47]

In view of the impending Allied victory in World War II, the air defense of the United States was apparently not considered to be of pressing importance. In a study prepared on 30 May 1945, however, Major General H. R. Oldfield, the AAF Special Assistant for Antiaircraft, pointed out that fighter interceptors, signal aircraft warning services, and antiaircraft artillery units were complementary members of an air defense team. "To divorce the antiaircraft artillery from this team and to place it on a cooperative basis," Oldfield thought, "not only violates the principle of unity of effort and of economy of force but endangers the success of the air defense mission."[48] Major General Donald Wilson, who had become Chief of OC&R, proposed on 6 June 1945 that air defense commands ought to be organized in the United States and charged to give their full attention to defense work. Wilson was critical of the wartime arrangement wherein three continental air forces had been charged with air defense at the same time that they were principally concerned with training of air force units.[49] After studying air

defense requirements, Arnold forwarded a study to the War Department Operations Division on 4 August 1945 which both outlined the unitary problem of air defense and recommended that antiaircraft artillery should be transferred from the Army to the postwar air force.[50]

Few of the postwar organizational problems were as perplexing as the future of air transport and troop carrier aviation. The Air Transport Command wished to continue into the postwar period at a strength of approximately six squadrons, each with 10 four-engine transports. Both Brigadier General Old and Lieutenant General Brereton advocated the establishment of a postwar airborne army, which would combine both airborne troops and troop carrier aircraft.[51] According to report, the War Department General Staff bounced the airborne army proposal from office to office, with no one liking it but everyone hesitating to disapprove it. In the end, the War Department G-3 indicated that it would prefer that the headquarters of a troop carrier command and of the airborne force would be separately maintained but located in close proximity in order to permit intimate coordination without consolidation.[52] In assessing the potential impact of nuclear weapons on air force organization, however, Norstad offered the opinion that troop carrier aviation ought to be integrated into the Air Transport Command and that the air force ought to procure large transport planes which could either provide mobility to a strategic bombing force or be prepared to lift large numbers of ground troops.[53]

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When the Air Staff began to make plans for the postwar air force, it based its organizational conception on the War Department's plan to maintain a postwar Army of 1,700,000 men. On this basis, Arnold approved an initial air force objective on 25 February 1944 calling for 105 groups, divided into 40 very heavy bombardment, 2 heavy bombardment, 4 medium and light bombardment, 45 fighter, 3 reconnaissance, and 11 troop carrier groups. The size of this force was devised without consideration of cost, but the force would be capable of "striking quickly and forcibly" on M-day and Major General Kuter defended it as being necessary to keep the peace in a troubled world. When the 1,700,000-man Army was brought to General Marshall's attention of 13 November 1944, however, he rejected it out of hand on the basis that the annual costs of supporting such an Army would be excessive.[54]

In order to justify a more economical postwar plan, the War Department adopted more optimistic assumptions. The new appreciation assumed that an enemy would launch an all-out attack against the United States without a declaration of war and that the United States would have no allies for at least 18 months, but it further assumed that "the United States will have cognizance of the possibility of war for at least one year, and during this year preparatory measures will be inaugurated." Marshall approved these

assumptions on 13 March 1945.[55] In a few months, the War Department G-4 questioned the realism of the assumption that the United States would have 12 months' warning time, but the Air Force wished to retain it because it would pose a strong requirement for the development of alert national intelligence.[56] Given a year to mobilize, the Army Air Forces matured a plan on 21 May 1945 calling for the retention of 78 groups in the interim air force. Since aircraft could not be stockpiled for a future mobilization emergency, Arnold also asked Congress to retain a substantial portion of the government-owned aircraft plants and machine tools on a standby status.[57]

When the 78-group strength was rejected by the War Department as impracticable financially, Lieutenant General Ira C. Eaker, Deputy Commander of the Army Air Forces, reached a decision on 29 August 1945 that 70 groups with approximately 400,000 personnel would be the bedrock minimum strength required by the postwar air force. This was an absolutely minimum strength because it would provide a force which could be operationally ready on D-day and still be able to provide training for a million and a half men that the air force would mobilize for a planned five-year war, because it was the smallest size force which would keep aircraft production in a sufficiently ready state to meet mobilization requirements, and because it was the size force that would be able to man the essential air bases that would be required in a combat and mobilization emergency. The Air Force planned that the 70-group strength would include 21 very heavy bomber, 5 light bomber, 22 fighter, 3 all-weather fighter, 9 strategic and tactical reconnaissance, and 10 troop carrier groups, plus 22 separate specialized squadrons. This regular strength would be backed up by 27 Air National Guard and 34 Air Reserve groups.[58]

The reduction of the Air Force postwar strength from 105 to 70 groups caused revisions in organizational planning. "In the interest of economy," Lieutenant General Eaker stated on 21 May 1945, "air power which can be applied to the accomplishment of more than one of its missions must not be duplicated."[59] The Headquarters, Continental Air Forces, had already begun to operate at Bolling Field on 1 April 1945, and on 8 September its Chief of Staff, Major General Samuel E. Anderson, proposed that the Continental Air Forces should be charged to provide a global striking force, to provide tactical air force units for cooperative training with Army and Navy forces, to plan the air defense of the continental United States, and to train combat units and crews for oversea service.[60] Seeking a similar organization of air transport resources, the Air Staff prepared a joint staff study on 5 September 1945 that recommended the consolidation of troop carrier and air transport units into a single Air Transport Command, which would serve as the major headquarters over the Troop Carrier Command, a Continental Air Transport Division, and a Foreign Air Transport Division.[61] General Arnold never acted on the proposal to place all combat aviation under the single Continental

Air Forces, but on 5 December 1945 he directed that the Air Transport Command and troop carrier forces would maintain a separate organizational status.[62]

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At the same time that the Air Staff considered the organization of the postwar air force, Arnold gave an increasing amount of his own thought to postwar research and development. In the war years the Air Materiel Command and its successor Air Technical Service Command had been more concerned with production than with research and development.[63] Research and development responsibilities had been divided between the Air Communications Officer on the Air Staff, the Air Materiel Command, the AAF Board, and the Air Proving Ground Command, and the system had worked only because of the cooperation of the various commanders involved.[64] Convinced that American military research and development had often been inferior to that of its enemies, General Arnold requested Dr. Theodore Von Karman on 7 November 1944 to head and to organize an AAF Scientific Advisory Group which would outline a research and development program to guide the Air Force for ten to twenty years. Arnold informed Von Karman that the "object of total war is to destroy the enemy's will to resist, thereby enabling us to force our will on him," and he asked that the Scientific Advisory Group indicate the potential scientific lines of advance which the Air Force might take to accomplish a predominantly offensive mission.[65] After a year's study, the Von Karman group would complete on 15 December 1945 a monumental report entitled Toward New Horizons.[66]

While the scientific study was progressing, Arnold continued to point out that the Air Force, as he said, "must have enough money and enough people and enough facilities to carry on necessary experimental research and development work to keep the U.S. Army Air Forces and U.S. aviation in the No. 1 position which they now occupy."[67] In a talk to his staff on 12 January 1945, Arnold "drew a picture of the next war as starting without warning with thousands of pilotless 'things' suddenly raining destruction over Washington and other prime targets in the United States. As a defense against this, he visualized other 'things,' not only seeking out the enemy's weapons, but also counteroffensive weapons which would seek out and destroy the enemy's ability to manufacture the articles for waging war."[68] Appearing before a Senate committee on 18 October 1945, Arnold said: "The first essential of air power necessary for peace and security is the preeminence in research. . . . We must remember at all times that the degree of national security rapidly declines when reliance is placed on the quantity of existing equipment instead of its quality. . . . We must count on scientific advances requiring us to replace about one-fifth of existing Air Forces equipment each year and we must be sure that these additions are the most advanced in the whole world. To this end the best scientific talents of the country must be mobilized continuously and

without delay."[69]

Air officers had a good appreciation of the importance of research and development, but they were much less sure as to how it could be attained by organization. At this juncture, no one apparently suggested that research and development in air materiel should be divided from procurement and production. Based upon a postulate that tactical research and proof testing ought to be separate from the development function, the AAF Board recommended on 29 April 1944 that the wartime relationship of the AAF Board, the AAF Tactical Center, the AAF Proving Ground Command, and the Air Materiel Command ought to continue unchanged in the postwar air force.[70] In September 1945, Brigadier General Eubank recommended that if the AAF Board were made directly responsible to the highest command level and augmented with highly-qualified officers it would be "capable of solving problems of any magnitude related to Air Force development, tactics, and techniques."[71] Other authorities regarded the AAF Board as being only one of several important research and analysis agencies. Colonel Leach, Chief of the Operations Analysis Division, for example, suggested that the AAF Board, the Operations Analysis Division, the AAF evaluation boards, and the Scientific Advisory Group were so closely related in function that they ought to be placed under the unified direction of an Air Staff officer in charge of analysis, evaluation, and research.[72] Apparently without recognizing that he was circumscribing the province of the AAF Board, General Arnold established an All Weather Air Forces Board at Lockbourne Air Base, Ohio, on 16 June 1945, and charged it to evolve and implement a long range research and development program for all-weather air operations. Without guidance from above, the Lockbourne center was soon reported to be more concerned with "gadgeteering" than with orderly investigation.[73] At Orlando, Florida, the AAF Board had enjoyed a close relationship with the educational facilities of the AAF School, but on 29 November 1945 the AAF School was physically transferred to Maxwell Field, Alabama, where the Air University was being established.[74]

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In the period prior to November 1945, the Army Air Forces laboriously planned a postwar organization, but the final approval of all planning would be dependent upon the wishes of General Dwight D. Eisenhower, who became Army Chief of Staff on 19 November 1945, and of General Carl Spaatz, who began to assume the duties of Commanding General, Army Air Forces, when General Arnold requested retirement on 8 November. While Arnold would not complete his terminal leave until 1 March 1946, he thought that his successor should have the responsibility for forming the policies that he would have to carry out. On 29 November, Eisenhower appointed a board of officers under Lieutenant General W. H. Simpson and charged it to prepare a definitive plan for the reorganization of the Army and the Air Force that could be effectuated by executive orders and

that would permit the separation of the Air Force from the Army. On 15 November, Spaatz had already stated that there had been "a tendency to over-emphasize long-range bombardment, and to ignore the versatile application of air power." In January 1946, Eisenhower and Spaatz laid aside the concept that all combat air power might be concentrated in the Continental Air Forces and agreed between them that the major commands of the Army Air Force should be the Strategic Air Command, the Air Defense Command, the Tactical Air Command, the Air Technical Service Command, the Air Training Command, the Air University, the Air Force Center, and the Air Transport Command.[75] While the organization of the Tactical Air Command appeared to represent a reversal of earlier expressed concepts that combat air power ought to be capable of both strategic and ground support missions, Spaatz later stated that he organized the Tactical Air Command at his own volition, with no pressure from General Eisenhower.[76]

The command reorganization of the Army Air Forces outlined by Eisenhower and Spaatz was keyed to the establishment of the Strategic Air Command, which was visualized as a long-range striking force equipped with atomic-capable B-29's and possibly B-36's. The Strategic Air Command's planes would be based in the United States and would be deployed to forward bases as necessary. Effective on 21 March 1946, Headquarters, Continental Air Forces, was redesignated as Headquarters, Strategic Air Command, and on 21 October 1946 the new headquarters moved from Bolling Field to Andrews Field, Maryland. In its mission statement, the Strategic Air Command was charged to be prepared to conduct long-range operations in any part of the world at any time; to conduct maximum long-range reconnaissance over land or sea; and to be prepared to provide combat units capable of intense and sustained combat operations in any part of the globe, employing the latest and most advanced weapons. The Eighth and Fifteenth Air Forces were assigned to the Strategic Air Command.[77]

"We feel," stated Spaatz, "that the air defense of the United States cannot be left to chance. . . . We must be properly organized so that there cannot possibly be an air surprise such as occurred at Pearl Harbor."[78] AAF leaders continued to urge that the air defense of the United States should be a centralized system which would control fighter aircraft, radar, and antiaircraft artillery, and they believed that antiaircraft artillery should be integrated into the Army Air Forces. According to report, antiaircraft artillery officers in the Army Ground Forces did not want to integrate with the Air Force, and the Simpson Board recommended that antiaircraft artillery should not be transferred to the Army Air Forces but that antiaircraft artillery units should be trained and attached to Air Force units from time to time.[79] The Air Defense Command was activated at Mitchel Field, New York, effective on 27 March 1946, and the First, Second, Fourth, Tenth, Eleventh, and Fourteenth Air Forces were assigned to it. The Air Defense Command

was charged to provide for the air defense of the United States, but it was obvious very early that providing tactical units to it would be difficult. Despite statements to the contrary, the War Department and the Army Air Forces held a relaxed view that air defense would be a mobilization measure. In the event of a war emergency, the Joint Chiefs of Staff would organize defense commands and make Navy, Strategic Air Command, and Tactical Air Command fighters available to the control of the Air Defense Command. In such event Air National Guard and Air Force Reserve fighter units would be mobilized, and the Air Defense Command was accordingly charged to organize, administer, train, and maintain the Air National Guard and the Air Reserve.[80]

Since the tactical air forces and ground forces had worked closely together in Europe, Spaatz wished to retain a close relationship between the headquarters of the Tactical Air Command and that of the Army Ground Forces. As a result, Headquarters, Tactical Air Command, was activated at Tampa, Florida, on 21 March 1946, but it moved on 27 May to Langley Field, where it was proximate to Headquarters, Army Ground Forces (later Army Field Forces) at Fort Monroe, Virginia. The mission of the Tactical Air Command required it to cooperate with land and sea forces in ground and amphibious operations and to train and equip tactical air units for operations anywhere in the world. It was also charged to promote "progressive development of air-ground coordination techniques and doctrines." Assigned to the Tactical Air Command were the Third and Ninth Air Forces and the IX Troop Carrier Command, but the latter was soon disbanded and replaced by the Third Air Force (Troop Carrier).[81]

In view of earlier decisions to retain them without change, the Air Materiel Command (the former Air Technical Service Command), the Air Transport Command, and the Air Training Command continued in being when the War Department reorganization was announced on 14 May 1946.[82] Still seeking to distinguish between the air transport and the troop carrier mission, the Army Air Forces stated the policy that the Air Transport Command would be responsible for air transport service between the United States and the oversea theaters and between the oversea theaters. The troop carrier units had to be prepared for assault airborne and air landed operations and for the performance of intratheater airlift at the discretion of the theater commanders.[83]

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Unlike the organization of the combat functions which progressed rapidly toward a functional alignment of responsibilities, the establishment of a framework for air research and development was marked by numerous changes in plans. In order to "shake down" for peacetime operations, Headquarters, Army Air Forces, was reorganized on 15 September 1945 with five typical assistant chiefs of air staff: ACAS-1 Personnel, ACAS-2 Intelligence, ACAS-3 Training and

Operations, ACAS-4 Supply, and ACAS-5 Plans. Research and development functions which had been handled by Organization, Commitments, and Requirements passed to ACAS-3.[84] In the last weeks before he retired, General Arnold spent most of his time thinking about the future development of the Air Force, and, at the advice of Dr. Edward L. Bowles, Arnold directed on 5 December 1945 the establishment of a Deputy Chief of Air Staff, Research and Development. Headed by Major General Curtis E. LeMay, the new Air Staff office was charged to prepare the overall research and development program for the Air Force and to concern itself with policy matters affecting the research and development program. The Air Materiel Command would continue as the field agency responsible for research and development programs.[85]

At the same time that he was centralizing responsibility for future research and development in the Air Staff, Arnold wanted to initiate new research projects before plentiful wartime funds dried up. In September 1945, Arnold took Bowles with him on a trip to the west coast, and, late in the month, they met Donald Douglas and Fr. R. Collbohm in a luncheon conference at Hamilton Field. At this meeting, Arnold proposed to divert $10 million from the Air Force's fiscal year 1946 procurement budget and to commit it to a long-range project wherein the Douglas Aircraft Corporation would assemble a staff of civilian engineers and scientists to study the entire subject of intercontinental warfare and the best means of waging it. The staff would also be prepared to evaluate the military worth of competing systems of warfare, current and future, with the objective of providing air planners with the best possible guides as to the most economical and effective means of achieving the AAF mission. When Douglas agreed to undertake the project, the Air Materiel Command negotiated a $10 million three-year contract beginning in May 1946 for a study of future warfare. This contract was the genesis of the non-profit Research and Development (RAND) Corporation, which would be located at Santa Monica, California, and which would split away from Douglas in a mutually-agreeable action in 1948.[86]

In the summer of 1944 the Air Staff had discussed and dismissed a proposition that an Air Council ought to be created to sit in Washington and provide high-level policy guidance. This proposal was apparently voted down because of the belief that the Air Staff could act as an air council when such was necessary.[87] In spite of the transfer of the AAF School to Maxwell Field, where it would be redesignated as the Air University on 12 March 1946, air planning continued to visualize that the AAF Center would comprise the AAF Board and the AAF Proving Ground Command. In January 1946, however, Spaatz directed that a study be made of the advisability of creating an Air Board similar to the Navy General Board, and, without waiting for the study, he suddenly directed on 12 February that the Air Board would be established, with Major General Hugh J. Knerr as its Secretary-General. As formally established on 5 March, the Air

Board comprised the Commanding General, the Deputy Commanding General, the Secretary-General, the commanders of major AAF commands, and such other retired officers, civilians, and Air National Guard and Air Reserve officers as the Commanding General of the Army Air Forces might care to appoint. The mission of the Air Board required it to study problems and policies and make recommendations to the AAF Commander.[88]

The establishment of the Air Board necessitated the disbandment of the AAF Board, since, as Lieutenant General Eaker observed, "there should not be two air boards." In his study of the matter, Norstad suggested that the Air Board had already assumed responsibility for advising the AAF commander on all general policies. He suggested that the AAF Board mission of reviewing and evaluating tests of materiel and new developments should be assigned to the AAF Proving Ground Command, thus allowing that command to review and evaluate its own tests. He recommended that the missions of the AAF Board which required it to "determine lessons learned from current combat operations" and to "develop and recommend the doctrines and techniques to be used in the training and employment of the Army Air Forces" should be assigned to the new Air University. Norstad pointed out that at the Air University "hundreds of instructors, spurred on by the sharp analysis and questions of thousands of highly-experienced students," would constantly evaluate combat doctrines. "They," said Norstad, "can probably do a better job, resolve a greater amount of sound air thinking into usable doctrine than any other group of men anywhere. And they will do it whether or not they are charged with it."[89]

The disposition of the AAF Board and the distribution of its missions closely followed Norstad's recommendations. On 8 March 1946 the AAF Center was redesignated as the AAF Proving Ground Command, and the center's personnel--together with that of the AAF Board--moved to Eglin Field, Florida, where the AAF Board was formally inactivated on 1 July 1946.[90] On the same day, the Air University was directed to develop basic doctrines and concepts for the employment of air power; to review, revise, and prepare basic AAF doctrines for publication; to maintain continuing research into the strategic, tactical, and defensive concepts of air power; to review and evaluate new tactics, techniques, and organization and make recommendations regarding them; to collect, analyze, and disseminate information on new methods and techniques of aerial warfare; to plan and supervise the development and testing of new and improved methods and techniques of aerial warfare; and to approve, activate, and designate test agencies and monitor all projects involving tactical unit testing.[91]

The redistribution of the missions and responsibilities of the AAF Board marked the completion of the postwar organization of the Army Air Forces. At Maxwell Field, Major General Muir S. Fairchild immediately began to seek the resources which would permit the new Air University to accomplish its test and development mission. Tentative guidance led him to believe that the Air University would be

assigned a fighter, a bomber, and a guided missile group, together with other units, which would serve as a Test and Development Force. Hearing of the Air University expectation, however, Major General Quesada, commander of the Tactical Air Command, immediately protested that the organization of a Test and Development Force would be extravagant of scarce tactical units, and he demanded that tactical experimentation and development be entrusted to the operational commands. On 13 May 1946, Spaatz agreed with Quesada and informed Fairchild that tactical groups would not be assigned to the Air University. He enjoined that the Air University would devote itself to individual training and leave equipment and tactical tests and demonstrations to the Air Materiel Command, the Air Proving Ground, and the combat commands. "The doctrines taught at the Air University," Spaatz ordered, "will be those current in the various commands, approved as necessary by this Headquarters."[92]

Despite this curtailment in its mission, the Air University assumed many of the responsibilities of the AAF Board. At a meeting on 6 June, Eubank urged Fairchild to organize a small section or committee directly responsible to the Air University commander to accomplish the missions being transferred. "By keeping a separate group working together on these functions," Eubank explained, "I believe it will assure that the functions do not get lost and I believe it will help avoid the impression of a too academic interest in the problems that will come up."[93] To allay the suspicions of the combat commands, Major General David M. Schlatter, Deputy Commander of the Air University, announced that in the accomplishment of research, evaluation, and doctrinal functions, the Air University would "act in the capacity of a monitoring agency or steering committee utilizing the expert knowledge available in all of the commands of the Air Force."[94] Following Eubank's recommendation, Fairchild established a Research Section within the Air University's Academic Staff Division on 18 June 1946 with spaces for 16 officers, most of whom were transferred from Eglin Field to complete projects on which they were assigned when the AAF Board was discontinued. A reorganization of the Academic Staff on 1 October 1946 resulted in the establishment of a Research Division with several sections and 18 officers. Since the division was evaluating rather than conducting research, the Research Division was redesignated as the Evaluation Division, Academic Staff, on 29 August 1947.[95] Cognizant that it was responsible for stimulating thinking and discussion on air power subjects and for disseminating as well as formulating doctrine, the Air University began to publish the Air University Quarterly Review in May 1947.[96]

In spite of a rapid turnover of experienced officers in its research and evaluation function, the Air University worked off the backlog of projects that it had inherited from the AAF Board and undertook some new projects. Since it had no assigned combat units, the Air University relied on other commands to conduct tests. Especially where the Tactical Air Command was concerned, the split responsibility proved troublesome. In September 1946, for example,

the Air University protested that the Tactical Air Command was providing very poor support for several test projects--notably the tactical tests of P-80 aircraft at March Field, California. Hearing of the protest, one Tactical Air Command officer retorted that the Air University ought to discontinue its research section and transfer the people to the operating commands where research ought to be performed.[97] The way in which the new system of preparing doctrine would function was gradually worked out. In August 1947, for example, the Assistant Chief of Air Staff for Training and Operations held a meeting in Washington to discuss the preparation of a common air defense doctrine. Here it was agreed that two panels would be established to prepare the doctrine: the Air University would monitor the panel concerned with policy and doctrine and the Air Defense Command would monitor the panel studying tactics and procedures.[98] This same pattern would be repeated in other doctrinal studies.

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Even though the postwar organization of the Army Air Forces had been designed to provide for a smooth transition into the autonomous United States Air Force, some changes were necessary when the National Military Establishment got underway in September 1947. General Spaatz became Chief of Staff, United States Air Force, and Lieutenant General Vandenberg, who had been Deputy Commanding General and Chief of Air Staff in the Army Air Forces, became Vice Chief of Staff, United States Air Force. Looking forward to the establishment of the United States Air Force, and not at all sure that the postwar organization of the Army Air Forces would be suitable to the autonomous service, Spaatz had suggested that the Air University should use some of its highly-experienced students to examine the whole scope of air organization. Prepared as a seminar activity in the first class of the Air War College, Problem No. 4, Proposed Reorganization Army Air Forces, was completed on 6 January 1947. This study recommended that the Headquarters, United States Air Force, should be "a policy and planning staff with virtually all the operational activity of the Air Forces to begin at the major command level below this staff." Believing that "wars are waged with two weapons--men and materiel--and the combination of the two provide for operations," the Air War College study recommended that all headquarters staffs in the Air Force should be organized into three activities: personnel and administration, materiel and logistics, and plans and operations. Possibly reflecting the views of Major General Orvil A. Anderson, who was the founding Commandant of the Air War College, the study also recommended that the most effective utilization of air power in an over-all strategy required the consolidation of air defense, strategic striking, and tactical support forces into a single command. The study accordingly proposed to eliminate the Strategic Air Command, the Tactical Air

Command, and the Air Defense Command and to place all air power capabilities under a single Air Combat Command.[99]

Whether by design or coincidence, Spaatz accepted the three-deputy system recommended by the Air War College when he reorganized Headquarters, United States Air Force, on 10 October 1947. This reorganization divided Air Staff functions between the Deputy Chiefs of Staff for Personnel and Administration, Operations, and Materiel, and the Comptroller, who would later be recognized as a Deputy Chief of Staff. Some of the functions which had been exercised by the Deputy Chief of Air Staff for Research and Development necessarily passed upward to the newly-created statutory Research and Development Board of the National Defense Establishment, and the October reorganization of the Air Staff placed the remaining responsibilities of the office in the Directorate of Research and Development under the Deputy Chief of Staff for Materiel. The new Director of Research and Development would serve as the military director of Dr. Von Karman's Scientific Advisory Board, but he would otherwise be subordinated to the Deputy Chief of Staff for Materiel.[100]

During the negotiations over unification, the Air Board was said to have served Spaatz in a role similar to that of a "board of directors in a business organization."[101] With unification attained in the summer of 1947, however, Major General LeMay suggested to Spaatz and Vandenberg that it might be well to establish a USAF Aircraft and Weapons Board, consisting of all major air commanders. LeMay reasoned: "We should have more than just the staff experience in Washington participating in the discussions of new weapons." He thought that the new board would constantly survey the research and development program to insure that proper weapons were emphasized, developed, and procured for the combat units.[102] When it was assembled for its first meeting on 19 August 1947, the USAF Aircraft and Weapons Board comprised the Air Force deputy chiefs of staff and the major air commanders. Meeting on call during 1948, the Aircraft and Weapons Board examined, discussed, and offered formal recommendations on programs which were submitted to it by subcommittees of officers drawn from Air Force headquarters and from the major commands. As a vehicle for handling high-level problems, the Aircraft and Weapons Board rapidly eclipsed the Air Board, especially after January 1948 when Knerr was transferred from the Secretary General position to assume other duties.[103]

Shortly after becoming Chief of Staff of the Air Force on 30 April 1948, General Vandenberg began to be dissatisfied with the manner in which the Aircraft and Weapons Board (which he had had a large part in establishing) was functioning. With fifteen senior members talking and voting there was much confusion, and it was difficult to prevent leaks of information out of such a large body. Vandenberg also believed: "In the final analysis, the top command of the Air Force is responsible for the weapons with which it will fight the war." Effective on 29 December 1948, Vandenberg accordingly established the USAF Board of Senior Officers, headed by

Lieutenant General Fairchild, who had become Vice Chief of Staff, and with the Deputy Chiefs of Staff for Operations and for Materiel and the Commanding General, Air Materiel Command named as voting members. Both Secretary Symington and Vandenberg referred problems to this board, but neither attended its sessions nor sought to influence its deliberations, which commonly included a solicitation of opinions from the major air commanders. The establishment of the USAF Board of Senior Officers foreshadowed the end of the Air Board, which finally became completely dormant in the autumn of 1949.[104]

3. The Air Force in the Developing Cold War Strategy

When the War Department began its planning for a postwar defense establishment in 1943, no one identified a likely adversary for the United States. The fact that the Soviet Union would become an enemy to the free world apparently became known to different leaders at different moments. Thinking back to the time that General Bradley and he had gone forward to meet with Soviet Marshal G. K. Zhukov in May 1945, General Vandenberg recalled a feeling of foreboding about Russia. The Soviet army was digging in, and Zhukov proudly displayed new jet aircraft and Stormovik fighters which had technical features that American designers had said were impossible. "I remember talking to General Bradley," Vandenberg recalled, "about my concern over the apparent feeling. . . that the Russians had. . . masses of manpower and no brains."[105] Putting his thoughts on paper, Spaatz wrote Arnold on 11 October 1945: "With the rapid weakening of our forces in Europe and Asia, the USSR is able to project moves on the continent of Europe and Asia which will be just as hard for us to accept and just as much an incentive to war as were those occasioned by the German policies. . . . I believe we should proceed rather slowly toward demobilizing our armed forces, particularly units of our Strategic Air Command."[106] Looking back at the events of 1945, General Marshall agreed that the "confused and tumultous demobilization was very injurious" and that it had weakened the diplomatic initiative of the United States. Marshall maintained that the United States could not have established "a very large force" in the period of postwar exultation, but he felt even more strongly that "the failure to establish a very definite procedure for maintaining our defensive posture was a very serious error."[107]

In 1945 and 1946 both the foreign policy and the military policy of the United States assumed that the United Nations "would gain rapid and growing recognition as a central factor in the establishment and maintenance of world security."[108] Based upon this assumption, General Eisenhower directed that Army and Air Force strength levels for the fiscal year beginning in July 1946 should be kept to the minimum. In May 1946, Spaatz was willing to hope that the United Nations would establish international arrangements for collective security, but he was unwilling to rely upon a hope.

"In modern war," he pointed out, "any nation losing command of the air approaches to its vital areas is in serious peril. . . . The surest defense will be our ability to strike back quickly with a counteroffensive, to neutralize the hostile attack at its source, or to discourage its continuance by striking at the vitals of the aggressor."[109] When it published its first plan for training and employment on 25 July, the Strategic Air Command pointed out: "No major strategic threat or requirement now exists nor, in the opinion of our country's best strategists, will such a requirement exist for the next three to five years." Serving in the Office of ACAS-3, Brigadier General Thomas S. Power indorsed the letter back with the admonition: "While the probability of a major strategic threat or a major armed conflict involving this nation in the next three to five years may appear to be remote, the possibility of such an occurrence cannot be excluded."[110]

During 1946 General Spaatz strongly supported a 70-group strength for the Army Air Forces, but his greatest immediate problem was to salvage something from the explosive demobilization that would reduce the air arm to a strength in December 1946 of only 55 groups, of which two could be counted as combat ready. In the emergency, Spaatz viewed the Air Force mission as being: "(a) To provide a long-range striking force in instant readiness and with the power and capacity to destroy the storehouse of enemy weapons and thereafter to reduce the enemy's industrial capacity and war-making potential. (b) To provide in peacetime the minimum establishment for prompt and rapid expansion from peace to war." In the critical months of 1946, Spaatz gave first priority to "the backbone of our Air Force--the long-range bomber groups and their protective long-range fighter groups organized in our Strategic Air Force."[111]

When the Strategic Air Command was established, air strategists were said to have recognized that the adaptability of nuclear weapons to delivery by air at great distances "makes the airplane at present, and its descendants in the future, the greatest offensive weapon of all times."[112] The plans for the Strategic Air Command, however, were predicated on scientific reports that fissionable materials were very scarce and that a state of nuclear plenty was improbable. Arnold had stated that nuclear weapons would be scarce and very expensive.[113] As a result of this prediction, the Strategic Air Command planned to employ both high explosive and nuclear weapons. In order to perform its mission, the Command asked that it eventually be assigned 21 bombardment groups (very heavy), nine fighter groups (very long range) and three reconnaissance groups (very long range). When he was assigned to head the Strategic Air Command in 1946, General George C. Kenney immediately organized one wing with three B-29 groups as the atomic-capable strategic striking force.[114] The size of this force was described as sufficient "to fully exploit the expected availability and effectiveness of new bombardment weapons including the atomic bomb."[115]

Before World War II air power had been unable to project across ocean barriers without the aid of surface craft, but the prospective development of 10,000-mile range aircraft--including the Northrup XB-35 "Flying Wing" and the Consolidated XB-36--promised to open a new air frontier over the frozen wastes of the Arctic. "We must visualize," said Spaatz, "the launching of heavy blows from any point on the globe against any other point."[116] In November 1945 a 6,553-mile flight of four B-29's led by Brigadier General Frank A. Armstrong from Hokkaido to Washington over the top of the world demonstrated that the Arctic was no barrier to air travel.[117] The Strategic Air Command's plan for training and employment issued on 25 July 1946 acknowledged the concept of transpolar air operations and divided the world into three sectors of potential operations: the North Atlantic, the North Pacific, and the Far East. In a future war, the Strategic Air Command thought it certain that "there will be but one Theater of Operations covering the entire globe or at least the Northern Hemisphere." Moreover, the next war would almost certainly "be primarily an air war until air supremacy is obtained, since surface forces cannot successfully operate without that supremacy." The Strategic Air Command's concept of operational employment accordingly called for a centralized control of the global strategic bomber force and a periodic rotation of bomber, long-range fighter, and reconnaissance groups from home bases in the United States to forward bases in the North Atlantic, North Pacific, and Far East. In a war emergency, the plan assumed that a relatively few atomic-capable B-29's would be employed, probably on the direction of the President, either as a part of larger B-29 formations or as individual aircraft which would strike at night or under cover of bad weather.[118]

"Destruction is just around the corner for any future aggressor against the United States. Quick retaliation will be our answer in the form of an aerial knock-out delivered by the Strategic Air Command." A public relations release thus explained the Strategic Air Command's concept of employment in August 1946.[119] As a matter of fact, however, the strategic striking force was very weak. Although the Strategic Air Command possessed the only two fully combat operational groups in the United States, it did not expect to have a total of four B-29 groups and two long-range fighter groups operational before February 1947.[120] As a result of weakness, the Army Air Forces was unable to measure up to its first postwar crisis, which occurred in August 1946, when two American C-47's were shot down by Communist pilots over Yugoslavia and the State Department proposed an immediate and aggressive use of air power over that country. Norstad had to point out that the Air Force was too weak to risk war. In place of the show of force over Yugoslavia, Assistant Secretary of War for Air W. Stuart Symington proposed an around-the-world B-29 flight, only to have this turned down by the State Department. In November, however, the Strategic Air Command was suddenly directed to send six B-29's to Europe: led

by Colonel James C. Selser, Jr., these planes left the 43d Bombardment Group's base at Davis Monthan Field, Arizona, on 13 November 1946, made the trans-Atlantic crossing, and landed safely at Frankfurt, Germany, despite low ceilings and half-mile visibility. In a 12-day stay in Europe, the B-29's made flights along the borders of Soviet occupied territory and surveyed airfields to determine their suitability for B-29 operations.[121]

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In the midst of the explosive demobilization of its group strength, the Army Air Forces found it impossible to procure new aircraft that were needed for modernization and to keep the aircraft producers of the United States in a solvent condition. Believing that national security required the maintenance of a healthy aircraft industry which would be capable of rapid expansion within a one-year period of warning, Assistant Secretary of War Robert A. Lovett had sponsored the establishment of an Air Coordinating Committee with members from the War, Navy, and Commerce Departments in December 1944. After detailed study of mobilization requirements, the Air Coordinating Committee recommended on 22 October 1945 that the military services would have to procure a minimum of 3,000 aircraft, or an airframe weight of 30,700,000 pounds, each year in order to maintain the nation's aircraft industries in a condition that would permit rapid expansion. This recommendation was predicated on an assumption that there would be a civilian requirement for 325 commercial transports and 20,000 private airplanes each year.[122]

As it finally materialized, the Air Force 70-group and 22-squadron program called for a total of 6,869 aircraft, while the 27 Air National Guard and 34 Air Reserve groups would be authorized an additional 5,572 aircraft, making a grand total of 12,441 aircraft. In order to replace losses in a period of conflict in which the aviation industry was gearing up for war production, the Air Force wanted to maintain an additional reserve of 8,100 aircraft.[123] Based upon estimates of attrition and a planned program of obsolescence (which would transfer aircraft from primary to secondary missions, such as training, after a given number of years), the Air Force computed that the annual procurement requirements of the 70-group and 22-squadron program would be its proportionate share of the 3,000 planes which the Air Coordinating Committee indicated as being the figure that the military services needed to purchase annually. The Air Force would expect to maintain "technical air supremacy."[124] "Quality of equipment is of major consequence," Spaatz explained. "Only technical air supremacy will permit an air defense capable of detecting and intercepting a possible surprise attack with the air weapons of the future; an air offense capable of destroying critical targets in enemy territory; and effective cooperation with the surface forces on land and sea."[125]

Despite their appreciation of the need for aircraft modernization, both Arnold and Spaatz found it difficult to justify aircraft purchases while the Army Air Forces was retrenching. In the last years of World War II the Army Air Forces had placed heavy orders for modern aircraft: in fiscal year 1944 it had ordered 100 global B-36 bombers and 498 new P-80 jet fighters; in fiscal year 1945 it had ordered an additional 417 P-80 fighters and 100 P-84 jet fighters. With new planes on order from war appropriations, it was difficult to justify the purchase of more aircraft at the same time that tremendous holdings of war-surplus planes needed liquidation. Rather than incur criticism for purchasing new and improved transport aircraft at the same time that it was releasing planes to the civil a lines, for example, Arnold directed on 27 August 1945 that the AAF would reduce its procurement objectives for transports "to the absolute minimum for development purposes."[126] In fiscal year 1946 (which began on 1 July 1945 and was the first postwar year) the Army Air Forces purchasing authorization was cut back to 662 aircraft, the principal models including 60 of the improved Superfortresses which were designated B-50's, 250 twin-fuselage Mustang fighters which had been adapted as an interim all-weather interceptor and designated as P-82's, and 141 P-84 jet fighters.[127]

As it was drawn up in the spring of 1946, the postwar aircraft procurement plan of the Army Air Forces reflected the fact that large stocks of World War II planes were still combat capable, that atomic bombs were scarce, and that new jet aircraft were very expensive. Brigadier General Alfred R. Maxwell, Chief of the Requirements Division ACAS-3, visualized the following future aircraft requirements. Aircraft of the global B-36 type would be important as special weapons for employment against extremely long-range targets--possibly A-bomb targets--but such planes would not be procured in large numbers. Medium bombers of the B-50 type would be "work horse" bombers for medium range and would be produced in large numbers. Penetration fighters would continue to be the most important fighter type, but all-weather and interceptor fighters would increase in importance as enemy nations threatened American air supremacy. To give fighter support for long-range bombers, the Air Force proposed to develop a parasite fighter that would be transported by a bomber to a target area and rejoined to the bomber for the trip home. Strategic and tactical reconnaissance planes would continue to be modifications of standard bomber and fighter models. Troop carrier aircraft would include large helicopters (which would replace gliders) and large transport models capable of moving completely-equipped infantry and armored divisions to any combat zone in the world. As a matter of priority, the Army Air Force wanted to develop jet bombers, but with current technology jet aircraft used large amounts of fuel and did not have the range demanded of bombers.[128]

In its budget requests for fiscal year 1947 the Air Force sought

to follow the program summarized by Brigadier General Maxwell and to begin to procure aircraft required for a modernized 70-group program. In its review of the military requests, the Bureau of the Budget severely reduced all items of the budget, including funds requested for aircraft procurement. It struck out requests for authority to procure new transport aircraft on the ground that proposed contractors would not be able to accomplish the proposed schedule, although the Air Force believed that they could. It also reduced the over-all program by 35 bombers and 42 fighters, and, after Congress had voted aircraft purchase funds for fiscal year 1947, the Bureau of the Budget subsequently impounded $30 million of aircraft procurement funds which was transferred to the pay and travel funds of the Army.[129] In fiscal year 1947 the Army Air Forces accordingly expended $302,684,000 for aircraft procurement and placed orders for a total of 769 aircraft, including such principal types as 73 B-50's, 96 B-45's, 80 P-80's, 191 P-84's, and 33 P-86's. The B-45 was a new light jet bomber which was designated as a replacement for the A-26 as a ground-support aircraft; the P-86 Sabre was a new swept-wing jet interceptor.[130]

The AAF aircraft procurement program for fiscal year 1947 was less than half of the Air Force proportionate share of the amount recommended by the Air Coordinating Committee as necessary to maintain a solvent aircraft industry.[131] In the spring of 1947, when it was drawing up its budget requests for fiscal year 1948, the Army Air Force put in for 1,844 planes, a figure based upon a modernization of 55 groups and 15 skeleton groups and not directly upon any plan to keep the aircraft industry healthy.[132] An economy-minded House of Representatives, plus rising costs of aircraft, cut the Air Force program far below the requested figure. Based upon an authorized expenditure of $495,507,000, the Air Force issued procurement orders for 965 aircraft in fiscal year 1948. The purchase included 82 B-50's, 43 B-45's, 154 P-84's, 188 P-86's, and, for the first time since the war, 120 new-model troop carrier and transport aircraft.[133] The transports included 27 C-97's, a global transport version of the B-29, and the troop carriers included 36 C-119 Flying Boxcars.[134]

* * * *

"The weapons of today are the museum pieces of tomorrow," General Arnold had warned when he was in the process of leaving office in November 1945.[135] Based on guidance provided in Dr. Von Karman's Toward New Horizons, Arnold talked confidently about supersonic flight and intercontinental missiles. As drawn up in the winter of 1945-46 by the Air Materiel Command, a 5-year Army Air Forces research and development program generally reflected the findings of Von Karman's scientists and was designed to provide a continuity to air research and development efforts. The program sought to conserve scarce engineering and scientific resources of the nation, but it was predicated on the basic rule that the Air

Force would not engage in "in-house" research and development unless private agencies were unwilling to do the work on a contract basis.[136] In explanation of the 5-year program, Major General LeMay observed: "Time in this period of unprecedented scientific progress can be the decisive factor in the continued existence of the United States."[137] General Spaatz spoke of the requirement for maintaining a "technical air supremacy," and in a statement of general AAF policy in October 1946 he emphasized that "the Army Air Forces must maintain a position of preeminent leadership in research and development."[138]

After studying the results of captured German scientific data, Von Karman's AAF Scientific Advisory Group had reported that the Germans appeared correct in their conclusion that a transoceanic rocket could have been developed. Von Karman also suggested that rocket-driven airplanes would be necessary in order to attain the higher and higher altitudes required to maintain air superiority. Rocket barrages with atomic warheads, Von Karman said, could well become the only effective air defense weapons.[139] Von Karman's findings were quite different from those of Dr. Vannevar Bush, when he offered his scientific advice to the Senate Committee on Atomic Energy in December 1945: "We have plenty enough to think about," Bush said, "that is very definite and very realistic--enough so that we don't need to step out into some of these borderlines which seem to be, to me, more or less fantastic. Let me say this: There has been a great deal said about a 3,000-mile high -angle rocket. In my opinion, such a thing is impossible today and will be impossible for many years. The people who have been writing these things that annoy me. . . have been talking about a 3,000-mile high-angle rocket, shot from one continent to another, carrying an atomic bomb and so directed as to be a precise weapon which would land exactly on a certain target, such as a city. I say, technically, I don't think anybody in the world knows how to do such a thing, and I feel confident it will not be done for a very long period of time to come. . . . I think we can leave that out of our thinking. I wish the American people would leave that out of their thinking."[140]

In making up its 5-year research and development program, the Army Air Forces chose to believe Von Karman rather than Bush. "There is great danger that the Air Force," stated Major General Knerr, Secretary-General of the Air Board in February 1946, "may find itself in the position of the Coast Artillery and the Navy in the not too distant future thru failing to realize that the airplane can well join the battleship and antiaircraft artillery as ineffective weapons carriers. The aerial missile, by whatever means it may be delivered, is the weapon of the Air Force."[141] During 1946, the Air Force accordingly negotiated a contract for Project MX-774 with Consolidated-Vultee Aircraft for study and investigation of missile guidance and control, rocket engine sniveling, and lightweight missile structures--the whole project looking toward the eventual development of an intercontinental ballistic missile. Another contract was negotiated with North

American Aviation for rocket propulsion and for the research and development of a pilotless aircraft which would become known as the Navaho. One of the contracts awarded to RAND required it to investigate the feasibility of a minimum-orbital satellite which would provide photographic reconnaissance of inaccessbile areas of the earth.[142]

Despite the fact that it attached great importance to its 5-year research and development program, the Air Force was not notably successful in getting funds for it. For fiscal year 1947 Congress appropriated $186 miilion for AAF research and development.[143] Major General LeMay was certain that all of this money could have been obligated by the end of the fiscal year, though not at a uniform rate. The Bureau of the Budget, however, did not feel that all of the appropriation could be obligated, and in January 1947 it notified the War Department that the fund would be cut by $100 million. After a reclama, the Bureau released $25 million of the amount in question, but continued to impound $75 million of the air research and development fund which was transferred to pay and travel of the Army, where there were deficiencies.[144] Both President Truman and an economy-minded House of Representatives reduced requested Air Force appropriations for fiscal year 1948, with the result that Congress finally appropriated only $145,300,000 for air research and development for the fiscal year beginning on 1 July 1947. This figure would be the nadir of Air Force research and development appropriations after World War II.[145]

Writing on 11 April 1947, Major General LeMay emphasized that "the greatest need at this time is assurance of a stabilized annual appropriation for research and development."[146] Later on, Department of Defense experts would state that the curtailment of research and development in the immediate postwar years had been a major mistake.[147] And the reduction of air research and development funding had an immediate effect upon Air Force work on guided missiles. Making his last appearance as Deputy Commanding General of the Army Air Forces before the House Appropriations Subcommittee in March 1947, Lieutenant General Eaker explained that with an all-out program (similar to that which had expedited the nuclear weapon) a 5,000-mile missile could probably be developed in five years. The Air Force, however, could not stand the expense of such a program and would have to progress on the research and development effort at a more leisurely pace which might produce an intercontinental missile in 10 to 15 years. "We cannot, therefore," Eaker said, "abandon the development of the very long-range very heavy bomber as a primary weapon of our long-range striking force but we should, as a wise precaution, spend the necessary experimental funds to insure that we are the first in the first in the field with a long-range guided missile which may be the primary weapon at some future date, but probably not within 15 years."[148] As it happened, however, the Air Force was compelled to give even more emphasis in spending its scarce research and development funds to the support of the air force in

being than Eaker had thought would be necessary. These projects included range extension, long-range strategic aerial reconnaissance, new jet bombers, high-thrust aircraft propulsion systems, short-range airborne guided missiles, and high-speed fighters.[149] In 1947, the Air Force reevaluated its guided missile requirements and gave priorities to research and development projects that promised to increase the capabilities of the air force in being. The new order of priority for missiles included: (1) missiles to enhance strategic air bombardment with conventional aircraft, (2) air defense missiles, (3) surface-to-surface missiles, and (4) interim missiles to include guided bombs and drone aircraft. Under this criteria and because of shortages of funds, the missile project MX-774 was not renewed in 1948, but the Consolidated-Vultee Aircraft Corporation would continue to carry on some studies in the inter-continental ballistic missile field with its own funds.[150]

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In the winter of 1946-47 the United States began to recognize that its policy of cooperation with the Soviet Union was rapidly breaking down. The antics of the Soviet representatives in the United Nations, the Iranian crisis of 1946, the Greek civil war, and Soviet pressure on Turkey gave the United States a better appreciation of the bipolar nature of world power and of the challenge of Soviet expansionism. "If we have war it is going to be with Russia," wrote Professor W. Barton Leach in February 1947. "If we have no war with Russia we shall have no war at all for at least two decades." While Leach had returned to civilian life he remained a close friend of General Vandenberg's, and he may well have expressed some degree of Air Force thinking.[151] Appearing before the House Subcommittee on Appropriations in February 1947, Brigadier General George A. Lincoln again demonstrated--with increasing urgency--the close relationship between military capabilities and foreign policy. "The War Department's broad policies. . .," he stated, "must be based on those of our State Department. Conversely, the State Department, in formulating its national policies must take into consideration the capabilities of the armed forces to maintain a respectable position in the world which makes our emissaries respected."[152] Revealing clearly for the first time that the United States recognized the menace of the Soviet Union, President Truman requested authority from Congress on 12 March 1947 to extend military and economic assistance to Greece and Turkey to enable them to combat internal Communist subversion and external Soviet pressure. In view of the deterioration of relations with the Soviet Union, General Spaatz began to speak openly of a war with "a continental empire" and the "problem of winning against great masses of people with great internal resources."[153]

With full support from the War Department, Spaatz submitted a budget for fiscal year 1948 that would have permitted the Army Air

Forces to attain a minimum permanent postwar strength of 70 groups and 22 separate squadrons. The Bureau of Budget, however, reduced the air request to an amount sufficient to maintain only 55 peace-strength groups and 17 separate squadrons. The Air Force nevertheless obtained authority to base its procurement and training objectives on a 70-group strength and to activate 15 record groups and 5 record squadrons that would not be manned or equipped.[154] In appearances before the House Subcommittee on Appropriations, Spaatz emphasized America's vulnerability to air attack from across the Arctic and urged that the only way to prevent bombs from falling on the United States "is to get them at the place they start from, and that is primarily our mission." Major General O. P. Weyland, Chief of AAF Plans, pointed out that America's air strategy was one of defense and retaliation. "It is inconceivable," said Weyland, "that the United States will start an aggressive war. Hence, it is obvious that at the start of a war, we will be the recipient of an all-out surprise attack."[155]

In May 1947 Congress appropriated the $400 million that President Truman requested as aid for Greece and Turkey, thus indicating approval for the Truman doctrine's objective of containing Soviet expansion. But the 1st Session of the 80th Congress was reluctant to vote military appropriations in the amounts requested. The House made a 10 percent cut in the AAF budget, and only part of it was restored by the Senate after General Eisenhower made a personal plea that the money was required.[156] Some of the cause for the reluctance to vote military preparedness funds may have sprung from the findings of the President's Advisory Commission on Universal Military Training, which reported on 29 May 1947. This distinguished panel endorsed military preparedness as the surest way of checking international aggression. It believed that World War III would begin with atomic sneak attacks against the United States, but it felt that such attacks were not imminent. "For a period estimated by responsible scientists at not less than 4 years and not more than 10 years," the commission reported, "we can expect immunity from such an attack because we alone will possess the atomic bomb." In a final summation, the President's Commission noted that "we cannot safely assume that we will have sole possession of atomic explosives beyond 1951, although most scientists and engineers familiar with the production of the atomic bomb believe it will be 1955 at the earliest before an attack in quantity can be made against us."[157] As a matter of record, moreover, the Joint Chiefs of Staff and specifically both Spaatz and Vandenberg placed more emphasis on aid to threatened nations under the Truman doctrine and the Marshall economic recovery program than they did to attainment of the 70-group program. "The 70-group program," Spaatz testified, "should not be reached at the expense of arms aid to Europe." "I think," said Vandenberg, "that the 70-group program, as visualized by the Air Force, with Europe unprepared, would not be as efficient as a lesser number of groups with a sound economy

of the United States and a western Europe that could resist aggression and give us time."[158]

While it was understood that most of the units would be equipped with World War II aircraft, the Army Air Forces obtained authority in July 1947 to activate or organize all of the groups of the 55-group phase of the 70-group program and to have them in place with some degree of operational effectiveness by the end of the year. In the final allocation of strength, the 55 groups included 13 very heavy bombardment, 3 light bombardment, 24 fighter, 7 reconnaissance, and 8 troop carrier groups.[159] Each major command sustained a reduction of combat strength, but the new allocation indicated that the Army Air Forces was beginning to mobilize against a particularized strategic threat somewhat different from the generalized concepts in initial postwar planning.

"As the initial blow will come from the air and be delivered by air power," stated General George C. Kenney, who headed the Strategic Air Command, in September 1947, "the answer must be for us to maintain our air power strong enough to deter any possible enemy from attacking us."[160] Under the 55-group phase, 12 very heavy bombardment, 5 fighter, and 1 very long range reconnaissance groups were assigned to the Strategic Air Command.[161] While the Strategic Air Command thus enjoyed priorities in manning and equipment, it did not obtain new equipment or a complete acceptance of its operational concept. Immediately after VJ-day, the Twentieth Air Force had been assigned to the Pacific Theater, with the result that one very long range reconnaissance squadron continued to be assigned to the Far East Air Forces in the Pacific. The Strategic Air Command maintained that these units should be placed under its command and that their functions should be performed by SAC groups which would stage to Pacific bases as necessary, but General Douglas MacArthur, Commander-in-Chief, U. S. Far East Command, did not agree to give them up.[162] Other than the fact that B-29's would be unable to reach many targets in Russia, the Strategic Air Command's most pressing aircraft problem concerned fighter escort. The Army Air Forces accepted the position that: "The necessity of providing adequate fighter protection for very long range bombardment aircraft was conclusively demonstrated during World War II." To protect bombers against hostile jet fighters, SAC would require jet escort fighters, but no American jet fighter had enough range to escort a B-29 and it was problematical whether jet aircraft could escort relatively slow conventional B-29's. Pending solution to the problem, the Strategic Air Command indicated that it would expect to operate its bombers over hostile territory only at night.[163]

In initial postwar planning, the Army Air Forces had considered air defense essentially a mobilization problem. When he was named to head the Air Defense Command, Lieutenant General George E. Stratemeyer was accordingly instructed to give most of his attention to the establishment of an aircraft control and warning system and to the management of the Air National Guard and Air Reserve, which

would, upon mobilization, provide fighter units for air defense.[164] As thus laid out, the air defense mission appeared simple, but Stratemeyer found it complex. Thinking in terms of scarce military funds and the eventual need to detect and destroy supersonic jet aircraft and nuclear missiles, Stratemeyer thought that first priority in the Air Force budget should be given to research and development, second to the Strategic Air Command, and third to the air defense system.[165] Stratemeyer believed that both the equipment and doctrine for air defense was obsolete,[166] and he urged that a minimum nucleus of regular Air Force interceptor groups ought to be assigned to the Air Defense Command. While it held to the concept that all available fighter units would be assigned to air defense in an emergency, the Army Air Forces agreed that the Air Defense Command should have some regular groups of its own. As a result, a fighter group was activated at Dow Field, Maine, in November 1946, and two additional fighter groups (all-weather) were assigned to the Command in May and June 1947 with stations at Mitchel and Hamilton Fields.[167] The fighter groups assigned to air defense were withdrawn from the Tactical Air Command, and, despite efforts to dramatize the tactical air mission, Lieutenant General Quesada found it hard to maintain a going organization. Shortly after its establishment, the Tactical Air Command organized its assigned groups into the Ninth Air Force and the Third Air Force (Troop Carrier) but because of the reduction in its troop carrier units the latter organization was inactivated on 1 November 1946.[168] Since most tactical air units were assigned to the Far East Air Forces, the United States Air Force in Europe, the Alaskan Air Command, the Pacific Air Command, and the Caribbean Air Command, the Tactical Air Command possessed only one light bombardment, three fighter, three tactical reconnaissance, and three troop carrier groups as its share of the 55-group strength.[169]

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"At the present time," noted Forrestal after he had become Secretary of Defense, "we are keeping our military expenditures below the levels which our military leaders must in good conscience estimate as the minimum which would themselves ensure national security. By so doing we are able to increase our expenditures to assist in European recovery." Forrestal considered that the United States was taking a calculated risk that was justifiable. "As long as we can outproduce the world, can control the sea and can strike inland with the atomic bomb," he wrote, "we can assume certain risks otherwise unacceptable in an effort to restore world trade, to restore the balance of power--military power--and to eliminate some of the conditions which breed war."[170] Forrestal's reasoning held good only as long as the United States possessed an aircraft industry that could meet the mobilization requirements of the nation's armed forces. By the spring of 1947 it was evident that

many of the postwar assumptions regarding this industry were in error. The widespread assumption that a rising demand for commercial aircraft would help tide a number of companies over readjustments failed to materialize; the aircraft industry remained from 80 to 90 percent dependent upon government purchases of military aircraft. The Air Force and the Navy had been unable to purchase a quantity of aircraft required to keep industry solvent, and the changing year-to-year purchasing programs had caused higher pricing of aircraft, thus reducing the quantity that could be purchased. Jet aircraft, moreover, cost substantially more than conventional planes, thus further decreasing quantity procurement.[171]

Despite their pressing concern for European recovery, both President Truman and Congress knew increasing alarm for the state of preparedness of the American aircraft industry. At the recommendation of the Air Coordinating Committee, Truman appointed a committee on 18 July 1947 headed by Mr. Thomas K. Finletter and charged it to make an objective inquiry into national aviation policies and problems and to assist him in formulating an integrated national aviation policy. The President's Air Policy Commission assembled on 29 July, held formal hearings from 8 September to 3 December, and completed its report on 30 December 1947.[172] Meanwhile, Congress--where the Republican Party held a majority--felt "a general concern over national security and the threatened bankruptcy of the aircraft industry and civil air carriers." Authorized on 22 July 1947, a temporary Joint Congressional Aviation Policy Board was formed with Senator Owen R. Brewster as chairman, and it organized an advisory council of civil aviation representatives and retired military leaders, including General Arnold. The Congressional Board held its first meeting on 15 September: while it held frequent meetings of its advisory council and staff after this it chose to use the elaborate testimony of the President's Commission rather than call witnesses. The Congressional Aviation Policy Board made its report to Congrees on 1 March 1948.[173] Although the conclusions of the Finletter and Brewster investigations were quite similar, the Brewster board was more pronounced in its criticism of the defense establishment. From the outset of its investigation, moreover, the Brewster board believed that "the primary problem of national aviation policy was one of providing well-balanced military and naval air forces rather than one of finding means to maintain an aircraft industry. If the former were accomplished," the board believed, "the health of the latter would be assured."[174]

In November and December 1947 the testimony of influential witnesses before the President's Aviation Policy Commission manifested a growing awareness of the importance of American military strength but illustrated diverse opinions as to what its composition ought to be. "Insofar as our thinking about preparation, readiness for war, or national security. . . is concerned," said Secretary Forrestal, "we are faced with the hard and solid fact that as a democracy we do not start wars and therefore can never be in a

complete state of readiness. . . . This nation's experience has been a clear demonstration that peace will not be furthered by the neglect of military strength. . . . In the past, we have invited aggression by that neglect. The military policies of this nation stem from a single desire and obligation. That is to use our strength as a force for peace." He emphasized the close relationship between the State Department and the National Defense Establishment: "One of our principal tasks," he said, "is to see to it that there is integration between our foreign policy and our military attitude. In other words, to see to it that the policy does not outstrip power."

Forrestal pointed out that America's concept of national security had changed. Before World War II, he said, "our concepts of security were the integrity of our own domain, and the freedom from. . . attack or danger of invasion. . . . In my own view. . . our security is now far broader than that. Our security is. . . our ability to contribute to the reconstruction of the world, and . . . our military requirements have to be fitted into the pattern of what we do toward the other larger results, in other words, the reconstruction of society." He also said: "It would not serve us to have the greatest military establishment in the world and concurrently be going down the road to continued and continuous inflation." He did not agree that the individual military services should present their requirements to Congress because "even in wartime, you could never meet the requirements of all the services . . . there has to be an accommodation of both. . . saying what we need and then someone saying what we shall get." As for air power, Forrestal believed that "the United States must have air forces sufficiently powerful to protect its own security and territory and sufficiently powerful and versatile to be capable of making swift and effective counterattacks in the event of war." He felt that air power should be developed over a period of years in an orderly manner, and he expected that the Joint Chiefs of Staff would provide a strategic plan for the military establishment which would give "an opportunity to bring into better balance the components of that establishment."[175]

Leading the Navy testimony before the President's Air Policy Commission, retired Admiral Nimitz provided a statement prefaced with a warning: "Unless we retain our ability to control the sea. . . we may eventually find ourselves exchanging long range air attacks which will be indecisive alike against ourselves and our enemies, but at the same time damaging to our own cities and vital installations. Nimitz emphasized that naval aviation was an integral part of the fleet. "I cannot. . . accept the idea," he said, "that naval aviation is a part of the Air Force. . . . I regard the Navy, the Air Force, and the Army as you would the three legs of a stool. . . and I think each one of those forces must be strong enough to carry out the mission which is assigned to it." Secretary of the Navy John L. Sullivan argued that "any de-emphasis in Naval aviation spells the end of America's control of the sea."

"During the war," he said, "England learned that whenever a sufficient number of German bombers came over on a determined raid, enough of them got through to give a great deal of trouble. . . . Later on, when the bombs kept coming over it was most apparent that the only defense against determined air attack or guided missiles--and the same proves true in the atomic techniques--the only defense is to . . . put a very large number of men on ships, transport them overseas and capture the platforms from which those weapons are launched."[176]

"I believe in air power, without 'ifs,' 'buts,' or 'howevers,'" stated former Secretary of War Robert P. Patterson. "I believe that our national defense should be centered on air power. . . to a far greater degree than is the case at present. It is my opinion. . . that we will not need the strongest Army in the world or the strongest standing Navy in the world, but we will need the strongest Air Force in the world."[177] Secretary of the Army Kenneth C. Royal described air power as "our first line of defense in the event of war," but, in view of the fact that World War II had had "to be won by tanks, guns and men, on the ground," he asked the commission "not to forget that the Navy and the Army, as well as the Air Forces, must be taken into account in cutting up shares of national defense."[178] Representing views of a scientist, Dr. Karl T. Compton, President of the Massachusetts Institute of Technology, stated that the question of whether more powerful nuclear weapons could be developed was still in the realm of speculation, but he felt that a surprise atomic attack against the United States even with current weapons would be a "very unpleasant sort of prospect." He recommended a requirement for a mobile striking air force to be employed "as a strategic weapon against the most important of the enemy's sources of industrial and military warfare." "I believe," he concluded, "that the existence of a striking Air Force of that type, always ready as a threat of retaliation, would be the strongest single thing that we could do in this country, to act as a deterrent against aggression by any other nation."[179]

Appearing in behalf of the Air Force, Secretary Symington offered the view that the United States had been "forced into a position of world leadership and of responsibilities of a global extent" at the same time that it had "lost the cushion of time and distance." Spaatz described the major segments of the Air Force plan for national security as being the 70 combat groups, adequately manned and equipped civilian components, plans and installations for aerial defense of the United States, a research and development program second to none, vigorous and alert aircraft manufacturing and air transport industries, and an industrial mobilization plan. Both Spaatz and Vandenberg devoted most of their testimony to explaining the aircraft requirements of the 70-group program.[180] Major Alexander P. de Seversky, however, discussed broader aspects of air warfare. "As long as we use piloted aircraft," he argued, "the destruction of the enemy cannot be accomplished without first

assuming control of the air above his territory. . . Penetration by piloted airplanes, even with jet and rocket propulsion, will be unthinkable without all-out air combat. Only with the advent of intercontinental rockets can there be any talk of penetration without combat." He pointed out that the 70-group Air Force would not necessarily represent air power-in-being in the full strategic sense. "A strategic military force is one which is self-sustained in its own medium, regardless of its base; capable of assuming control of its medium while denying it to the adversary. By thus assuming freedom of action in its own medium, it can bring about the end of hostilities through the direct application of force upon the enemy's means to wage war." In the past, armies had been strategic forces on land and navies on the high seas. "Today," he said, "when neither of them can maintain a battle under hostile skies, they have ceased to be strategic forces and become auxiliaries to Air Power." Seversky conceived that an air force-in-being should have two main divisions: an intercontinental striking force large enough to paralyze an enemy's industrial establishment and a continental defense force of a size sufficient to defend the vital industries of the United States.[181]

"We believe," stated the President's Air Policy Commission on the basis of testimony presented to it, "that the United States will be secure in an absolute sense only if the institution of war itself is abolished under a regime of law." Since early attainment of this condition seemed doubtful, the commission found that "our security includes. . . winning any war we may get into. . . not losing the first campaign of the war. . . not having our cities destroyed and our population decimated in the process of. . . winning the first campaign. . . not having our way of life. . . taken from us in preparing for war."[182] The Congressional Aviation Policy Board reported that the only defense against modern war "will be swift and more devastating retaliatory attack." The board also noted that "the primary military objective of modern warfare is no longer the armed forces of the enemy. The primary objective is the war potential or . . . the industrial organization and the resources of the enemy. . . . The great contenders in a possible war of the future will first engage in the political and then the industrial phases of that war. The political phase of the next war has been actively engaged in since VE-day--and the industrial phase is clearly recognizable." [183]

With professed reluctance, the President's Air Policy Commission stated that "relative security is to be found only in a policy of arming the United States so strongly (1) that other nations will hesitate to attack us or our vital national interests because of the violence of the counterattack they would have to face, and (2) that if we are attacked we will be able to smash the assault at the earliest possible moment." The commission recommended that the United States should maintain "an adequate Navy and Ground Force" but that the military establishment "must be built around the air

arm. . . . Our military security must be based on air power." In view of the violence of an enemy attack against the United States, the commission stated: "what we must have and can support is a reasonably strong defensive establishment to minimize the enemy's blow, but above all a counteroffensive air force in being which will be so powerful that if an aggressor does attack, we will be able to retaliate with the utmost violence and to seize and hold the advanced positions from which we can divert the destruction from our homeland to his."[184]

The President's Air Policy Commission sought to base its military aircraft procurement recommendations on a firm estimate of the date by which an enemy nation might be expected to possess nuclear weapons. The commisssion found that expert opinion on the subject varied from that of some highly qualified persons who said that other nations might already possess the weapons to that of other equally well qualified persons who estimated that other nations would not possess atomic weapons in quantity for fifteen years. The commission thus set its own date of 1 January 1953 as A-day--the date when the U.S. air arm should be able to deal with a possible atomic attack against the United States. The commission stated that a future hostility might well be a localized conflict or a "practice war" such as the Spanish Civil War had been, but it urged that the United States must assume that "if the enemy can do it he will make a direct air assault on the United States mainland regardless how or where the first shooting starts." The commission recommended that immediate steps be taken to build the Air Force to 70 groups (6,869 first-line aircraft), the Air National Guard to 27 groups (3,212 first-line aircraft), and to equip the 34-group Air Reserve adequately. The Air Force was also judged to require an additional reserve of some 8,100 aircraft. It recommended that the 70 groups should be ready for service by 1 January 1950, and the complete Air Force program should be in being by the end of 1952. The commission found it more difficult to evaluate Navy requirements for aircraft: while the Navy would not be required to oppose a hostile surface fleet in the future, it would be expected to keep supply lines open to forward air bases and to oversea sources of essential war materials. The aircraft carrier would be the major ship of the future Navy, and in order to carry out its future responsibilities (one of the most important being protection against modern submarines) the Navy would require 5,793 first-line planes, plus about 5,100 in support. The Navy had presented strong arguments for increasing its air strength to 8,000 first-line planes with 6,500 planes in support, but the President's Commission believed that such an increase would constitute a naval expansion which should be deferred until the Joint Chiefs of Staff had completed a strategic plan that would demonstrate the need for a naval expansion. In addition to providing the minimum-level combat air arm which the United States would require on 1 January 1953, the President's Air Policy Commission believed that expanded aircraft procurement would

enable the nation's aircraft industries to maintain the industrial base that would be required for a national mobilization emergency.[185]

The Congressional Aviation Policy Board was openly critical of the fact that the Joint Chiefs of Staff had not completed "a unified plan of action" for a future conflict that would have allowed it to make an exact computation of the aircraft requirements of the Navy and the Air Force. In view of the "inability of the Joint Chiefs of Staff to prepare a unified plan," the Congressional Board accepted the unilateral statements of requirements offered to it under two plans of action: Plan A, to provide air strength necessary to mount promptly an effective, continuing, and successful air offensive against a major enemy; and Plan B, to prevent the loss of a war at the outset of hostilities and to provide effective retaliation but not a sustained offensive action. Plan A included the Air Force's 70-group program with 20,541 aircraft plus the Navy program of 14,500 aircraft, or a total of 35,041 aircraft to be procured between 1949 and 1953, when level-off procurement would begin. Plan B was substantially the same program, less reserve aircraft. "We believe," stated the Congressional Aviation Policy Board, "that when . . . a unified plan has been determined, the total requirements of the armed services may be materially reduced below the totals of the estimates prepared unilaterally."[186] As an additional means of maintaining a desirable mobilization base, both the Congressional Board and the President's Commission suggested that the armed services should give thought to the performance of a part of their aircraft maintenance on a contract basis with civilian industrial organizations. Contract overhaul of military aircraft should result in monetary savings and would build up civil staffs trained in such work for use in a mobilization emergency.[187]

Some of the men who worked on the President's Air Policy Commission report expressed regret that the commission had not been more critical of the weaknesses of the over-all defense organization, particularly the inability of the Joint Chiefs of Staff to provide an over-all defense plan for the United States.[188] Seversky later suggested that the President's Commission "strategically didn't make much sense" except to the aviation industry, because it recommended everything that flew--strategic aviation, tactical aviation, naval aviation, marine aviation, airlines, helicopters, private flying. Seversky described the division of the strategic problem into two phases, according to whether or not Russia had atomic weapons, as being unrealistic. "That, I thought," said Seversky, "was a great fallacy because improved explosives don't necessarily change strategy; they may change tactics, but they do not change strategy. Whether you are carrying TNT or atomic bombs, you will have to win control of the medium through which you want to make a delivery. The means of delivery are more important than the explosives."[189] A board of Air Staff officers named by Secretary Symington to analyze the reports of the President's Commission and the Congressional Board took more optimistic attitudes when it reported on 23 March 1948. These officers judged the four primary functions of the Air

Force to be to provide defense against air attack, to possess the capability to deliver an immediate and retaliatory attack against an aggressor, to provide tactical air support to ground forces, and to gain and maintain air supremacy in order to carry out sustained air operations against vital enemy installations. Since both the commission and the board had recommended that the Air Force attain a 70-group strength, the board of officers recommended that the Air Force begin an immediate expansion toward that program.[190]

* * * *

In the summer of 1947, prior to the organization of the National Defense Establishment and the investigations by the President's Commission and the Congressional Board, the Army, Navy, and Air Force had prepared unilaterally their budgets for fiscal year 1949. The budgets were based on an over-all amount of $10 billion which President Truman had indicated would be available for military defense, and, even though it was said that the service budgets were developed from Joint Chiefs of Staff plans, the Joint Chiefs neither reviewed nor approved the detailed military budget. When Forrestal appeared before the President's Commission, he let it be known that he would be very reluctant to disturb the structure of the fiscal year 1949 military budget, except on the urgent request of the Joint Chiefs of Staff.[191] The Air Force portion of the national defense budget for fiscal year 1949 allowed the operation of a maximum of 55 combat groups and 17 separate squadrons and provided $700 million for the continued modernization of the combat groups by replacement of their World War II aircraft.[192]

In visualizing the expenditure of the $700 million for new aircraft, Air Force planners committed enough funds in the 1949 budget for the purchase of additional jet fighters to permit a total of 13 of the Air Force's 24 fighter groups to be equipped with these aircraft.[193] None of the available jet fighters would be capable of escorting bombers to far-distant targets, and the Air Force still accepted the doctrinal lesson of World War II to the effect that an attainment of a preliminary air superiority was necessary in order that surface operations could be successfully undertaken or that decisive bombing of an enemy's vitals could be accomplished. In July 1947, however, in the United States Strategic Bombing Survey report entitled Air Campaigns of the Pacific War, Major General Orvil Anderson questioned the air superiority doctrine. "Air superiority is not an end in itself," suggested Anderson. "Operations must be evaluated in terms of the decisiveness of the action and the cost to our own war potential. If the over-all damage inflicted on the enemy significantly outweighs the cost of the operation in terms of manpower, materiel, and production potential, the operation may be strategically sound."[194] During World War II, the Eighth Air Force had found that the best method for daylight penetrations of Germany was with large

bomber formations; in the summer of 1947, however, interceptor tests flown by the 1st Fighter Group against B-29's indicated that P-80 pilots had difficulty intercepting a single B-29.[195] As the speed of both bombers and fighers increased, General Kenney reasoned that "dog fighting" between aircraft would be impossible and that intercepting fighters might be able to make no more than a single head-on pass against a bomber.[196]

While Air Force thinkers began to express some cautious optimism that the employment of nuclear bombers without fighter escort might be strategically feasible, the USAF Aircraft and Weapons Board knew a good bit of uncertainty about the kinds of bombers that ought to be procured for the Strategic Air Command when it began to study the problem of attacking Soviet targets in the autumn of 1947. At this time it still appeared that the future supply of atomic bombs would be very limited and that the Strategic Air Command would have to plan to use a heavy proportion of conventional bombs in a strategic air campaign. The major problem, however, was to penetrate to and to attack heavily defended targets in the Soviet Union with atomic bombs.[197] The only intercontinental bomber which the Air Force had in prospect was the giant conventional B-36. An order for 100 of these planes had been placed on 23 July 1943, but to meet price rises and the costs of improved engines this wartime order had been cut to 95 aircraft. The war appropriation covering the contract would run out in June 1948, and the Air force would need new appropriations to complete it. The B-36 was large and appeared to be relatively slow, but it was the only aircraft which could bomb Soviet targets from bases in the United States.[198] B-29's and improved B-50's were already in the Strategic Air Command inventory, but these planes lacked enough built-in range to strike deep-in Soviet targets and return. The Air Force had two jet strategic bombers under contemplation. In response to a requirement in 1944, the Boeing Company had developed the six-jet, medium-range B-47. In 1946 Boeing had won the design contest for an intercontinental jet bomber which would be designated as the B-52, but, in its design stage with available power plants and a requirement for built-in intercontinental range, the B-52 was threatening to become even larger than the B-36.[199] Recognizing that Air Force bombers lacked global range, Colonel Dale O. Smith suggested in an article published in the autumn of 1947 that the Air Force might prepare its aircrews to fly one-way atomic combat missions. Smith suggested that the crews would have a good chance to evade and survive. Such blitz tactics would rapidly expend the bomber force, but Smith thought that there "seems to be little doubt that the nation making the first atomic bomb strike in force will be the victor."[200]

In an effort to clear up indecision within the Air Force regarding the strategic bomber program, General Spaatz formed a Heavy Bombardment Committee on 9 September 1947 with representatives from the Air Staff, the Strategic Air Command, the Air University,

and the Air Materiel Command and charged it to study "methods of and instrumentalities for air delivery of individual and mass atomic attacks against any potential enemy from bases within the continental United States." In its discussions, the bombardment committee shared the current concern that the B-36 might not have as good a chance to penetrate as would faster medium bombers. Based on this belief, the committee sought means to extend the range of medium bombers. General Kenney had already urged the development of tracked landing gears which would enable his bombers to operate from hastily-prepared airstrips, possibly on the polar ice caps. Another alternative, favored by both the Strategic Air Command and the Air Materiel Command, was to develop air-to-air refueling equipment and to employ airborne tanker aircraft which could refuel strike aircraft en route to a target. Such aerial refueling had been used in 1929 when Major Spaatz and Captain Eaker had broken the world's aircraft flight endurance record in the "Question Mark." Thought had been given to the use of aerial refueling during World War II, but the technique was logistically infeasible for supporting massed bomber attacks which employed iron bombs. As a means of extending the range of fighter-escort aircraft, General Vandenberg had urged aerial refueling in 1945. Aerial refueling would be expensive, however, since two aircraft--a bomber and a tanker--would be required to accomplish a single sortie.

After studying all aspects of the bomber problem, the Heavy Bombardment Committee recognized that the most practical way to extend the range of existing medium bombers and to lighten the design weight of the proposed intercontinental B-52 jet bomber would be to develop equipment and techniques for air-to-air refueling of bombers from specially-equipped tanker aircraft. Aerial refueling also would permit the B-47 jet bomber, which was still in prototype awaiting decision for production, to strike far-distant targets. The committee therefore recommended that air-to-air refueling be developed as a matter of first priority. It nevertheless emphasized that the Air Force should not completely close the door on the development of aircraft with built-in range. Since much of the information about the B-36 was still speculation, it recommended that the Air Force ought to continue the funding of the 95 B-36's which were on order. The latter serial models of these B-36's could be equipped with improved engines, and it might be possible to convert some of the earlier serial B-36S's into aerial tankers. At sessions held on 27-30 January 1948, the USAF Aircraft and Weapons Board accepted the Heavy Bombardment Committee's recommendations, and Spaatz gave his formal approval to them on 3 March 1948.[201]

In the winter of 1947-48, the Soviet Union began to reveal its aggressive designs upon Western Europe. According to unofficial reports reaching the U.S. State Department late in 1947, the Soviet general staff sought permission to push troops straight into Western Europe, thus preempting with military force before Marshall Plan aid could become effective. As the story was told, however, the

Politburo overruled the Red Army and issued orders for internal Communist strikes and revolts throughout Western Europe. The organization for revolution was activated in December 1947, and, after an agonizing week of strikes and disorder, the essential structure of European governments held up.[202] On 24 February 1948, however, a Communist coup d'etat overthrew the government of Czechoslovakia, which had beena model of democratic rule in Central Europe. Few Communist acts of aggression shook the western nations as profoundly as the loss of this friendly republic to the forces of Soviet subversion.[203] In a top-secret message from Berlin on 5 March, General Lucius D. Clay, Commander-in-Chief, U.S. European Command, reported that war might well be imminent. "For many months, based on logical analysis," Clay messaged, "I have felt and held that war was unlikely for at least ten years. Within the last few weeks, I have felt a subtle change in Soviet attitude which I cannot define but which now gives me a feeling that it may come with dramatic suddenness."[204]

When he appeared before the House Subcommittee on Military Appropriations on 16 March 1948, Secretary Forrestal conceded that the international position of the United States had deteriorated. "Wars," he said, "are usually caused by the assurance on the part of an aggressive power that it possesses sufficient superiority to overcome any possible obstacles to the success of its military efforts. . . . Since the United States is a democracy--a form of government which traditionally does not start a war of aggression--its national defense policy must be directed at preventing the development of that tempting imbalance of power." Forrestal admitted that the President's Commission and the Congressional Board had shown that the nation's air strength was less than its strategic position required. "There is no question," he said, "but that our national security would be greatly enhanced by such a powerful Air Force." He nevertheless argued that the Armed Forces budgets had "to strike a balance between funds which are available and expenditures which might be considered strategically desirable or even essential." Forrestal thus supported the $10 billion military budget, which would maintain the Air Force at 55 combat groups and would keep the Army and Navy in an appropriate balance with this force. "While the Air Force and naval aviation alone may be the cutting edge," he concluded, "we must also have the logistical organization to back them up, the adequately equipped Ground Force to seize and hold the bases from which planes fly, the ships with which to supply and help protect such bases, and all of the other elements of balanced strength."[205]

Speaking to the same committee later in the day on 16 March, Secretary Symington emphasized that an air force in being provided two assets: "It serves as an active deterrent to any aggressor, and it is the force which envelops him in prompt and decisive retaliatory action if he risks war with the United States." In response to a

direct question, both Symington and Spaatz asserted that the minimum air power necessary for the security of the United States was the 70-group program. And Symington agreed that the "maintenance of an adequate Army" was "essential to the effectiveness of the Air Force." Several hundred thousand Army troops would be necessary for "holding and servicing an air-base complex in a forward area." In subsequent testimony, General Omar N. Bradley, who had succeeded General Eisenhower as Army Chief of Staff, demonstrated the Army's importance by visualizing how a future war would be fought: "First, by repelling any attack made against us, and repairing the damage, and preparing the people to receive that shock without getting too discouraged. Next, we would immediately secure bases we do not now have from which he might attack us. . . . Next, we would try to launch a counterattack against him by air. The next phase would be trying to move those bases closer to the enemy."[206]

While Congressional hearings on the Defense Establishment's fiscal year 1949 budget continued, the Soviet commander in Germany served notice on 1 April 1948 that his troops would begin to inspect Allied trains and trucks going to Berlin. The Soviet military blockade of Berlin was beginning although it would not be clamped down in earnest until June. When Forrestal appeared before the House Armed Services Committee on 12 April, Representative Carl Vinson told him frankly that he intended to seek to secure an additional $992 million of aircraft procurement funds to provide a 70-group Air Force. Answering a question that Forrestal had put to them earlier, the Joint Chiefs stated on 14 April that, based solely on military considerations, they believed that the administration should advocate a balanced military establishment commensurate with the 70-group program for the Air Force. To support such a balanced force, more than $9 billion would need to be added to the fiscal year 1949 budget. Forrestal returned this report with an additional request that the Joint Chiefs give him an estimate of the additional force which could be obtained with an additional $3 billion rather than $9 billion. Within the Air Force share of this increment, Spaatz figured that the Air Force could--by utilizing many mothballed planes rather than buying a complete complement of new aircraft--afford to activate all of the 70-group program except for two light bomber and two troop carrier groups which could be delayed since they would be scheduled to support ground divisions which would not be active before 1950. Apparently accepting the Joint Chiefs' planning, President Truman forwarded a supplemental appropriation request to Congress on 13 May asking for $3,068,441,000.[207] Truman stated that every effort should be made to reassure the public that the increased appropriation was "not one of mobilization for war, but rather one of maintaining a firmer foundation of preparedness on which a more rapid mobilization could be based than would be possible without the increases." Truman enjoined Forrestal to proceed with great care in making commitments and to give the entire program a realistic review in September and December 1948.

On 25 June Truman further directed that the Air Force would not expand beyond a strength of 411,000 men and 9,240 active aircraft pending further review in the autumn of 1948.[208]

Shortly after he succeeded Spaatz as Air Force Chief of Staff on 30 April 1948, General Hoyt S. Vandenberg faced the immediate problem of mobilizing existing Air Force capabilities to resist Soviet aggression in Germany and the longer range problem of expanding the Air Force within the limits set forth by President Truman. In Germany, on 24 June, Soviet troops finally halted all rail and road movement from the west into beleaguered Berlin. Later on, General Maxwell D. Taylor would assert that people like General Clay and others felt that the United States "should have used force on the highway, at least to verify what the Russian intent was."[209] Contemporary evidence, however, indicates that from the start of the crisis Washington authorities proceeded on the assumption that Berlin would be supplied as long as possible by airlift. "After discussion with the military services. . . and . . . throughout the National Security Council and finally with the President and the appropriate committees of Congress to whom I reported," said Under Secretary of State Robert A. Lovett, "we decided to stand firm in Berlin and not be thrown out, confident that we could do the job ultimately by the same techniques that we used in lifting approximately 70,000 tons in one month over the hump from India into China at very high altitudes."[210]

In Germany, where he had been assigned as commander of the United States Air Force in Europe, Lieutenant General LeMay started the Berlin Airlift with locally available planes on 26 June 1948. Back in Washington, Secretary of State Marshall and Under-Secretary Lovett emphasized that the United States could not afford to bluff. "We had to have something to back us up," Lovett maintained, "in case the Russians wanted to use this as an excuse for a war." At a meeting on 27 June, Forrestal, Lovett, and high-ranking officers discussed the advisability of deploying two additional B-29 squadrons to join the squadron of the 301st Bombardment Group which was on a rotational tour of duty at Furstenfeldbruck Air Base in Germany and of securing approval from Great Britain for the movement of two other B-29 groups to British bases. With Truman's approval, the State Department queried Britain on her willingness to accommodate the groups and received an affirmative reply.[211] On 27 June, Air Staff officers went to Andrews Field and verbally briefed the Strategic Air Command as to what was expected of it. Without delay, the Strategic Air Command ordered the two remaining squadrons of the 301st Group to move to Goose Bay, Labrador, the normal summer staging point for Europe. The 28th and 307th Groups were put on short alerts at their home airfields. Given orders to continue the deployment, the 301st Group was in place in Germany on 2 July. Some additional time was required to prepare bases in Great Britain, but the 307th arrived there on 17 July and the 28th had its planes in England on 18 July.[212] As soon as the B-29 deployment was completed,

the Military Air Transport Service was able to put most of its capabilities into the Berlin Airlift, and Major General William H. Tunner took command of the augmented Airlift Task Force (Provisional) in Europe on 30 July. Ultimately employing USAF, Navy, and Royal Air Force transport aircraft, Tunner soon geared up "Operation Vittles" to a maximum capacity which would lift a total of 2,325 million tons of food, fuel, and supplies into Berlin before the blockade was ended. One of the most important immediate lessons of the airlift, according to Tunner, was the inherent efficiency of large transport planes to accomplish important airlift missions.[213]

"For the first time in History," stated Air Force magazine in September 1948, "the United States is employing its Air Force as a diplomatic weapon. . . . Today, in keeping with its coming of age as the nation's first line of defense, the USAF has taken on two big assignments in international affairs. . . . One is what has been called 'the return of the American Air Force to Europe,' the arrival of two groups of Strategic Air Command B-29s in England. . . . The second is the Berlin Airlift. . . . The first chapters of the 'role of air power in diplomacy' are being written here."[214] Earlier in the summer, Forrestal had feared that the British might not be willing to accept forceful diplomacy that carried a risk of war, but in October Chancellor of the Exchequer Sir Stafford Cripps assured him that "Britain is placing its main reliance on the development of fighter aircraft to insure the security of Britain. Britain must be regarded as the main base for the deployment of American air power and the chief offensive against Russia must be by Air." When Forrestal visited Britain in November 1948, Winston Churchill told him that the United States ought not to minimize the destructive power of atomic weapons lest the Russians receive dangerous encouragement. Speaking in person in Boston on 31 March 1949, Churchill advanced the same view even more positively. "It is certain," he said, "that Europe would have been communized like Czechoslovakia and London under bombardment some time ago but for the deterrent of the atomic bomb in the hands of the United States."[215]

4. Strategic Bombing and the B-36 Controversy

"I am firmly convinced," wrote Dr. Edward Teller, the nuclear physicist who had done pioneer work on the A-bomb and who would father the H-bomb, "that in the early postwar years secrecy was a powerful barrier between military men who were clinging to the past and scientists who were turning away from what seemed a frightening future."[216] The whole matter of atomic weapons continued to be a very heavy secret which was not even shared among all top-level military officers. Writing in November 1948, Bernard Brodie reported there was "reason to believe that the amount of uranium and thorium available in the world for the manufacture of atomic bombs is much more limited than was being assumed two years ago, and the deposits available are much more accessible to the United States than to the

Soviet Union."[217] Knowledge of the size of the U.S. atomic weapons production effort and the stockpile was confined to a very small circle. As late as May 1951, General Douglas MacArthur testified that he did not know the number of atomic weapons in the U.S. stockpile.[218] Although two years had passed since Hiroshima and Nagasaki had been destroyed by atomic weapons and additional tests of atomic bombs had been made at Bikini and Eniwetok in the summer of 1946, there was lingering uncertainty in the military services as to the potential affect of atomic weapons on the old techniques of war. One viewpoint was that an atomic bomb was merely another weapon. While his statement was soon retracted, the head of the Navy's Aviation Ordnance Branch told the House Committee on Armed Services in October 1949: "You could stand in the open at one end of the north-south runway at the Washington National Airport, with no more protection than the clothes you now have on, and have an atom bomb explode at the other end of the runway without serious injury to you."[219]

Although Air Force thinkers never underestimated the destructive capabilities of atomic weapons, they apparently required time in which to grasp the potential gamut of effects which these weapons held for air operations and the modifications of air doctrines which could be accepted when they were employed. One of the principal results of the clear identification of Soviet Russia as the major menace to world peace was a vigorous analysis within the National Military Establishment of the potential influence of atomic weapons on future American military strategy. The concept that atomic air power could "kill a nation" apparently emerged in the Air Force Directorate of Intelligence during the winter of 1947-48 when target planners were attempting to work up a list of industrial objectives in the Soviet Union which had been requested by the Joint Chiefs of Staff. In the aftermath of World War II, the U.S. Strategic Bombing Survey depreciated the effectiveness of Royal Air Force attacks against German population centers, and USAF target planners accordingly attempted to develop Soviet steel, electric power, oil, aluminum, aircraft engines, and tank factories as air targets. Most of these specific targets were found to be located within 70 Soviet cities, and this fact led some target planners to suggest that atomic attacks might be directed against the Soviet cities rather than the specific industries. The concept followed that the mission of atomic air attack might be to destroy governmental control and industrial mobilization and support potential instead of specific industrial targets. "I think," remembered Colonel Grover C. Brown, who had been assigned to the Directorate of Intelligence, "it was a sort of a shock to a lot of people when a few began to talk about bonus effects and industrial capital and particularly when some began to ask what was a city besides a collection of industry?"[220]

When members of the State Department's Policy Planning Staff were briefed concerning the concept of atomic bombardment of Soviet

be completely opposed to it. "If you
Leningrad, and the rest," George Kennan
you will simply convince the Russians
g to destroy their very society and
indeterminate guerrilla war against the
oted as responding: "The negative
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of American air strength, including
trol of the enemy air space. And not
could we be absolutely sure of the
outcome of a war." Since air power could not gain and hold forward air bases, Spaatz considered that ground and sea forces would "remain indispensable supporting instruments in the struggle for the mastery of the air" until intercontinental air weapons were developed.[222]

Speaking out in a "gloves off" talk in Los Angeles on 16 July, Secretary Symington for the first time publicly criticized the balanced force concept of American defense which had come out of World War II. According to a newspaper report, Symington assailed "ax-grinders dedicated to obsolete methods" of warfare, who contended that large Air Force appropriations might "unbalance" the three armed services, and he declared that air power should not be put in balance with the Army and Navy but with the power of potential adversaries.[223] In a letter on 11 August 1948, General Kennedy pointed out that atomic bombs and other modern developments had made profound changes in the concepts of war. "When we consider that 100 atom bombs will release more foot pounds of energy than all the TNT released by all the belligerents of World War II combined. . . and that the effort could be put down in a single attack, it is evident that the long drawn out war is out of date. . . . No nation, including our own, could survive such a blow. A war in which either or both opponents use atomic bombs will be over in a matter of days so that our target analysis system should change. Bombing of targets which will affect enemy production in a few

months is meaningless. There is no time to try to destroy the enemy air force. The air force that is superior in its capability of destruction plays the dominant role and has the power of decision. The inferior air force has no role. Before it can be built up the war will be over. The advantage accruing to the aggressor who makes such a surprise attack has become so great that it can almost be considered decisive."[224]

Making a reevaluation of Douhet's principles in the light of atomic explosives in the summer of 1948, Lieutenant Colonel Joseph L. Dickman found that the Douhet theory was "not only a pattern for the conduct of the war but also a guide for the preparation for one." After demonstrating that the power of atomic bombs validated Douhet's principles, Dickman suggested a corollary rule: "If, at any time, it appears that expenditures for tactical aviation will jeopardize development in strategic, the former will have to be sacrificed."[225] In a study prepared on 10 August 1948, Colonel William W. Momyer, Director of Plans of the Tactical Air Command, analyzed the whole Air Force mission. He pointed out that the Tactical Air Command would not become involved in hostilities unless the atomic offensive failed and the war degenerated into a conventional air-surface action, a contingency which he did not anticipate would occur at all, and, in any event, not until approximately two years after the onset of a war. Momyer pointed out that Tactical Air Command's fighters would pass to the operational control of the Air Defense Command at the onset of hostilities, he argued for a more effective cross-training of fighters to perform both air defense and tactical air missions. Finally, he questioned the planned use of jet fighters in an escort capacity as "an obsolete concept of the last war."[226]

Three articles in the autumn 1948 issue of the Air University Quarterly Review strongly advocated a strategic bombardment strategy. "We have come to the realization that if we are to have peace in our time it will have to be a Pax Americana," wrote Lieutenant Colonel Frank R. Pancake. "There has been a further awakening to the fact that the instrument of Pax Americana must be Air Power, just as the instrument of Pax Britannica a century ago was sea power. . . . In the event of another war our first and perhaps only major offensive effort will be strategic air attacks."[227] Writing on the relationship of air power and foreign policy, Lieutenant Colonel John P. Healey stated: "The historic discrepancy between our foreign policy aims and their means of military support is now ended. The 'quantum jump' taken by military technology in this country affords a measure of military power sufficient to support our present aim if such power is wisely used as a deterrent."[228] Looking backward at World War II, Colonel Dale O. Smith noted that "air siege" or strategic bombardment was "generally considered to have been the most decisive factor" in the defeat of the Axis, but that the strategic bombing effort had required the support of surface combat. In the war against Germany, the strategic bombing effort had been frequently switched from one target system to another in the expectation that a "key" target system could be destroyed with decisive results. In the end, Smith

said, "when German industry collapsed, no single target system was responsible, but rather a widespread disintegration of all industry occurred." From this experience, Smith thought it plausible to conclude that "the most effective air siege will result by concurrently attacking every critical element of an enemy's economy at the same time. . . . If all the critical industrial systems could be destroyed at one blow, so that recuperation were impossible within any foreseeable time, there seems little question but that a nation would die just as surely as a man will die if a bullet pierces his heart and his circulating system is stopped." Smith visualized an atomic striking force of 300 B-29's directed against an enemy nation, and he thought there was little doubt that "an offensive bomber force, utilizing tactical surprise, will be able to penetrate to targets in the enemy heartland." Believing that the strategic air assault with atomic weapons would destroy a modern nation, Smith suggested that the Air Force should abandon "the old doctrine of 'sustained' operations." "The atomic bomb is real. . . . There need be no doubt about its combat worthiness," he wrote. "Why then must we revert to the old TNT bombs and forever hamstring our logistical and tactical plans with the requirement for sustained operations?"[229]

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Even though a bill which authorized a peacetime Air Force strength of 70 groups and an eventual level-off purchase of 5,200 aircraft a year was lost in the closing rush of the 80th Congress during the late summer of 1948, General Vandenberg considered that Congress--by providing the first increment of funds for such a purpose--had given the Air Force a clear mandate to expand to the 70-group objective. The Air Force therefore decided that the purchase of the 2,201 new aircraft which could be funded with the augmented fiscal year 1949 appropriations would be pointed toward accomplishment of the 70-group program. It thus contracted to purchase 190 B-45 aircraft, which would partially equip five light bombardment groups and three night tactical reconnaissance squadrons. In the spring of 1948 many Air Force officers had continued to be skeptical of the B-36, but when the Air Force began to get deliveries of some of these planes the test data worked out from them was so much better than had previously been reported that Vandenberg elected on 24 June to continue the funding on the original contract for 95 aircraft. Contracts were also awarded for 10 B-47 jet bombers, 132 B50D's, 1,457 jet fighters, and 147 transport and troop carrier planes. By stretching available personnel strength rather thinly, moreover, the Air Force activated a total of 60 combat groups before the end of 1948.[230]

In the spring of 1948 when work was begun on fiscal year 1950 budget requests, the Air Force assumed that appropriations would be enlarged to support expanded personnel strength and aircraft

procurement necessary for the 70-group program. The Air Staff therefore first submitted a request for an $8 billion appropriation to the Secretary of Defense. Then, as Secretary Symington explained, "word got around that again the three services were going to ask for everything they could get on a unilateral basis and then we were all going to be cut proportionately because there was no agreed on strategic plan against which to buy." Symington therefore took personal responsibility for raising the Air Force budget request to more than $11 billion. As a result, the uncoordinated original estimates of the three military services received by Forrestal totaled more than $30 billion.[231] Two things shortly indicated that no such amount of money would be available. During fiscal year 1949 the Bureau of the Budget had expected that the Treasury would have a $5 billion surplus, but because of an economic recession there would be a deficit of almost $2 billion instead. In the summer of 1948, acting on advice from the Bureau of the Budget and apparently without consulting the National Security Council or the Joint Chiefs of Staff, President Truman established a ceiling of $14.4 billion on the National Defense budget for fiscal year 1950.[232] The wide difference between the military requirements submitted by the individual services and the presidential ceiling forced the Secretary of Defense to make decisions.

In an effort to return responsibilities for stating force requirements to the Joint Chiefs of Staff, Secretary Forrestal secured the appointment of a budget review board of three officers from the services headed by General Joseph T. McNarney, Commander of the Air Materiel Command. As early as 10 July, Forrestal also submitted a formal request for budgetary guidelines to the National Security Council, and, when he received no response, he evidently sought bits and pieces of advice elsewhere. U.S. Ambassador to Russia Walter B. Smith told Forrestal that the Russians did not, in his opinion, have the industrial competence to develop the atomic bomb in quantity for "five or even ten years." General Vandenberg reassured Forrestal that the Air Force could drop the atomic bomb "where, how, and when it was wanted." Working in terms of requirements for balanced forces, the McNarney Board reduced the service requests to $23.6 billion but could go no lower. The Joint Chiefs of Staff estimated that the $14.4 billion budget would limit U.S. offensive action against Russia to a strategic air offensive from Britain and suggested that for $16.9 billion the United States could maintain forces needed to control the Mediterranean as well as conduct the strategic air offensive. Forrestal presented these facts to Truman on 5 October, but Truman preferred to hold to the $14.4 billion budget and to plan to take care of the Mediterranean with a supplemental appropriation if an emergency arose.[233] In a final conference with the President on 9 December, Forrestal and the service secretaries again advocated the $16.9 billion budget, but Truman would not budge from $14.4 billion. Faced with this positive ceiling, the Joint Chiefs of Staff agreed that the funds should be

subdivided at $4.834 billion for the Army, $4.624 billion for the Navy, and $5,025 billion for the Air Force.[234]

Aware that it faced definite strategic requirements and would be unable to expand to 70 groups, the Air Force began to reorganize its forces in the winter of 1948-49. Under the "14.4 billion concept," the Air Force mission (as defined by the USAF Board of Senior Officers) would be: "(a) Initially, to launch a powerful air offensive designed to exploit the destructive and psychological power of atomic weapons against the vital elements of the Soviet war-making capacity. (b) To provide on an austerity basis for the air defense of the United States and selected base areas. (c) To provide the air components necessary for the advancement, intensification, and/or diversification of our initial offensive until forces generated from inadequate mobilization bases have become available."[235] Seeking to pool the resources which could be used for more than one purpose, the Air Force on 1 December 1948 established the Continental Air Command at Mitchel Field as the superior headquarters to the Air Defense Command and the Tactical Air Command. The Continental Air Command received direct command over the six air forces formerly assigned to the Air Defense and Tactical Air Commands, both of which were reduced to the status of operational headquarters. The Continental Air Command also took over three of the Strategic Air Command's fighter groups.[236] Although the consolidation of commands was a product of austerity, Colonel W. H. Wise, Deputy Chief of the Air University's Evaluation Division hailed it as being fundamentally correct and called for further consolidation. "An Air Force Combat Command," he recommended, "should be so organized and constituted as to make it readily feasible to employ maximum strength in the performance of the mission at hand, be it strategic, tactical, or defensive. . . . Since an Air Force properly organized and equipped to achieve success in the decisive phase will be capable also of performing the necessary tactical operations in the exploitation phase, the peacetime maintenance of a specialized air arm at the expense of the strength and effectiveness of the decisive air echelons is unwarranted. The soundness of this concept is already recognized in the Air Force, but how soon corrective action can or will be accomplished is a matter for conjecture."[237]

Since the budgetary limitations would force the Air Force to reduce its combat strength to 48 groups and 10 separate squadrons and to change its aircraft purchase programs, General Vandenberg assembled the USAF Senior Officers Board in Washington on 29 December 1948 for the first of seven day-long sessions. Because of the illness of General Fairchild, General McNarney presided as acting-chairman, and the other two members of the board were Lieutenant General Lauris Norstad and Lieutenant General H. A. Craig. Recognizing that the Joint Chiefs of Staff had for the first time provided a strategic concept of operations against Soviet Russia, the Senior Officers determined that "the launching of an atomic offensive and the defense of the Western Hemisphere and the essential base areas from which to

launch the atomic offensive must be considered as the primary mission of the Air Force and must be given the greatest consideration and priority." Because of the supreme importance of the strategic air mission which was now being vested in the Air Force, the board decided that means must be found to deliver the atomic stockpile under the most adverse conditions foreseeable, which included loss of advanced bases in the United Kingdom and an unexpected failure of aerial refueling techniques.238

Seeking to make a determination in regard to requirements for strategic bombers, the USAF Senior Officers Board heard testimony from Lieutenant General LeMay, who had taken command of the Strategic Air Command on 16 October 1948. LeMay stated his basic conviction that "the fundamental goal of the Air Force should be the creation of a strategic atomic striking force capable of attacking any target in Eurasia from bases in the United States and returning to the points of take-off." In order to deliver the atomic stockpile, LeMay needed four groups of bombers and one group of strategic reconnaissance aircraft. LeMay liked the B-36. In its tests in 1948, the B-36B had proven to be a better aircraft than had been predicted. By attaching two twin-jet pods (actually B-47 engines) to the big conventional bomber, the B-36B would be able to operate on a target run at an altitude of 45,000 feet and a maximum speed of 378 knots. Assuming that the Soviets were not more advanced in aerial defense than was the United States, the Senior Officers reckoned that the B-36B would be able to penetrate Soviet defenses: with its range, moreover, it would be able to cover 97 percent of Soviet target complexes from bases in North America. The B-36 could also haul 43 tons of conventional bombs over medium ranges, and this would permit a great intensification of a conventional air offensive if advanced bases were available. The Strategic Air Command was already programed to get two groups of B-36's, and the Senior Officers concurred with LeMay's request that the Command be authorized a total of four groups of B-36B's and one group of RB-36B's, all to be equipped with supplemental jet pods.239

Since the 48-group program would reduce the Strategic Air Command's strength to 14 bomber groups, the Senior Officers Board gave careful consideration to the aircraft composition of the 10 groups that would be equipped with medium bombers. These planes might be called upon to deliver nuclear weapons, but they would more probably be dispatched with conventional bombs in the wake of a B-36 atomic attack or against targets (such as Soviet oil) that were too small to warrant atomic bombs. The Senior Officers noted that sufficient B-50's had been delivered or were on order to equip and maintain five medium bomber groups and one reconnaissance group. They recommended that two other medium groups and one medium reconnaissance group should be equipped with the speedy but range-limited B-47's. The remaining three medium bomber groups and one medium reconnaissance group would continue to be equipped with B-29's and RB-29's, but the Board noted that the Air Force had issued procurement

orders for 30 B-54A aircraft--an ultimate development of the B-50--which would probably become the replacement for the B-29's and RB-29's.[240]

The Senior Officers Board made no recommendations as to the aircraft to be used for a modernization of the two strategic weather reconnaissance groups and the one strategic mapping group which would continue in the 48-group program. The five light bomber groups which had been put in the 70-group program chiefly to perform ground support mission were reduced to a single group. Tactical reconnaissance was also reduced to the equivalent of one group (two squadrons in the United States and one in the Far East). The Board postponed consideration of the aircraft requirements for the four heavy troop carrier groups and two light troop carrier groups which would remain in the 48-group program, but it gave careful attention to the equipment and composition of the 20 fighter groups which would be kept in active service. In World War II, the F-47 and F-51 had served as admirable all-purpose fighters, but the Board reasoned that the advent of jet power probably prevented the development of a successful all-purpose jet fighter. The F-80's, F-84's, and F-86's would be no more than marginally effective against any bomber faster than a B-29, and the Board accordingly recommended that a pure interceptor type fighter should be developed by 1953-54. Pending further developmental work in fighters, the Board recommended that the F-84 and F-86 should perform both interceptor and penetration missions, but it stated that the 20 fighter groups should be divided into 8 penetration groups, 7 interceptor groups, and 5 all-weather fighter groups.[241]

The cut-back of the Air Force from its planned objective of 70 groups to 48 groups necessarily reduced the weight and speed of the initial air offensive, seriously delayed the time at which the Air Force would be prepared to support exploitative surface operations, and reduced the fighter defenses which had been planned for advanced American bases in the United Kingdom. Recognizing these limitations, Vandenberg approved the report of the USAF Senior Officers Board, and Secretary Symington also gave his approval to it when it was submitted to him on 13 January 1949. On 5 February, the Joint Chiefs of Staff approved the Air Force deployment inherent in the 48-group program.[242] The sudden termination of the 70-group objective meant that the Air Force had ordered aircraft from fiscal year 1949 money that it would be unable to use. By cancelling various orders including 51 B-45's no longer needed for light bombardment groups, 118 F-93's ordered as penetration fighters, and 30 C-125B assault transports that had been designed to replace gliders the Air Force recaptured some $269,761,000 from fiscal year 1949 supplemental funds which could be applied to the purchase of B-36's. In a series of actions begun on 29 January 1949, the Air Force requested authority from Secretary Forrestal to purchase 32 B-36's and 7 RB-36's and to modify the B-36's already on hand or on order with jet pods. While this request was under study in the National

Military Establishment Research and Development Board, LeMay requested still more B-36's on 2 February. LeMay told Vandenberg that he had carefully compared the projected performance capabilities of the B-36's against those of the B-54's and that he had decided that the B-54 contract ought to be cancelled and enough B-36's be bought to equip two additional groups. The Board of Senior Officers reconvened on 21 February to hear about the proposed change, and it agreed that either B-36's or B-47's ought to be procured instead of B-54's. Both the Board and General Vandenberg were willing to cancel the B-54 contract, but they were reluctant to convert two medium bombardment groups into heavy bombardment groups. At another meeting of the Senior Officers Board on 8 March, LeMay offered a compromise proposal whereby he would retain the existing group structure but would increase the aircraft complements of each B-36 and RB-36 group from 18 to 30 aircraft. This proposal was accepted, and the Air Force secured the cancellation of the B-54 contract and a recertification of funds to purchase 36 B-36's and 5 additional B-47's. Shortly before his resignation as Secretary of Defense on 28 March, Secretary Forrestal approved the basic decisions to procure additional B-36's, and, on 4 May 1949, President Truman formally released the funds for the several B-36 projects.[243]

In other meetings during the spring of 1949 the USAF Senior Officers Board took long looks at Air Force development in relation to the new strategic planning. In January, the Board recommended that the B-52 be designed to transport atomic weapons and that any accommodation made to permit it to carry iron bombs should not increase its basic weight. In March, the Board accepted the B-52 as the follow-on replacement to the B-36 and recommended that B-36 production facilities should be changed over to B-52 production as soon as unit B-36's had been obtained to outfit four heavy bomber and two heavy reconnaissance groups. In March the Board also recommended that B-47 production ought to be accelerated in order that these medium jets could eventually replace the conventional B-29's and B-50's. In a meeting in May, the Board gave detailed consideration to Air Force fighters and transports. After study of all available fighters, the Board agreed with the recommendation of Major General Saville, head of the Air Defense Command, that the F-86 Sabre was the best interim air defense fighter that could be procured. The Board had earlier recommended that the Air Force should purchase no more than service test quantities of light cargo aircraft, and in May it concluded that all transports procured ought to be designed to meet emergency and wartime military cargo airlift requirements of the Army and Air Force. The Board recommended that the C-97 be continued in production until the Douglas C-124, which most closely met wartime cargo requirements and should become the standard heavy transport, could begin to reach units in May 1950. Although the Board reduced most requirements for smaller troop carrier planes, it recommended continued production and procurement of C-119 aircraft, planes which were suited for air

drop and air delivered transport functions.[244]

* * * *

While military planning emphasized that budget ceilings necessitated redirections in strategy, President Truman apparently had begun to think seriously about collective security as early as the summer of 1948. In March 1948, the Western European nations concluded the Brussels Pact pledging themselves to collective self-defense, and in the following July Truman instructed Under-Secretary of State Lovett to begin exploratory discussions looking toward the participation of the United States in a broadened Atlantic alliance. Agreements were reached on the general nature of such a treaty in September, and in December Secretary of State Dean Acheson began to negotiate the treaty in private. In his inaugural address on 20 January 1949, Truman spoke of a need for a collective defense of the North Atlantic area.[245]

When they appeared before Congressional committees in support of the National Military Establishment budget for fiscal year 1950, the military leaders generally emphasized the force reductions that were impending. Appearing before the House Subcommittee on Appropriations on 31 January 1949, Forrestal justified the budget as one "designed to maintain a military posture for the preservation of peace." Forrestal continued to believe in balanced forces, but he admitted that "as air power expands its radius it may be that you will have a war in the future where you will rely on it alone." He favored the 70-group concept as an authorized force, but he believed that this should be an ultimate--rather than an immediate--goal.[246] Army officers did not question the new strategy. Secretary of the Army Kenneth C. Royall mentioned that for the first time in American history the defense budget had been correlated for the three services, and Lieutenant General Wedemeyer, the Army's Deputy Chief of Staff for Plans and Combat Operations, observed that "for the first time in my knowledge since I have been in the Army the strategy has been correlated and integrated."[247]

At Air Force hearings early in February, Secretary Symington explained that the Joint Chiefs of Staff had accepted strategic bombing as the primary mission of the Air Force and had approved the establishment and maintenance of the 48 combat groups and 10 separate squadrons. The Air Force Assistant for Programming, Major General F. H. Smith, Jr., frankly described the 48-group program as having "definite capabilities in the strategic air-offense field and . . . a respectable defensive power," but noted that it was "deficient in its means to exploit the offensive, because it is shy in the essential close support of the ground-force elements and in pursuing the tactical advantage with fighter bombers and light bombardment." Appearing on 7 February, Vandenberg did not question the President's decision to limit the military budget, but he gave his own purely personal military viewpoint on the matter. "Not taking into consideration the other factors which I realize must be

taken into consideration," he said, "but speaking purely from a military point of view, it is my opinion that the minimum defense forces, as far as the Air Force is concerned--and with world conditions as they are today--would consist of a 70-group Air Force."[248] In speaking on the 1950 budget, Secretary of Navy John L. Sullivan made oblique remarks about the "enthusiasm of single-weapon experts," but the Navy supported the budget, even though under it the number of its attack carriers would have to be reduced from 11 to 8 and there would be other substantial reductions in naval vessels afloat.[249]

While the leaders of the National Military Establishment supported the presidential budget, Congress apparently believed that it would be necessary to have a stronger Air Force if the nation was to follow an air strategy. On 28 March, Chairman Carl Vinson of the House Committee on Armed Services proposed that the Air Force receive an addtional $800 million in order to enable it to maintain 57 effective combat groups. Two days later, Chairman George H. Mahon of the House Subcommittee on Armed Service Appropriations stated that Congress had already taken the initiative to provide a 70-group program, and he recommended that Congress increase the Air Force appropriation by about $1 billion so that the Air Force could maintain about 60 groups.[250] With such an amount of money, the Air Force proposed to add six strategic bomber groups, thus restoring the Strategic Air Command to its 70-group program strength, and to maintain three fighter, one light bomber, and one troop carrier group in order to support the Army.[251] After exhaustive debate, Congress finally added over $746 billion to the Air Force appropriation for fiscal year 1950.[252]

At the same time that the fiscal year 1950 budget was under consideration in Congress, the Department of Defense had already begun to make its estimates for the 1951 budget. On 21 January 1949, Forrestal brought General Eisenhower back to Washington on temporary duty to work with the Joint Chiefs of Staff in the preparation of a war plan which he hoped would be the basis of future budgets. In preparing for the 1951 budget, Forrestal also directed each service chief to review his portion of the war plan and state the forces that would be required. These force levels would then be costed for budgetary purposes. Following the same procedure used the year before, the Joint Chiefs established a budget advisory group and headed it with Vice Admiral Robert B. Carney. Assisted by the plans staffs of the three services, the Carney group took longer than expected in its deliberations and was eventually unable to provide unanimous recommendations to the Joint Chiefs. Increasingly fatigued with his duties, Forrestal arranged for his resignation, and President Truman requested that he introduce Louis A. Johnson to the duties of Secretary of Defense. Accompanied by Johnson, Forrestal took the Joint Chiefs to Key West in February 1949 for several days' uninterrupted study of force levels. Here, the Joint Chiefs were still unable to resolve all their problems within the $14.4 billion which they expected to be the budget ceiling for

fiscal year 1951, but they agreed to accord priorities to forces on the basis of, first, what would be necessary in order to avoid defeat, second, what would next be necessary, and, third, what they would require if each service could have every type of weapon that it wanted.[253]

In December 1948, when they had considered the force structure to be attained under President Truman's budget ceiling, the Joint Chiefs of Staff had been able to agree upon all items except the number of attack carriers that the Navy would continue to operate. The Air Force recommended four, the Army six, and the Navy nine. Unable to agree, the Joint Chiefs had passed the problem to Forrestal, who had decided that the Navy would retain eight attack carriers and attendant forces on active duty.[254] Apparently troubled after his return from Key West about the matter of the supercarrier United States, which the Navy was beginning to build, Forrestal asked Secretary-designate Johnson to make a thorough study of the problem, saying that he had come to have doubts about it but did not feel that he could do anything. Shortly after he became Secretary of Defense on 29 March 1949, Johnson asked the Joint Chiefs to state their opinions on the aircraft carrier. Admiral Louis E. Denfield, Chief of Naval Operations, favored the completion of the $188 million vessel, on which some $20 million had already been expended. General Bradley, on the other hand, reasoned that budgetary restrictions already seriously limited the maintainance of minimum levels of balanced forces, that the fundamental purpose for which the supercarrier was designed lay within a primary function of the Air Force, that the Soviet Union was not a naval power, that the potential use of carrier air forces against land targets was limited. He therefore concluded that it was "militarily unsound to authorize at this time the construction of additional aircraft carriers or to continue expenditures on the U.S.S. United States." Vandenberg also expressed his opposition to the large carrier because he could "see no necessity for a ship with those capabilities in any strategic plan against the one possible enemy." He added that limited defense funds imposed a necessity "of never buying a second priority item when essential items are still unbought." When his opinion was asked, General Eisenhower agreed that construction of the large carrier should be cancelled. After consulting with President Truman, Secretary Johnson issued orders on 23 April discontinuing the construction of the United States.[255]

While background negotiations were privately conducted, the text of the North Atlantic Treaty was released to the public on 18 March 1949, a little more than two weeks before it was signed on 4 April in Washington by representatives of Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom, and the United States.* By adhering to the

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*Greece and Turkey were invited to join NATO on 15 February 1952, and these two nations signed the treaty later that spring. The Federal Republic of Germany would be admitted to NATO in 1955.

treaty the member nations agreed that an armed attack against one or more of them in Europe or North America should be considered to be an attack against all of them. Each of the members agreed to "assist the Party or Parties so attacked by taking action as it deems necessary, including the use of armed forces, to restore and maintain the security of the North Atlantic area." The over-all Western Union command structure established by the Brussels Pact would become a part of the North Atlantic Treaty Organization (NATO). When he forwarded the draft treaty to Truman on 7 April, Secretary Acheson pointed out that it did "not mean that the United States would automatically be at war if we or one of the other parties to the treaty were attacked." The United States would be obligated to take promptly the action which it deemed necessary, but the decision would have to be made in accordance with the constitutional processes under which only Congress had the power to declare war. President Truman sent the treaty to the Senate on 12 April 1949, and, in spite of spirited debate by opponents of American involvement in European affairs, the Senate voted 82 to 13 to accept it on 21 July 1949.256 While the North Atlantic treaty was under consideration in the Senate, the Soviets evidently realized that the Berlin Airlift had thwarted their efforts to starve West Berlin and that the Berlin blockade was leading to Western European military unification. First informally on 27 April and then firmly on 12 May, the Soviets agreed to end the Berlin blockade. Continued for a while to build up supply stockpiles, the Berlin Airlift officially ended on 30 September 1949.257

The principle of collective security manifest in the Atlantic Pact permitted a formalization of the American military strategy which had already been necessitated by the presidential budgetary ceilings in fiscal year 1949. On 25 July, President Truman requested Congress to appropriate $1.4 billion for military aid to countries which were vital to the security of the United States. The major portion of the appropriation would be devoted to the needs of the western European nations. Appearing as the representative of the Joint Chiefs of Staff in support of the mutual defense assistance act before the House Committee on Foreign Affairs on 29 July, General Bradley outlined the new collective strategy. "The essence of our over-all strategy," he said, "is this: There is a formidable strength, and an obvious economy of effort, resources, and manpower in this collective strategy, when each nation is capable of its own defense, as a part of a collective strategic plan." In approving the mutual defense assistance act, the Joint Chiefs followed "the principle that the man in the best position, and with the capability, should do the job for which he is best suited." The Joint Chiefs also assumed that:

> First, the United States will be charged with the strategic bombing.
>
> We have repeatedly recognized in this country that the first priority of the joint defense is our ability to deliver the atomic bomb.

> Second, the United States Navy and the Western Union naval powers will conduct essential naval operations, including keeping the sea lanes clear. The Western Union and other nations will maintain their own harbor and coastal defense.
>
> Third, we recognize that the hard core of the ground power in being will come from Europe, aided by other nations as they can mobilize.
>
> Fourth, England, France, and the closer countries will have the bulk of the short-range attack bombardment, and air defense. We, of course, will maintain the tactical air force for our own ground and naval forces, and United States defense.
>
> Fifth, other nations, depending upon their proximity or remoteness from the possible scene of conflict, will emphasize appropriate specific missions.

Bradley urged that the defensive capabilities of the United States would be improved if the military assistance program was put into effect.[258] Most members of Congress apparently accepted the idea that military aid was needed, but many objected to the manner and timing of the request, to the amount, and especially to the proposal that the President have a free hand in allocating the money and arms. A new administration bill, sent to Congress on 5 August, proved more acceptable because it eliminated the blank-check authority for the President. On 28 September, Congress passed the Mutual Defense Assistance Act of 1949, authorizing an appropriation of $1,314,010,000, and on 6 October the President signed his approval. The act authorized $1 billion in arms assistance to the North Atlantic countries but provided that $900 million of it would not be available until the President had approved recommendations for an integrated command structure. The remaining funds were committed to the military aid of Greece and Turkey, Iran, the Philippines, the Republic of Korea, and the Republic of China.[259]

In the spring of 1949, when Congress added $726 million to the Air Force appropriation for fiscal year 1950, President Truman and Secretary Johnson were willing to hear Secretary Symington's plea for a 70-group Air Force, but Truman subsequently impounded the additional funds and kept the Air Force at the 48-group level. Not waiting for the beginning of fiscal year 1950 to initiate its downward readjustment in strength, the Air Force began to inactivate tactical organizations in March 1949. By the end of the year it would possess 47 groups and 13 separate squadrons. Generally following the recommendations of the USAF Senior Officers Board, the aircraft authorized for procurement in fiscal year 1950 included 34 B-36F's and 13 RB-36F's, 81 B-47's, 709 jet fighters, 14 C-97's, 51 C-119C's, and 50 C-124's, plus miscellaneous aircraft for a total of 1,252 planes.[260]

Based partly upon the impoundment of the funds that Congress had voted for Air Force expansion, the Joint Chiefs of Staff assumed

that the budgetary ceiling for all military forces during fiscal year 1951 would be the same austere $14.4 billion that had been authorized in fiscal year 1950. In May, Secretary Johnson took the Joint Chiefs to another conference in Key West, where they established the force levels that could be supported with $14.4 billions. Quite without warning in July, however, President Truman summoned Department of Defense officials and the Joint Chiefs of Staff to this office, where the Director of the Budget told them that the national defense expenditures for fiscal year 1951 must be reduced to $13 billion.[261] "I was sick about it," said Secretary Johnson, as he recalled his reaction to the news. While he tried to get the figure raised, he was unsuccessful. "The climate on the Hill, the climate of the President's economists and all the rest of the economists, the climate of the world at that moment--the airlift having been successful--the climate was," Johnson recalled, "there was going to be peace."[262] In view of the reduction of the budget, each armed service would have to stand a further reduction in forces. While the connection was not mentioned the reduction in the defense budget was the same amount that Truman had requested for mutual defense assistance: the President may have intended that reductions in U.S. forces would be compensated for by an increasing effectiveness of friendly allied forces.

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In the winter of 1948-49 the U.S. Navy accepted the new American military strategy based upon a primacy of the strategic bomber offensive. According to Vice Admiral Arthur W. Radford, however, the Navy Department had not known of the Air Force plans to purchase additional B-36's for strategic bombing until reports to this effect appeared in the newspapers.[263] At the first Key West conference the Secretary of Defense had laid down the principle that each service should develop the weapons it required to perform its mission: the cancellation of the United States on the split advice of members of the Joint Chiefs appeared to negate this principle. Since Secretary Johnson had cancelled the supercarrier without consulting either the Chief of Naval Operations or himself, Secretary of the Navy Sullivan resigned his office on 26 April, explaining that he expected the decision not to develop a powerful weapon would also "result in a renewed effort to abolish the Marine Corps and to transfer all naval and marine aviation elsewhere."[264] Within the Navy Department a civilian public relations specialist drew up an anonymous document, widely circulated in April and May, that charged that the B-36 had been selected through corruption, that the Air Force was obsessed with a belief that "airplanes can reduce warfare to a clean, quick, inexpensive and, to our side, painless procedure," that Air Force statements about the performance capabilities of the B-36 were "false," "silly," and contrary to "all common sense and all engineering knowledge," and that in the

effort to obtain the B-36 the Air Force had cancelled purchase of other aircraft to the detriment of continental air defense and the air support of the Army.[265] The Navy also anticipated that in its 1951 budget it would have to reduce its attack carriers from 8 to 6, its escort carriers from 10 to 8, its carrier air groups from 14 to 6, its patrol squadrons from 30 to 20, and its Marine air squadrons from 23 to 12.[266] In response to a request for an opinion, the new Secretary of the Navy, Francis P. Matthews, informed Congressman Vinson on 20 July that the Air Force was "unbalanced in favor of strategic bombing to the detriment of its ability to provide tactical air support for ground forces and for other missions involving tactical aviation. Some reduction of the large bomber groups translated into tactical aircraft would produce better balance with the entire program, still being within the 48-group limitation."[267]

As it was directed to do by the House of Representatives, Congressman Vinson's Armed Services Committee began hearings in August in which all principal officials who had been concerned with B-36 procurement were examined. Early in the hearings the author of the anonymous charges appeared and confessed the falsity of his allegations. After three weeks the committee unanimously resolved on 25 August that not one iota of evidence had been presented to it that would support charges that fraud or favoritism had played any partin the procurement of the B-36 but that the testimony had shown that the Air Force had selected and procured the bomber solely on the grounds that it was the best aircraft for its purpose. Even though it suspended the B-36 hearing early, the Committee expressed itself as deeply disturbed "by reason of recent developments within the Department of Defense which might have resulted in the impairment of the proper functioning of one or all of the services and thus endanger the national defense."[268] Because of this belief, the Committee opened a second phase of its hearings on 6 October and heard testimony on the national defense program for twelve days. In the course of often repetitious testimony in the two hearings, Navy, Air Force, and Army officers presented detailed but somewhat different analyses of their concepts of national military capabilities and national military strategy.

In his letter to Vinson at the outset of the hearings, Secretary Matthews demonstrated that the primary mission of the Navy was to command the seas and that, in order to carry out its primary mission, the Navy had to have weapons which could "destroy enemy forces threatening that command." Taking a corporate view of the responsibility of the Joint Chiefs of Staff to insure the defense of the United States, Matthews was willing to grant each service a responsibility to inquire into the expenditure of scarce defense funds by the other services, but he nevertheless argued that a chief of any service was best informed as to the weapons his service needed to carry out its responsibilities. As for the B-36, Matthews charged that the plane sacrificed performance characteristics to

obtain intercontinental range. As long as the Navy controlled the seas, Matthews submitted that advanced bases would be available to the Air Force, which should, therefore, develop and employ shorter-range and higher-performance bombers.[269]

Heading a long list of distinguished Navy witnesses, Vice Admiral Radford expressed his opposition to the B-36 because it had "become, in the minds of the American people, a symbol of a theory of warfare--the atomic blitz--which promises them a cheap and easy victory if war should come." He believed the B-36 to be an obsolete aircraft suited only for city bombing. "Are we as a nation," he asked, "to have 'bomber generals' fighting to preserve the obsolete heavy bomber--the battleship of the air?" He insisted that a proper air strategy ought to be built around short-range jet aircraft such as the B-47 and naval jets which would, operating from advanced land bases and aircraft carriers, establish control of the air over hostile territory and then wage strategic air warfare campaigns.[270] Rear Admiral Ofstie made a distinction between "strategic air warfare," which was directed against an enemy's will and ability to wage war, and "strategic bombing," which he and other Navy witnesses arbitrarily described as an indiscriminate blitz against urban areas. Ofstie supported strategic air warfare and accurate attacks on precise military targets, but he deplored the strategic bombing which had unwisely destroyed Germany and Japan. Ofstie thought that the concept of "instant retaliation" had produced an illusion of power and even a kind of bomb-rattling jingoism." The strategic bomber force, moreover, was an independent force which served none of the primary demands for national security--the defense of western Europe, the protection of forward bases, the early reduction of enemy military potential, or command of the sea. "Must the Italian Douhet continue as our prophet," he asked, "because certain zealots grasped his false doctrines many years ago and refuse to relinquish this discredited theory in the face of vast, costly experience? Must we translate the historical mistake of World War II into a permanent concept merely to avoid clouding the prestige of those who led us down the wrong road in the past?" [271]

Appearing as the next principal witness for the Navy, Brigadier General Vernon E. Megee, Assistant Director of Marine Aviation, emphasized the Marine Corps belief in tactical air power. "The evidence appears conclusive," he stated, "that in both the Atlantic and Pacific battle areas, tactical aviation, not strategic bombing, was the decisive factor." He charged that the Air Force was neglecting the development of tactical air power, and further asserted that the Air Force's "traditional doctrinal insistence on coequal command status at all levels of contact with the ground forces. . . deprives the Army commander of operational control over his supporting elements and requires that ultimate decision must be made at the level of the highest echelon, in case of a dispute between ground and air commanders."[272] Continuing the Navy testimony, Fleet Admiral Ernest J. King pointed out: "Mass bombing is merely a specialized task and big bombers alone will not assure us

command of the air. Without control of the air, the job of the soldier, the sailor, and even the job of the strategic airman becomes more difficult, perhaps impossible."273 As an advocate of air power, Admiral Louis E. Denfeld, Chief of Naval Operations, favored an initial air offensive by the nation's total military air power--Air Force, Navy, and Marine Corps--at the outset of a war. He believed that the airplane had materially altered the conduct of war, but that it had not changed the basic principles and objectives of war. "The defeat of the armed forces of the enemy," he said, "is still the primary objective of war. Air power is not an end in itself."274

Because of the nature of the charges under investigation, Air Force leaders devoted most of their time to a detailed history of B-36 procurement, but on 12 August Vandenberg described the strategic situation and the objectives and the capabilities of the Air Force. Disdaining to talk in riddles, he identified the Soviet Union as the "one military threat to the security of the United States and to the peace of the world." The aggressive thrust of the Soviets could be contained only by economic and military power of western nations. "The only war a nation can really win," he said, "is the one that never starts." "When reason, good will, and the accommodation of competing national interests give assurance of keeping the peace," he thought, "the maintenance of deterrent forces will be unnecessary. Until that day comes, the striking power of atomic weapons in the hands of this country is a prerequisite of national and world security."275

As his statement continued, Vandenberg described the Air Force mission as being the defense of the United States against air attack, the maintenance of forces in being necessary to attack immediately and effectively the vital elements of an enemy's warmaking capacity, and the preparation of air power which would work in conjunction with surface forces. While all of the missions were important, the Joint Chiefs had determined that the capacity for immediate retaliatory strategic attack was essential: this attack would blunt an enemy's initial operations and lay a foundation for subsequent operations by land, sea, and air forces. Although the Air Force had given first emphasis to its strategic air elements, Vandenberg pointed out that the distinction made between strategic air operations (attacks against an enemy's industrial strength) and tactical air operations (attacks against an enemy's military forces) was not completely valid. Such a distinction, he said, "denies the unity of air power, by failing to recognize that strategic and tactical air units are component parts of a whole and are complementary forces." As a matter of practicality, he demonstrated that it was more difficult and more expensive to destroy a deployed tank or plane than to destroy them in the process of manufacture, but the choice of air targets depended upon the situation. "The ultimate objective of the strategic air campaign," he said, "is to reduce an enemy's capacity to below the level at which he can support his war

effort. However, there may well be interim or emergency objectives of overriding importance. For example, this would be the case if the enemy had a long-range air fleet and a stock of atomic bombs, and if this disposition of these weapons rendered them vulnerable to attack by a strategic air force. Before attacking an enemy's economic strength, it might be mandatory, in the interest of survival, to take action to prevent these weapons of mass destruction being employed against us. Likewise, a hostile army poised on a European frontier might, under certain circumstances, provide the best target for a strategic air force."276

In justifying the employment of B-36's under conditions where air superiority would not have been attained, the Air Force appeared to be deviating from its findings that control of the air was necessary for a strategic air campaign. Vandenberg was reluctant to discuss the matter in open sessions, but he reiterated the historic fact: "No bombing mission set in motion by the Army Air Forces in World War II was ever stopped short of its target by enemy opposition." In response to another pointed question, he said: "We have new tactics, new techniques, new speeds, new altitudes, an entirely different type of explosive. Where at one time the losses might be unacceptable, in another war, in order to destroy a target, they might be very acceptable."277 Pressed still further, Vandenberg made an appraisal that would plague him for the next several years. "In our defensive system or in that of Britain or of any other country with an air defense system," he said, "the ultimate that we can ever hope for from the point of view of destruction of forces launched against us is in the neighborhood of 25 percent. That is the ultimate, and it undoubtedly would be less than that."278

In their testimony before the hearings, both Symington and Vandenberg emphasized that the Joint Chiefs of Staff were in full agreement that "the capacity for an immediate retaliatory strategic bombing offensive is considered essential to the security plans of the United States." "Today," said Vandenberg, "our air potential is the most effective single deterrent to aggression; it is the strongest single force working for peace."279 "In the first place," said Symington, "the Air Force believes that the atomic bomb plus the air power necessary to deliver it represent the one most important visible deterrent to the start of any war. . . . Secondly, if war comes, we believe that the atomic bomb plus the air power to deliver it represents the one means of unloosing prompt crippling destruction upon the enemy, with absolute minimum combat exposure of American lives."280 Both Symington and Vandenberg disavowed any belief that an atomic blitz could produce a "quick, easy, and painless war." "We can hope, but no one can promise," said Symington, "that if war comes the impact of our bombing offensive with atomic weapons can bring it about that no surface forces ever have to become engaged. Disregarding such an illusory hope, we do know that the engagement of surface forces will take place with much

greater assurance of success and much fewer casualties to the United States and its Allies if an immediate, full-scale atomic offensive is launched against the heart of the enemy's war-making power."[281] Vandenberg also emphasized that "any possible future war can be won only by the highest degree of teamwork among the Army, Navy, and Air Force." He specifically denied that the Air Force sought to take over Navy or Marine aviation, and he stated a belief that any future war "will be concluded on the ground." Vandenberg nevertheless pointed out that "balanced forces" were forces that were "balanced against the task to be performed. . . . Balance among military forces," he thought, "should be based on the time sequence of military tasks called for in the strategic timetable."[282] This concept had caused him to oppose the construction of the super-carrier. "I am in favor," he said, "of the greatest possible development of carrier aviation to whatever extent carriers and their aircraft are necessary for fulfillment of a strategic plan against the one possible enemy we have to face." Aircraft carriers had been of great importance in the island campaigns of the Pacific, but Vandenberg believed that a future war would resemble the war against Germany rather than that against Japan. While he did not believe that a supercarrier would be of value in a continental war, he saw a great requirement for the employment of aircraft carriers in antisubmarine warfare. He said that he was "not only willing but insistent that the types of carriers which can help meet the threat of an enemy submarine fleet shall be developed fully and kept in instant readiness. The sea lanes must be kept open."[283]

Speaking as the newly-appointed Chairman of the Joint Chiefs of Staff, General Bradley deplored the fact that too many secrets were being spread on the record but nevertheless felt forced to disclose the military plans and preparations of the United States. With reference to the corporate Joint Chiefs of Staff, Bradley waid: "We all believe that the No. 1 priority for the Air Force must be strategic bombing ability." The Joint Chiefs "considered the fact that we were able to retaliate quickly as one of the big deterrents to war today." He identified Soviet Russia as the major adversary to the United States and saw Europe as "the first prize for any aggressor in the world today." His basic concept of U.S. military operations in a future war included the defense of the United States and North America, early retaliation from combat-ready bases, the seizure of forward bases to permit attacks against enemy targets from shorter ranges, and the ultimate necessity "to carry the war back to the enemy by all means at our disposal" including "strategic bombardment and large-scale land operations." In a continental war, he believed there would be little requirement for "island-hopping" and predicted that "large-scale amphibious operations, such as those in Sicily and Normandy, will never occur again."[284]

In his discussion of strategy, Bradley defined strategic bombing as "violent airborne attacks on the war-making capacity or potential of an enemy nation." He justified strategic bombing: "From a military standpoint, any damage you can inflict on the war-making

potential of a nation, and any great injury you can inflict upon the morale of that nation contributes to the victory." As for the charge that mass bombing was immoral, he pointed out that "war itself is immoral." "Strategic bombing," he said, "has a high priority in our military planning, because we cannot hope to keep forces in being of sufficient size to meet Russia in the early stages of war. This is particularly true since we are never going to start the war, and the Soviet Union because of their peculiar governmental organization can choose the date of starting it. Lacking such forces in being, our greatest strength lies in the threat of quick retaliation in the event we are attacked." The insinuation that the atomic bomb was relatively ineffective drew Bradley's strongest refutation. "The A-bomb," he said, "is the most powerful destructive weapon known today. . . . As a believer in humanity I deplore its use, and as a soldier I respect it. And as an American citizen, I believe that we should be prepared to use its full psychological and military effect toward preventing war, and if we are attacked, toward winning it."[285]

Both Bradley and General J. Lawton Collins, now the Army Chief of Staff, refuted the charge that the Air Force had neglected tactical aviation. Bradley pointed out that in the face of very strong enemy opposition in Europe the Ninth Air Force had allocated approximately one group for the support of each two Twelfth Army Group divisions; using this comparison as a guide, he questioned whether the Marine Corps required the equivalent of seven groups for the support of only two Marine divisions.[286] Speaking of his experience in Europe during World War II, General Collins recalled that "the tactical air forces were able both to support the ground forces and to assist in the safe conduct of our strategic bombers in their missions of destruction and isolation of the battlefields." To prevent the costly duplication which would have ensued if the Army had insisted on retaining its own organic close-support aviation, Collins said: "The Army. . . willingly agreed to the transfer to a Department of the Air Force of tactical air along with air transports." He expressed dissatisfaction with the lack of progress being made in developing joint interservice doctrine, but he stated unequivocally that the Air Force was cooperating with the Army. Purely as a personal opinion, Collins predicted that airborne operations would be much more important in a future war with "the only potential enemy" than large-scale amphibious operations.[287]

During the course of the unification and strategy hearings, Chairman Vinson and several committee witnesses took note of the fact that the Secretary of Defense had organized a Weapons Systems Evaluation Group to provide the Secretary and the Joint Chiefs of Staff with objective analyses of the effectiveness of competing weapons systems. At Newport in August 1948 the Joint Chiefs had agreed that the establishment of a weapons evaluation group was desirable and necessary. Secretary Forrestal promptly established the Weapon Systems Evaluation Group, headed by Dr. Philip M. Morse,

who had headed the Navy's Operational Evaluation Group during World War II, and with a membership of military officers and civilian operations analysts. At the request of President Truman, WSEG made a detailed study of the Strategic Air Command between August and December 1949: though the results of the study were never released, a source described as knowledgeable stated on 6 January 1950 that the B-36 could be expected to have a better than even chance of delivering its bombs to a target area. The study apparently reinforced the Air Force position that the B-36, while not perfect, was capable of going anywhere of importance in the world and dropping an atomic bomb.[288] Although the fact could not be presented in the public hearings, General LeMay would later recall that the Soviet air defenses in 1949 and for several years afterward were too weak to have effected unacceptable losses on a nuclear-laden strategic bombing force. "We didn't have to worry about winning an air power battle," he reminisced, "because the Russians had no threat against us. . . . We could ignore the rule book in winning the air power battle and go about destroying their resources."[289]

Both at the time that the hearings were in progress and afterward the B-36 and unification and strategy investigations were seen to involve challenges which had been made to broad concepts of unification and of strategy. "Despite protestations to the contrary," General Bradley observed, "I believe that the Navy has opposed unification from the beginning, and they have not in spirit as well as deed, accepted it completely to date." Bradley called for team play in national defense: "This is no time for 'fancy dans' who won't hit the line with all they have on every play, unless they can call the signals."[290] In the course of the hearings, Chairman Vinson openly deplored the fact that the national military budget was being prepared in terms of ceilings worked out by the Treasury and the Bureau of the Budget rather than in terms of the nation's risks and foreign policy requirements. "The first duty of our Government," he said, "is to provide for the national defense. I am less fearful of deficit financing than I am of the designs of the Russians." Vinson told Secretary Johnson that he felt that Congress and the American people believed that the nation required a 58-group Air Force.[291]

Although the House Committee on Armed Services favored an expansion of the Air Force, the committee's formal report on the unification and strategy investigation made on 1 March 1950 explicitly endorsed strategic pluralism in defense organization. Speaking of strategy, the committee concluded that "the basic reason for this continuing disagreement is a genuine inability for these services to agree, fundamentally and professionally, on the art of warfare. . . . Of course, with the views so sharply opposed, both services cannot be right; the committee suspects that both are right--and that both are wrong. The true answer probably lies somewhere in the gulf between the two." Especially in the early

stages of unification before a "one-armed-force" esprit had developed, the committee expressed "strong doubts that it is a service to the Nation's defense for the military leaders of the respective services to pass judgment jointly on the technical fitness of either new or old weapons each service wishes to develop to carry out its assigned missions." Holding that "military air power consists of Air Force, Navy and Marine Corps air power, and of this, strategic bombing is but one phase," the committee expressed an intention to examine any proposals for reducing the size of Marine aviation very closely, deplored the manner in which the construction of the United States had been cancelled, and announced that it would rely upon the professional endorsement of Air Force leaders (subject to evaluation by the Weapons Systems Evaluation Group) as to the capabilities of the B-36 bomber. The committee thought that the Weapons Systems Evaluation Group would be a proper forum for examining competing weapon systems, but it stated that the "appropriate role" of the group would be "to evaluate weapons after they have been developed, not to instruct the services what types of weapons they will or will not develop." Finally, the Armed Services Committee emphasized its belief that unification ought to involve a comprehensive and well-integrated program for national security based upon three separately administered military departments.[292]

Coming in the autumn of 1949, when the Soviet Union staged its first atomic explosion and thus served notice that the United States no longer possessed a nuclear monopoly, the strategic bombing controversy stood as a benchmark in the movement toward armed service unification. The "Revolt of the Admirals" clearly embittered interservice relations. "I have been here for some years," said Secretary Symington, "and I think the hatchet job that is being done, and has been done on the B-36 is the best hatchet job that I have seen since I have been in town."[293] On the other hand, General Bradley's reference to "fancy dans" left a false impression that difficulties in armed service unification arose from personality rather than more fundamental issues that needed attention. After a retrospective analysis of the controversy, a civilian student, James C. Freund, concluded that "the budget-first approach to national security emerged as the real culprit on the scene," but he also pointed out that the controversy conclusively demonstrated that unification had not solved all defense problems, that military problems were becoming increasingly dependent on technological judgments, that Congress was unprepared to formulate or pass judgment on strategic and technological issues of defense, and that the military leaders had proven unable to arrive at unanimous decisions on weapons and strategy.[294]

Speaking shortly after the "interservice row of 1949" had taken place, Major General John A. Samford, the Air Force Director of Intelligence, pointed out that the armed forces leaders had been unable to agree on the art of warfare. "Since it has been stated that military men are unable to reach any fundamental agreement on the art of war," he predicted, "it seems very probable that

civilian thought will go to work to help them."[295] This prediction would prove to be correct. The strategic bombing controversy had two other important effects. For a number of years after 1949, the Joint Chiefs of Staff would accept a practice of stating quantitative requirements for military forces and of leaving qualitative requirements to the providing service: thus, for example, the Joint Chiefs would determine the number of aircraft carriers or heavy bombardment groups that would be required to implement strategic plans but they would not determine the size or the types of carriers or the kinds of bombers that would be provided.[296] The hearings also demonstrated that the Air Force had not given enough realistic thought to the problem of targeting nuclear weapons: this matter would receive serious attention within the year that followed the investigations.