



AWPD-42 to Instant Thunder

Consistent, Evolutionary Thought or Revolutionary Change?

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Abstract

This study analyzes the air war plans in World War II and the Persian Gulf War. The goal of this study is to ascertain whether there is a continuity of thought reflected in American air planning over the years. This study assesses Air War Plans Division-1/42 and Instant Thunder as to their importance to contemporary airpower theory. This study concludes that there is a continuity of thought reflected in major air plans, particularly in the issues of strategic bombing, precision attack, and command and control. This study also evaluates Korea and Vietnam as a bridge between World War II and Operation Desert Storm and evaluates the implications of this demonstrated continuity of thought on current and future Air Force doctrine and strategy.

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Chapter 1

Introduction

We fail to see the historic significance in current events until it becomes manifest in their consequences.

—Louis J. Halle
The Cold War as History

Airmen have, for the past eight decades, argued the efficacy of airpower and for independence and centralized control of air forces.¹ Beyond this, however, are American airmen consistent in their thoughts as revealed in war plans and their execution over the years? Specifically, do the plans for and the employment of American airpower in World War II and the Persian Gulf War reveal a prevailing, consistent thought on airpower theory? Do Air War Plans Division (AWPD) plans (AWPD-1, -4, and -42) for the strategic bombing of Germany in World War II and Checkmate's Instant Thunder—the foundation for the American air plan in Operation Desert Storm—reveal a prevailing Air Force thought regarding the nature of warfare?² The purpose of this study is to determine whether the Air Force's view of war has changed significantly over the years. Additionally, the goal is to determine whether there is a universal or prevalent view of airpower among American airmen that is timeless in nature and independent of technology or political goals. This study does not intend to chronicle the execution of air plans in World War II or the Gulf War. However, it seeks to determine whether the plans and their execution reveal a unifying theme that contemporary airmen can use in modern airpower thought and campaign planning.

In *The Foundations of US Air Doctrine: The Problem of Friction in War*, Barry D. Watts explores the issue of consistency through 1980.³ Watts wrote this book to answer the question, "To what extent has mainstream US air doctrine preeminently envisaged aerial warfare as a vast engineering project whose details could, in every important respect, be calculated as precisely as the stress loadings on a dam or the tensile strength requirements for a bridge?"⁴ He arrived at the following conclusions:

1. The key assumptions underlying mainstream US doctrine for conventional air warfare have not evolved appreciably since Air Corps Tactical School (ACTS) theorists elaborated their theory of precision, industrial bombardment during the 1930s.
2. Both ACTS bombardment doctrine and deterrence theory appear fundamentally flawed insofar as they omit the frictional considerations that distinguish real war from war on paper.⁵

Watts further concludes the fundamental shortcomings of US airpower thinking across the years as (1) a failure to nurture a comprehensive understanding of war as a total phenomenon, and (2) as professional airmen,

we continue to rely upon airpower ideas that were conceived in circumstances vastly different from those we face today.⁶ Watts also called for airmen to adopt a more deterministic (or organic, meaning a view grounded on the psychology of battle and the pervasive reality of general friction) outlook on the nature of war by airmen instead of the mechanistic methods used over the years.⁷ Watts was concerned with the mechanistic nature of airmen's thinking and the impact of friction on the resultant doctrine. His book thus offers a convenient point of departure for this study. The emphasis here, however, will be to concentrate on key strains of consistency within the body of airpower thought.

Since World War II, American airmen have continually stressed the importance of airpower's contribution to national security. It is important that contemporary airmen understand the history of airpower thought and the struggles airmen encountered throughout the years. Doctrine, theory, history, and policy are intertwined and represent the critical ingredients for airpower planning and employment. Airmen approached two of the greatest air wars in history—World War II and the Persian Gulf War—with strikingly similar philosophies. In both wars, difficulties surfaced in getting the air campaign plans approved by political leaders and achieving cooperation from the other services. Overly optimistic claims by air planners also emerged in both wars. Aircrews, nevertheless, executed both air campaigns with enthusiasm, and most air advocates considered the air wars highly successful. An analysis of both plans will reveal the thought processes, assumptions, and ideals planners used to try to determine the best use of airpower in each case. This will in turn reflect the degree of consistency of thought among leading airmen concerning airpower's "mystical efficacy" across the years.

Determining whether airmen over the years have shown consistent thought and finding a unifying theme is a broad undertaking. This study is limited in scope and, consequently, will not deal with the subjects of nuclear warfare and the attitudes of the Cold War.⁸ Thus, the term *strategic air warfare*, as defined in Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms*, means "air combat and supporting operations designed to effect, through the systematic application of force to a selected series of vital targets, the progressive destruction and disintegration of the enemy's war-making capacity to a point where the enemy no longer retains the ability or the will to wage war. Vital targets may include key manufacturing systems, sources of raw material, critical material, stockpiles, power systems, transportation systems, communication facilities, concentration of uncommitted elements of enemy armed forces, key agricultural areas, and other such target systems."⁹ Air Force Manual (AFMAN) 1-1, *Basic Aerospace Doctrine of the United States Air Force*, quotes Gen Carl A. "Tooley" Spaatz defining strategic bombing as "an independent air campaign, intended to be decisive, and directed against the essential war-making capacity of the enemy."¹⁰ Finally, the report of the House Committee on Armed Services, dated 1 March 1950,

defines the term *strategic air warfare* as “aerial warfare against a selected series of vital targets.”¹¹ These definitions provide the context in which this study uses the term *strategic*.¹²

A broad, cursory look is also given to Korea and Vietnam. The air campaign in Korea and Rolling Thunder and the Linebacker campaigns in Vietnam provide context and act as a bridge for the analysis of events in 1941–45 and in 1991. This study examines major wars rather than isolated campaigns, low intensity conflicts, and military operations other than war and only addresses aerospace control and force application missions. In the interest of brevity, force enhancement and force support missions have been omitted from consideration.

Notes

1. The term *airpower* is used in this study as a single word. This word used as a single expression has more impact and clarity than as a separate word. For a very interesting article dealing with the vocabulary of contemporary airmen, see Col Phillip S. Meilinger, “Towards a New Airpower Lexicon—or—Interdiction: An Idea Whose Time Has Finally Gone?” *Airpower Journal* 7, no. 2 (summer 1993): 39–47.

2. Checkmate was a think tank within the Pentagon led by Col John A. Warden III, who led the initial air campaign planning in the Gulf War. This is where Instant Thunder originated.

3. Barry D. Watts, *The Foundations of US Air Doctrine: The Problem of Friction in War* (Maxwell AFB, Ala.: Air University Press, 1984).

4. *Ibid.*, 2.

5. *Ibid.*, xv.

6. *Ibid.*, 1.

7. *Ibid.*, 117.

8. Cold War attitudes are well documented. For interesting perspectives, see Louis J. Halle, *The Cold War as History*, 1st US ed. (New York: Harper and Row, 1967).

9. Quoted in Air Force Manual 1-1, *Basic Aerospace Doctrine of the United States Air Force*, vol. 2, March 1992, 302.

10. *Ibid.*

11. *Ibid.*

12. Lt Col Timothy G. Murphy, “Critique of the Air Campaign,” *Airpower Journal* 8, no. 1 (spring 1994): 71, says that the term *strategic* has been used “since before World War II to differentiate between ‘independent’ air power and air power that supported surface forces.”

Chapter 2

The Origins of American Airpower Theory

By reason of the great striking power of the bombardment airplane, bombardment aviation is the basic air arm—the backbone of any air force.

—Air Corps Tactical School Lecture

American airpower thought was born in World War I as the Gorrell Plan. Though written by American lieutenant colonel Edgar S. Gorrell, British air theorist Sir Hugh Trenchard heavily influenced its direction.¹ In fact, Gorrell took the plan verbatim from a contemporary Royal Air Force bombing plan. The Gorrell Plan, “later hailed as the earliest statement of the American conception of airpower, was based almost entirely on the thinking of Tiverton, [author of British plan] who, in 1917, was primarily interested in the material and moral effects of bombing specific military-industrial targets, and in developing rational, analysis-based methods of selection.”² Gorrell called for specific strategic bombing objectives against four main target centers in Germany’s industrial centers.³ In November 1917, the Gorrell Plan became the first strategic bombing plan for the United States Army Air Service–Allied Expeditionary Force.⁴ However, the armistice prevented the plan from being executed.

Gorrell was tasked after the war to write a history of the Air Service and to compile lessons learned from American experiences in the war. He was also to initiate a survey of Allied bombing efforts.⁵ In what would become a standard practice of airpower enthusiasts even to this day, the survey “often lamented the fact that the air effort had been ruined by the armistice.”⁶ In 1918 airmen were already complaining of interference with an air campaign from external sources.

The Narrative Summary section of the US Bombing Survey was critical of British bombing efforts in World War I.⁷ The criticisms included “the lack of a predetermined program carefully calculated to destroy by successive raids those industries most vital in maintaining Germany’s fighting forces.”⁸ The US Bombing Survey further states “a careful study should be made of the different kinds of industries and the different factories of each. This study should ascertain how one industry is dependent on another and what the most important factories of each are. A decision should be reached as to just what factories if destroyed would do the greatest damage to the enemy’s military organization as a whole.”⁹

Italian airpower theorist Giulio Douhet stated in 1921 that “the choice of enemy targets is the most delicate operation of aerial warfare.”¹⁰ After World War I, Americans favored selective bombing and theorized that the proper way to employ airpower was through strategic bombing. It should

“cause a high degree of destruction in a few really essential industries . . . [rather] than to cause a small degree of destruction in many industries.”¹¹ Evidently, American airmen were already thinking in the following terms: strategic bombing of vital target sets; industrial bombing; the importance of intelligence to the targeting process; precision bombing; and feelings of intrusion when the air campaign was not executed as planned. Discounting the moral effects of bombing in favor of concentration (precision), the survey stated that “bombing for moral effect alone . . . which was probably the excuse for the wide spread of bombs over a town rather than their concentration on a factory, is not a productive means of bombing.”¹²

The main lesson that emerged from World War I for American airmen was that the successful application of airpower required a predetermined plan to effectively destroy the enemy’s will and war-sustaining capability. They determined further that this new “air war” required a systematic analysis to determine which targets, if destroyed, would cause the greatest damage to the enemy.¹³ In time, those perceived lessons heavily influenced the teachings at the US Army ACTS. They would also serve as the point of origin for American strategic bombing theories employed in World War II.

Air Corps Tactical School

The faculty at ACTS focused on a solution to winning wars that was a product of British experiences in World War I combined with the theories of William “Billy” Mitchell, Trenchard, and, arguably, Douhet. In the 1920s, American airmen focused on support missions of observation and pursuit—ideas that came from isolationist and defensive security ideas.¹⁴ Additionally, the Army derived these missions from what it saw as the best use of aircraft based on World War I and what it perceived the future to hold. However, by the late 1920s and throughout the 1930s, theories taught at ACTS increasingly stressed attacking an enemy’s war-making capacity through strategic bombing.¹⁵

Infatuation with the efficacy of long-range bombers was starting to emerge as the dominant, prevailing thought of the day. Thus, teachings at ACTS were strategic in scope, and instructors sought to systematize the application of military airpower.¹⁶ They also sought to make airpower an exact science by developing themes of attack, weapons, and force size that were based on beliefs of the viability of daylight, high-altitude, long-range precision bombing.¹⁷ One such ACTS instructor, Capt John D. White, developed a concept in the 1930s of attacking an enemy’s infrastructure. The resulting theories were used in the curriculum called “Country X as a Subject of Air Attack.”¹⁸ The underlying motivation or philosophy of attacking an enemy in such a fashion is consistent with Gorrell’s analysis of World War I and the perceived shortcomings of British morale bombing.

The Industrial Web and Strategic Bombing

In the mid- and late 1930s, then-Lt Haywood S. Hansell Jr. was a prominent ACTS instructor who later would be instrumental in planning the strategic bombing campaign in World War II. He stated “proper selection of vital targets in the industrial/economic/social structure of a modern industrialized nation, and their subsequent destruction by air attacks, can lead to fatal weakening of an industrialized enemy nation and to victory through airpower.”¹⁹ In his post-World War II memoirs, General Hansell wrote, “I believed foreign industrial analysis and targeting was the *sine qua non* of strategic air warfare. Without such intelligence and analysis there could be no rational planning for the application of airpower.”²⁰

Airmen thinking in terms of high-altitude bombing of selected industrial targets by day was an expression of an abstract concept.²¹ RAND strategy formulation and analysis specialist Carl H. Builder wrote “some airmen saw a new frontier in an air force that could carry the war to an enemy . . . some courageous airmen began to explore the frontier by pursuing the doctrinal and tactical issues in an air force for strategic bombardment. They were frontiersmen—out of the Army mainstream, anticipating the future.”²² This unproved theory envisioned by these “pioneers” was to become the cornerstone of United States Army Air Force (USAAF) doctrine.

During the interwar years, ACTS further refined the concept of strategic bombing. Instructors continued to emphasize targeting as an integral part of bombardment aviation.²³ By 1932, then-Capt Harold L. “Hal” George consolidated most of the views at ACTS into an “essentially unwritten doctrine articulating strategic attack as a war-winning weapon.”²⁴ George wrote that the ACTS curriculum must be written “to direct the goals toward which all Air Force effort is directed, so that all branches of the Air Force will have these common ends in view when conducting their particular courses . . . only through such common effort . . . present the student a logical and cohesive picture of Air Force employment . . . in achieving the Air Force mission.”²⁵

By 1934-35, ACTS was looking at generic target sets against which airpower doctrine should be directed. Targeting philosophy concentrated on the “key node” approach to strategic bombing.²⁶ These ideas related directly to what Gorrell emphasized concerning industrial targeting in the Gorrell Plan and the post-World War I US Bombing Survey. This train of thought at ACTS led to the “industrial web” theory, which subsequently became the genesis of AWPDP-1, the initial air section plan for waging strategic air war against Germany and Japan in World War II.²⁷

The AWPDP War Plan series consists of AWPDP-1, -4, and -42. AWPDP-1 was written in August 1941, AWPDP-4 in December 1941 after Pearl Harbor, and AWPDP-42 in the fall of 1942. The last of these three was in response to President Franklin Delano Roosevelt’s directive to overcome the Luftwaffe. Future references to these plans in this study encompass

all three documents except where noted, though AWPD-42, as the “final” product, is emphasized.²⁸

Dr. James A. Mowbray, professor of Air and Space Doctrine and Strategy at the US Air Force Air War College, wrote that ACTS doctrine “established the concept of a *sustained strategic bombardment campaign*, and the relationship between the objectives, forces, and environments.”²⁹ Effects of the Great Depression probably influenced these ideas. Historian Tami Davis Biddle wrote that the economic slump had “a particularly harsh impact in America . . . [which] had reinforced the notion of the intricate interdependence (and thus the essential frailty) of advanced industrial economies.”³⁰ This perception in turn led to the belief that an enemy’s economy was vulnerable to aerial attack. Maj Donald Wilson, an ACTS instructor in the 1930s, believed attacking a few critical targets would thus disrupt an enemy’s economy. Opponents could not then sustain their forces in the field. The resultant day-to-day disruption on civilian life would cause people to lose faith in their government and force them to sue for peace.³¹ “It is one thing to determine that the principal objective for an air force is the hostile will to resist; that a modern industrial nation’s most vital spot is its industrial system; and quite another thing to determine upon a plan which will accomplish the disruption of that industrial system.”³²

In 1938 the school’s Air Force course explained ACTS’s theory of the industrial web. “The economic structure of a modern highly industrialized nation is characterized by the great degree of interdependence of its various elements. Certain of these elements are vital to the continued functioning of the modern nation. If one of these elements is destroyed the whole of the economic machine ceases to function. . . . Against a highly industrialized nation air force action has the possibility for such far reaching effectiveness that such action may produce immediate and decisive results.”³³

Modern industrial states are made of what Sir Basil H. Liddell Hart called a “complex and interdependent fabric.”³⁴ The following ACTS tenets also reflected this interdependence:

- (a) Modern states are dependent upon an interwoven industrial base to produce war and their standard of living.
- (b) Precision bombing with suitable weapons is practical and possible.
- (c) Strategic Air Forces could use speed, initiative, deception, altitude, defensive formations and gunfire to penetrate defenses and bomb interior targets with minimal losses.³⁵

These tenets served later as the cornerstone for both AWPD-1 and AWPD-42. However, for the airmen to execute an air war against what became the industrial web, they would require significant target intelligence and most of all, accurate bombing. Precision bombing thus became another emerging tenet of American airpower theory.

Precision Bombing

Biddle wrote, “The ‘key node’ theory assumed that bombers would be able to locate and destroy specific factories and commodities; it placed a premium on accurate strikes in daylight.”³⁶ In the 1930s ACTS’s curriculum included a “Bombing Probabilities” class in the “Bombardment Aviation” course. This class, taught by Lt Laurence S. Kuter in the 1935–36 school year, emphasized precision bombing: “Where the objective is a large industrial center, individual bombers must hit specific buildings or areas or the mission may be a failure. . . . It is thus evident that the destruction of material objective—the reason for the existence of our arm—depends on the ability of bombardment to hit small targets.”³⁷

Kuter’s curriculum suggests early interest in this key node targeting concept and its emphasis on precision bombardment. The desire for daylight bombing to increase accuracy was apparent. Biddle, however, wrote that “the theory of key nodes proved problematical [in World War II]. . . . Only those commodities for which there were no ready substitutes were really candidates for ‘key node’ status.” Electricity could have been such a target, and oil fit the bill in the end. They “helped to bear out the theory of selective targeting, but only in cooperation with pressure exerted by the Allied (especially Soviet) ground armies.”³⁸ But, as in the case of electrical power, the vulnerability of a key node and the effects of its destruction rested largely on conjecture.

By 1941 the ACTS faculty was urging aircrews to view all targets as precision targets because of the political unacceptability of area bombing.³⁹ ACTS instructors realized that targeting “industrial vital centers” required precise bombing, and they stressed it accordingly. This concept has dominated the thinking of airmen ever since.

Airpower: Prominence and Independence

Concerning airmen’s views on the nature of warfare, airpower historian Herman S. Wolk wrote that “force structure, internal reorganization, and roles and missions first took into consideration the belief the Army air arm had become the premier component of the defense phalanx.”⁴⁰ The ACTS curriculum in 1934 emphasized the following: “If we accept air forces as a military weapon, our final inclination is to fit it into the established theories and practices of warfare, with as little disruption as possible. Certainly this takes the least mental effort and is therefore most inviting. But such an application is not necessarily most efficient.”⁴¹ Most Air Corps officers disagreed with the War Department’s and the Army’s view of airpower as a support weapon.⁴² The drive for autonomy was part of the fundamental culture of the Air Corps during the interwar years. Beliefs in the importance of airpower and the need for an independent air force, that airpower can be decisive and win wars, and that airpower must be controlled by airmen—all reflected airmen’s ideas about airpower and

air organization as formed during the decades since World War I.⁴³ The drive to get an independent air force served as a major motivator for the Air Corps to push strategic bombardment theories. Reasoning for an independent air force portrayed strategic bombing as a new way of waging war by attacking the enemy's will to resist and bypassing "fielded forces." This reflected the desire to avoid another slaughter like that in the trenches in World War I.

This view of strategic bombing and the nature of war developed by airmen was in disagreement with traditional methods of warfare—attacking enemy forces.⁴⁴ Hostile will, the Air Corps came to believe, should be attacked by using air forces to destroy an enemy's socioeconomic infrastructure and its industrial war-making potential through direct attack.⁴⁵ ACTS lectures emphasized that "morale then is the pivotal factor. Its disruption is the ultimate objective of all war."⁴⁶ The way to attack morale in their minds, however, was not through directly attacking civilians.

In summary then, as the Air Corps prepared to plan the American bombings of Japan and Germany in World War II, most firmly believed in the efficacy of daylight, precision industrial bombardment against an enemy's war-making potential. Viewing wars as "total" affairs, airmen saw an assault on the sources of enemy war making rather than his fielded forces as the proper application of airpower. The idea of bypassing enemy forces and hitting the industrial heartland thus had evolved since World War I and was enhanced by ACTS's teachings. The predominant attitudes of American airmen heading into World War II were (1) strategic bombing is the proper application of airpower; (2) an enemy's economy is vulnerable to air attack; (3) because of the strategic mission, there should be an independent air force equal to the other services; and (4) daylight, precision bombing against vital centers or certain target sets can defeat an enemy. ACTS created an unofficial doctrine of strategic bombing for the Army that was later reflected in AWPD-1.⁴⁷

ACTS consisted of some very motivated, outspoken officers who believed in the efficacy of strategic, precision bombardment. ACTS was pivotal to Air Corps/AAF thought, promoting an unproved doctrine that, they believed, could provide the United States a war-winning strategy in World War II. Mowbray wrote that "with the acquisition of the Norden-equipped B-17 and the doctrine of high-altitude, daylight precision attack on an enemy's industrial web taught in the Air Corps Tactical School for seven years, the Air Corps had its first operational doctrine and a prototype force structure based on appropriate equipment."⁴⁸ This technological breakthrough provided the capability to do what was an early reflection of what precision-guided munitions (PGM) and stealth later gave Instant Thunder planners—the capability to "go downtown" and hit "precisely." Mowbray wrote, "Those airmen who believed in the potential of airpower as a decisive weapon were viewed as radicals by the balance of the Army."⁴⁹ Furthermore, Mowbray perceived airmen as paranoid and concerned with an independent air force and survival of the service—a paranoia that still persists today.⁵⁰

Notes

1. Tami Davis Biddle, "British and American Approaches to Strategic Bombing: Their Origins and Implementation in the World War II Combined Bomber Offensive," in John Gooch, ed., *Airpower: Theory and Practice* (London: Frank Cass and Co., 1995), 106. Col Edgar S. Gorrell was head of the technical section of the US Air Service.
2. *Ibid.* This plan was written by a British officer named Tiverton, who helped Gorrell with the Gorrell Plan.
3. *Ibid.*
4. John R. Glock, "The Evolution of Air Force Targeting," *Airpower Journal* 8, no. 3 (fall 1994): 15.
5. Biddle, 108.
6. *Ibid.*, 107.
7. *Ibid.*, 108. American airmen lessons learned were part of the narrative titled "Criticisms of Bombing in the Present War." Criticisms included the lack of British agreement on targeting and failure to target German industry.
8. Biddle, 108.
9. Quoted in Glock, 15.
10. *Ibid.*, 14.
11. Quoted in Biddle, 91.
12. *Ibid.*, 108.
13. Glock, 16.
14. Biddle, 109.
15. James A. Mowbray, "Air Force Doctrine Problems: 1926–Present," *Airpower Journal* 9, no. 4 (winter 1995): 24.
16. Mason Carpenter and George T. McClain, "Air Command and Staff College Air Campaign Course: The Air Corps Tactical School Reborn?" *Airpower Journal* 7, no. 3 (fall 1993): 74.
17. *Ibid.*, 75; and Mowbray, 24, says the airmen began to look at what the air forces could do to help avoid the repetition of stalemate and trench warfare from World War I.
18. Lt Col Maris McCrabb, "Air Campaign Planning," *Airpower Journal* 7, no. 2 (summer 1993): 15.
19. Quoted in Glock, 19.
20. Haywood S. Hansell Jr., *The Strategic Air War against Germany and Japan: A Memoir* (Washington, D.C.: Office of Air Force History, 1986), 22.
21. Haywood S. Hansell Jr., *The Air Plan That Defeated Hitler* (Atlanta, Ga.: Higgins-McArthur/Longino and Porter, 1972), 48.
22. Carl H. Builder, "Doctrinal Frontiers," *Airpower Journal* 9, no. 4 (winter 1995): 10.
23. Glock, 17.
24. Mowbray, 24.
25. Directive of Instruction, Air Corps Tactical School (ACTS), n.d., Air Force Historical Research Agency (AFHRA), Maxwell AFB, Ala., 248.126.
26. Biddle, 110.
27. Mowbray, 25.
28. Maj Laurence S. Kuter was replaced on AWPD-4 by Col Orville A. Anderson. Thomas Allen Fabyanic, "A Critique of United States Air War Planning 1941–1944" (PhD diss., St. Louis University, 1973), AFHRA, K112.1–16, 83.
29. Mowbray, 25–26.
30. Biddle, 112.
31. Glock, 17.
32. ACTS 1933–34, "Air Force Employment," lecture, AFHRA, 248.101.2, 1, 28 June 1934.
33. ACTS, "Air Force" text in "Air Warfare" section, 1 February 1938, AFHRA, 248.101–1; and see also Biddle, 111.
34. Biddle, 127.

35. Hansell, *The Air Plan That Defeated Hitler*, 40.
36. Biddle, 113.
37. ACTS, Bombardment Aviation course, "Bombing Probabilities," 18 October 1935, AFHRA, 249.222, 2; and see also Biddle, 113 and 139-40 and notes numbered 114 and 115.
38. Biddle, 129.
39. *Ibid.*, 111.
40. Herman S. Wolk, *The United States Air Force General Histories: Planning and Organizing the Postwar Air Force, 1943-1947* (Washington, D.C.: Office of Air Force History, 1984), 6.
41. ACTS 1933-34, "Air Force Lectures," lecture, AFHRA, 248.101.2, 8, 16 May 1934.
42. Hansell, *The Air Plan That Defeated Hitler*, 24.
43. Wolk, 6.
44. Kenneth Walker stated, "Bombardment is to airpower what infantry is to the Army." Hansell, *The Air Plan That Defeated Hitler*, 15.
45. *Ibid.*, 37; AWPD-1 did not rule out attacking civilians. "It may become highly profitable to deliver a large-scale, all-out attack on the civil population of Berlin"; and AWPD-1, pt. 4, 8 September 1941, tab no. 2, 4, AFHRA, 145.82-1.
46. ACTS 1934-35, "Air Force Objectives," lecture, AFHRA, 248.101, 1, 2 February 1935.
47. The fighter versus bomber controversy was hot at ACTS. Pursuit section leader Claire Chennault did not believe that unescorted bombing could work. Bombardment section felt otherwise. Hansell, *The Air Plan That Defeated Hitler*, 12 and 22. The major ACTS shortcoming became the failure to develop bomber escort.
48. Mowbray, 26.
49. *Ibid.*, 23.
50. *Ibid.*, 24.

Chapter 3

Air War Plans Division-42

There is a thin line between stubborn and stupid coherence to a preconceived idea on one hand, and courageous persistence in the face of initial reverses on the other.

—Maj Gen Haywood S. Hansell Jr.
The Air Plan That Defeated Hitler

AWPD-1 was the initial air section plan for waging a strategic air war against Germany and Japan in World War II. It was written by former ACTS instructors then-Captain George, 1st Lt Kenneth N. Walker, Maj Haywood S. “Possum” Hansell Jr., and Maj Laurence S. Kuter. Captain George became the head of the division in 1941.¹ The initial focus of AWPD-1 was to prepare the Army air section of the “Joint Board Estimate of US Overall Production Requirements” in the event America found itself at war.² AWPD-1 reflected USAAF doctrine by emphasizing daylight visual attacks against selected targets in order to destroy the economic and industrial infrastructure of Germany.³

Historian Thomas Allen Fabyanic wrote, “The chief theorists and planners of USAAF were convinced that proper application of direct strategic bombing would be decisive; that is, it would destroy the enemy’s will to resist.”⁴ AWPD-1 was the blueprint for the air war against Germany and “a monumental example of the power of an idea.”⁵ That idea had been developed through ACTS for more than a decade. Later in 1942, AWPD-1 and AWPD-4 would provide the foundation for the final American air plan, AWPD-42.⁶ AWPD-42 stated that “the US Army Air Force will concentrate its efforts upon the systematic destruction of selected vital elements of the German military and industrial machine through precision bombing in daylight. The RAF will concentrate upon mass air attacks of industrial areas at night, to break down morale.”⁷ Themes from the past—precision, strategic bombing, and vital industrial centers as targets—were evident throughout the document.

President Roosevelt’s request for “the number of combat aircraft types . . . to have complete air ascendancy over the enemy” led to the creation of AWPD-42, which represented the mature realization of interwar thinking for American airmen.⁸ AWPD-42 was written as a wartime production document as well as to counter the stunning successes of the Luftwaffe. AWPD-1, on the other hand, had been written prior to the Pearl Harbor disaster.

Gen Henry H. “Hap” Arnold, commanding general of the AAF,⁹ responded to the president’s request by calling for “an air offensive against Europe to deplete the German Air Force, destroy the sources of German submarine

construction, and undermine the German war-making capacity.”¹⁰ This response reflected the prevailing views of airmen at the time—gaining control of the air through precise, strategic bombardment of vital target sets. In terms of achieving air ascendancy, AWPD-42 stated, “it will be observed that: (1) the enemy air strength must be so depleted as to render him incapable of frustrating the operations of our air, land, and sea forces; and (2) our own air strength must be so developed as to permit us to carry out the roles of our air force, in conjunction with our land and sea forces and also independently thereof, which are necessary for the defeat of our enemies.”¹¹

The theories of the airmen were coming into fruition. First, the Allies must destroy the German air force.¹² Second, they must launch a massive strategic campaign against the German economic structure.¹³ As discussed later, air planners also suggested that victory through airpower was possible but argued, nevertheless, that widespread bombing was necessary prior to a land invasion—if an invasion were needed at all. The underlying intent of the planners is reflected in Hansell’s writing. He suggested, referring to AWPD-1, that the air effort’s objective should lean “heavily toward victory through air power, but which provided for air support of an invasion and subsequent combined operations on the continent *if the air offensive should not prove conclusive*” (emphasis added).¹⁴ Hansell also argued that the plan had not only to be accepted in principle but also had to be adopted in fact.¹⁵ General Spaatz and Gen Ira C. Eaker, both of whom would at one time or another command Eighth Air Force in World War II, accepted AWPD-1 and then AWPD-42 as authoritative strategic guidance even though the plans were intended as production guidelines.¹⁶

Maj Gen Dwight D. Eisenhower, then serving as commanding general of the United States Forces in the European theater of operations, was in general agreement with the initial AWPD ideas.¹⁷

A successful air offensive must be launched and sustained from the United Kingdom to break down and undermine enemy strength before attempting a combined offensive involving an invasion of the continent. I am in agreement with the plan for attacking the sources of German Air Power and depleting the German Air Force as first priority for the air offensive and attacking the German Submarine Force as the second priority . . . I agree with AWPD forty-two insofar as this theater is concerned and recommend that its provisions be promptly put into effect.¹⁸

Hansell also noted that confusion surfaced over objectives. He wrote that the basic problem facing air planners was selection of the air objective. The Army assumed that the objective of an Air Force was to neutralize enemy air forces and thus, assist the Army in defeating enemy forces.¹⁹ This conflict of ideas prospered throughout the war. Still, AWPD had found the chance to promote untested doctrine derived from ACTS’s teachings of the 1920s and 1930s in the greatest air war to that time.

Links to ACTS

A major issue facing planners was the degree of accuracy expected in bombing as well as the uncertainty of penetrating German anti-aircraft and fighter defenses. AWP-4, written immediately after Pearl Harbor and a precursor to AWP-42, stated that “an analysis of the industrial sources of German military power indicates that a powerful air force, waging a sustained air offensive against carefully selected targets, may destroy the sources of Axis military power.”²⁰ These writings were consistent with ACTS’s teachings and indicated that logically the destruction of such sources of power would lead to the defeat of an enemy.

AWP-4 authors thought that America’s principal wartime production effort should be to develop US offensive and defensive air forces to prepare for the offensive in the air.²¹ It was also very clear that in AWP-4 they were pushing airpower as a possible solution to end the war.²² AWP-4 stated that “a successful air offensive must precede the launching of any other type of offensive against the Axis Powers. A powerful air offensive may be decisive by itself. Hence, a powerful air force is a prerequisite to any decisive action.”²³ AWP-42’s rhetoric was toned down somewhat, perhaps to ensure approval with senior military and political leaders. Not only were planners fighting for the lion’s share of the war production budget but they were also pushing for a significant increase in airpower’s status in the US military—an independent Air Force. AWP-4 reflected many of these ideas, which were consistent with the ACTS teachings of the efficacy of strategic bombardment, and timing was perfect—being the initial plan proposed after Pearl Harbor.

AWP-42 itself never reflected that airpower alone was to win the war and that an invasion would not have to occur. “The German air force must be depleted and the German war economy must be undermined before a successful invasion of the European continent can be undertaken.”²⁴ As indicated earlier, Hansell thought otherwise. Employing strategic airpower was America’s only real offensive option early in the war. Air planners recognized, however, the importance of at least appearing to accept the need for action by surface forces. “To implement the strategic concept, our land, sea, and air forces should be disposed to effectuate the following courses of action: wear down and undermine German resistance by increasing bomber offensive, blockade, raids, subversive activities, and propaganda. (Note: A successful air offensive is a necessary preliminary to success in a combined offensive involving land, sea, and air forces.)”²⁵

AWP-42 listed factors involved in conducting the proposed air operations. The list reflects the predominant thinking of air planners—precision bombing, unescorted bomber raids, and weather concerns. Notice the confidence air planners placed in precision bombardment.

- (a) Destructive effect of bombing (Tab E). Direct hits by bombs will destroy all of the targets selected.

- (b) Feasibility of conducting accurate bombing (Tab C). Experience has shown that it is perfectly feasible to conduct accurate, high level daylight bombing under combat conditions in the face of enemy anti-aircraft and fighter opposition.
- (c) Feasibility of penetrating fighter and AA defense without excessive losses (Tab D). With our present types of well armed and armored bombers, and through skillful employment of great masses, it is possible to penetrate the known and projected defenses of Europe and the Far East without reaching a loss-rate that would prevent our waging a sustained offensive.
- (d) Rates of Operations and Weather (Tab F). The following rates of operation of bomber units may be anticipated: Europe—5 to 6 operations per month; Far East—10 operations per month.²⁶

In order to hit their targets, aircraft had to first be able to reach them. An obvious concern of airmen was the expected attrition during missions over Germany. "It is likely that initial operations in the air offensives will be attended by an abnormally high rate of attrition. These loss rates should drop rapidly as our operations progress. It is believed that the rate of attrition of 20% per month from all causes in active combat zones will be a fair average."²⁷ Paragraph C of the previous list adamantly states that bombers massed with great firepower "will get through." Hansell criticized this concept in his memoirs, stating that their major theoretical shortcoming became the failure to develop bomber escorts. While this became readily apparent in the early stages of American bombing efforts, fighters of the mid-1930s lacked the capability to provide adequate escort to bombers. It was not until much later in the war that Allied fighters were capable of providing escort deep into Germany. Nevertheless, Hansell also wrote "if Spaatz and Eaker and the many combat crews had not persisted in spite of all the misgivings and suffering, the American Strategic Air Doctrine of precision bombing of selected industrial targets would have been abandoned and the escort fighter would have arrived too late."²⁸

Precision Bombing and Targeting

AWPD-42 briefly mentioned the level of collateral damage expected from the proposed mass bombings. "There is, of course, a tremendous amount of incidental damage to be expected from the hundreds of bombs which drop near the aiming point but do not strike the particular part of the target selected."²⁹ This issue later caused American airmen much concern and embarrassment during the Allied war against Germany. Additionally, optimistic bombing predictions concerning accuracy and effects proved erroneous.³⁰ Table 1 depicts the AWPD-42 target systems list prioritized by objectives. Table 2 illustrates target priorities within the systems. Notice in table 1 the first priority would be to gain air supremacy. Thus, pursuit and bomber aircraft assembly plants won the honor as "first" in the order to be destroyed.

The critical aspect of the plan was which target systems or vital elements of the German economy should be attacked. The target systems listed in AWPD-1 were related to those in AWPD-42 on the basis of an air offensive

Table 1
AWPD-42 Target Priorities

First Priority: Destruction of the German air force (fighter factories, bomber factories, airplane engine plants)
Second Priority: Submarine building yards
Third Priority: Transportation (locomotive building shops, repair shops, marshalling yards, inland waterways)
Fourth Priority: Electric power (37 major plants)
Fifth Priority: Oil (23 plants)
Sixth Priority: Alumina
Seventh Priority: Rubber (two synthetic Buna plants)
Recapitulation: Targets: 177; Force required: 66,045 bomber sorties
Bombs: 132,090 tons
Results: Decimation of the German air force; depletion of the German submarine force; disruption of German war economy

Source: AWPD-42, pt. 4, 3–4.

Table 2
AWPD-42 Target Systems

SYSTEM OF TARGETS	NO. OF TARGETS	PERCENTAGE OF TOTAL PRODUCTION REPRESENTED BY TARGETS
Pursuit airplane assembly plants	11	100
Bomber airplane assembly plants	15	100
Aero engine plants; submarine yards	17	100
Submarine yards	20	100
Transportation	38	41.9 Locomotive building 31.5 Locomotive repair
Power	37	—
Oil	23	47
Alumina	14	100
Rubber	2	47.5
TOTAL NUMBER OF TARGETS	177	

Source: AWPD-42, tab B-1-a, "Air Offensive—Europe," Air Force Historical Research Agency, 145.82–42.

embracing the entire strategic air forces, after built to full strength, lasting six months.³¹ AWPD-1 called for the destruction of 154 targets in six months. Hansell wrote that “we believed that the air offensive against these selected targets should be vigorously pursued with full force for six months. The minimum effect, we concluded, should be a significant decline in operational effectiveness of the German army by the time the invasion of the European continent was ready for launching.”³² The target

list in AWPD-42 grew to 177 targets. The characteristics of the targets as “vital centers” reflected the recommendations and theories of Gorrell, Mitchell, Douhet, and of course, ACTS instructors.

AWPD-42 planners were extremely confident in the target list and were convinced that if all those facilities listed were destroyed, Germany would have no choice but to sue for peace.³³ “There is no doubt that if the targets included in these systems were successfully destroyed, the effect would be decisive and Germany would be unable to continue her war effort.”³⁴ Here again surfaces the thought originally expressed by Gorrell in 1919 that airpower can possibly win the war alone, provided the plan is followed as intended.³⁵ Hansell also complained after the war that airpower was never given the chance to do what it was intended to do. The ramifications of this were that, as Hansell saw it, the plan was not executed as intended, causing the problems encountered during the bombing of Germany. This type of complaint consistently emerged in later conflicts such as Vietnam and Desert Storm.

To summarize, the assumptions and conclusions the planners reached, as listed in AWPD-42, were as follows:

- (a) Both Germany and Japan are vulnerable to air attack.
- (b) A successful air offensive against Germany can be carried out and is a necessary preliminary to ultimate victory over Germany.
- (c) Base areas are now available in the United Kingdom, capable of sustaining the necessary air forces to accomplish this purpose.
- (d) It is possible to conduct precision daylight bombing in the face of known and projected defenses of Western Europe.
- (e) It is possible to conduct such an air offensive against Germany without prohibitive loss.
- (f) Air support is essential to the conduct of all our other campaigns in 1943.
- (g) It is possible to meet logistical and personnel requirements.
- (h) It is possible to provide and deploy the necessary forces by 1943.
- (i) It is not believed possible to provide and deploy the necessary air forces in 1943 for simultaneous air offensives against Germany and Japan and air support of other essential operations.³⁶

Thought processes of the air planners are evident in the above list of assumptions and conclusions. However, this list does not mention that airmen were also motivated by a strong desire for an independent air force. That fact is evident elsewhere.

Independence

USAAF leaders knew the role of airpower would be reexamined in any postwar debate about military services’ roles and missions.³⁷ Comments on AWPD-42 supported airmen’s beliefs concerning the efficacy of airpower. Those comments, listed in the AWPD-42 Annex, are presumed to be from either AWPD staff or AAF staff, or both, and were as follows:

- (1) A clear and concise statement of US strategy is required.
- (2) Unified command promises to be a key point in the study.
- (3) Establishment of a separate air force is involved.

- (4) We are building toward the wrong goal. This is an air war until the ground forces gain a lodgment in Europe. Thereafter, the air is of equal importance. Build *air power first*.
- (5) The actual existence of AWPDP-42 and of a separate paper by the Navy on the same subject is in itself a powerful argument for a single air arm.
- (6) This is an air war. Only in the air can we be superior to the enemy. There is little hope of successfully engaging the enemy on the ground or on the water. However, air power reaches directly at the enemy's vital points.³⁸

It is quite apparent from staff comments that the not-so-hidden agenda of AWPDP was the drive for an independent air force as well as the air plan to defeat the Axis powers. Additionally, the strong desire to promote air-power as the dominant method to wage the war is evident. Indeed, the two—*independence and dominance*—are interrelated. This loaded rhetoric is a consistent theme for air planners that would surface in future conflicts.

Combined Bomber Offensive

The Combined Bomber Offensive (CBO) was initiated to coordinate efforts of American and British bomber forces. Importantly, CBO had a strong resemblance to AWPDP-1.³⁹ Ideas were essentially the same, but target priorities changed somewhat. The Casablanca Conference, which had directed the CBO, was somewhat at odds with AWPDP-42 concerning bombing decisiveness. AWPDP-42 implied that strategic bombing may be decisive, but the final directive from Casablanca “made it clear that the air offensive, like the expected land invasion, was but a means to an end.”⁴⁰

General Arnold established a committee of operation analysts to help with the targeting process. This was the first time the United States had a single organization responsible for collection and analysis of intelligence for the purpose of air target selection.⁴¹ Hansell's biggest complaint about executing the CBO was that bombers were diverted to targets primarily in support of the Army; missions that were not in the CBO targeting plan.⁴²

Conclusion

Watts wrote that “the theory of industrial (or strategic) bombardment that, by the eve of World War II, had emerged as the dominant view on aerial employment at the Air Corps Tactical School (ACTS) was the culmination of a line of development spanning nearly two decades and involving a large cast of characters.”⁴³ “The broad vision,” he continued, “that motivated Colonel George's planning team was, unquestionably, the belief and doctrine that precision bombardment offered a new, revolutionary means of warfare.”⁴⁴ These beliefs were still present after World War II, and the precision bombardment beliefs survived to influence modern-day thinking.

The AWPDP series of plans was largely theoretical since planners could draw upon but slight experience in arriving at their conclusions.⁴⁵ From start to finish, AWPDP-1 planners followed their doctrinal beliefs to the letter. Watts argues, however, that their thinking “was mechanistic in char-

acter—more akin to that of artillery officers laying out a plan of fire against inanimate targets than to classical, Clausewitzian strategists.”⁴⁶ Watts also wrote that the ACTS viewed war as fundamentally an engineering science.⁴⁷

Notwithstanding Watts’s criticisms of the “mechanistic thinking” of early air pioneers, AWPD planners were consistent and persistent in their quest for the maturing of the theory of strategic, precision bombing. Watts says the core beliefs that reflect mainstream thinking of airmen are the following:

- (1) Technological advances have created . . . offensive weapons of such unprecedented destructive power as to *change the dominant form*, if not the very nature, of *all-out* war between industrialized societies.
- (2) Since there appears to be no effective defense against a well-planned and well-conducted bombardment attack, *air forces can*, in contrast to armies and navies, leap over traditional obstacles (oceans, vast distances, opposing forces, etc.) and *swiftly destroy the will or means* of an enemy society to wage war.
- (3) In any warfighting application of the air weapon, *aerial strategy* reduces to *selecting* those *key targets* whose destruction will secure the military objectives sought, and *aerial employment* consists of *allocating* the necessary *sorties* to impose the desired levels of destruction (emphasis in original).⁴⁸

Watts reveals the beliefs, as he saw them, of airpower advocates concerning the efficacy of strategic, precision bombing of an enemy’s vital targets. These beliefs also reflect contemporary thinking of the capabilities afforded to airmen through stealth, PGMs, and centers of gravity targeting.

Watts does admit that the impact of AWPD-1 planners on contemporary airpower thinking was quite dramatic. He wrote “the total acceptance by the AWPD-1 planning team of the Douhetian notion of aerial strategy as targeting—and, along with it, Douhet’s mechanistic view of war itself—cannot be dismissed as mere expedient. The AWPD-1 planners knowingly sought, not without success, to set the tone and direction of Air Force thinking for decades to come.”⁴⁹

When the smoke had cleared from World War II, American airmen set about pursuing their quest for an independent air force.⁵⁰ Wolk wrote that airmen such as the first Air Force chief of staff, General Spaatz, as well as General Arnold demonstrated that airpower had become synonymous with national security.⁵¹ Spaatz wrote in 1947, “The strategic concept is so obviously a vital consideration in the formulation of national defense measures, that air power and its primary vehicle, the Army Air Forces, must be given whatever support is necessary to maintain strategic offensive readiness with which to answer the actions of any future aggressor.”⁵²

Despite criticisms leveled at the use of airpower in World War II and the perceived lessons, the vital centers concept of targeting and precision bombing doctrine continued to evolve.⁵³ Additionally, another prevailing USAAF opinion endured: “Proper war planning demanded that decision making be highly centralized and feature flexibility in the assignment of military tasks and responsibility.”⁵⁴

Air planners of the 1950s, '60s, and '70s had to deal with so-called aberration in Korea and the political war in Vietnam. Airmen generally consider these two conflicts to be limited wars driven by political interference. They are therefore difficult to compare to total, unrestrained war as in the 1940s and politically unrestricted war in 1991.

Notes

1. James A. Mowbray, "Air Force Doctrine Problems: 1926-Present," *Airpower Journal* 9, no. 4 (winter 1995): 25. Maj Laurence S. Kuter was replaced on AWPDP-4 by Col Orville A. Anderson. Thomas Allen Fabyanic, "A Critique of United States Air War Planning 1941-1944" (PhD diss., St. Louis University, 1973), AFHRA, K112.1-16, 28, 34, 83.

2. John R. Glock, "The Evolution of Air Force Targeting," *Airpower Journal* 8, no. 3 (fall 1994): 19.

3. W. Hays Parks, "Precision and Area Bombing: Who Did Which and When?" in John Gooch, ed., *Airpower Theory and Practice* (London: Frank Cass and Co., 1995), 148. ACTS ideas were molding the largest air armada ever assembled against Germany in World War II; and Carl H. Builder, "Doctrinal Frontiers," *Airpower Journal* 9, no. 4 (winter 1995): 8.

4. Fabyanic, 1, digest section.

5. *Ibid.*, 50.

6. AWPDP-4, 15 December 1941, "An Estimate of the Situation and Recommendations for the Conduct of the Air War," AFHRA, 145.82-4 (hereafter cited as AWPDP-4). A serious shortcoming of AWPDP-1 was a failure to cite specific subtargets with the petroleum refineries, metallurgical factories, and assembly plants; and Fabyanic, 61.

7. AWPDP-42, pt. 4, "Report," AFHRA, 145.82-42, 2 (hereafter cited as AWPDP-42, pt. 4).

8. President Roosevelt, memorandum to General Marshall, subject: Requirements for Air Ascendancy, 24 August 1942, AFHRA, pt. 1, President's Directive, 145.82-42.

9. Phillip S. Meilinger, *American Airpower Biography: A Survey of the Field* (Maxwell AFB, Ala.: Air University Press, July 1995), 13.

10. Gen Henry Arnold memorandum to the chief of staff, subject: Combat Aircraft Which Should Be Produced in the United States in 1943, 9 September 1942, pt. 2; and "Answering Memo and Outline of Report," in AWPDP-42, AFHRA, 145.82-42.

11. AWPDP-42, pt. 4, 1. AWPDP-42 stated the US grand strategy was: "To conduct the strategic offensive with maximum forces in the Atlantic-Western European Theater at the earliest practicable date, and to maintain the strategic defensive in other theaters, with appropriate forces." AWPDP-42, tab A, "Strategic Situation and Concept," AFHRA, 145.82-42, 2 (hereafter cited as AWPDP-42, tab A).

12. "Our numerically superior air forces must deplete the air forces of the enemy and undermine the structure which supports his surface forces." AWPDP-42, pt. 4, 1.

13. In a memo from Lt Col Donald Wilson to chief, Bombardment Section at ACTS, 26 August 1937, this feeling was evident early on. "In working up the Bombardment Course for 1937-38 it is desired that every effort be made to concentrate instruction on those missions our bombardment forces may be expected to perform in the early part of war. In this connection the destruction of enemy air base facilities, beyond the radius of action of attack aviation, will be given first priority." AFHRA, 248.12601.

14. Haywood S. Hansell, *The Air Plan That Defeated Hitler* (Atlanta, Ga.: Higgins-McArthur/Longino and Porter, 1972), 108; and Barry D. Watts, *The Foundations of US Air Doctrine: The Problem of Friction in War* (Maxwell AFB, Ala.: Air University Press, 1984), 19.

15. Hansell, 89.

16. *Ibid.*, 144.

17. In November 1942, Dwight D. Eisenhower assumed command of British and US forces for the invasion of North Africa. He made four-star general in May 1943 and was

named supreme allied commander (supreme commander of Allied Expeditionary Forces) in December 1943. *New Standard Encyclopedia*, 1991 ed., s.v. "Eisenhower, Dwight David."

18. Message, Gen Dwight Eisenhower, to Agwar, 29 September 1942, AFHRA, 145.82-42, annex 1, 1.

19. Hansell, 63.

20. AWPD-4, 4.

21. *Ibid.*, 5.

22. "It may be the methods described above will by themselves be enough to make Germany sue for peace. . . ." *Ibid.*, 7.

23. *Ibid.*, 8.

24. AWPD-42, pt. 4, 2.

25. AWPD-42, tab A, 2.

26. AWPD-42, pt. 4, 5.

27. *Ibid.*, 7. Quoting a letter from General Eaker, General Arnold anticipated losses to be heavy soon after 21 July 1943 because the Germans were "struggling mightily and squirming to beat hell to figure some way of stopping our bombers. . . . I am convinced, however, that there is grave danger that some one of these systems may eventual (*sic*) be tried in such force and with such good equipment and highly trained crews as to increase greatly the cost of our bombing." General Arnold, memorandum for General Peabody, subject: German Struggle to Stop Our Bombers, 21 July 1943, AFHRA, 248.126.

28. Hansell, 142.

29. AWPD-42, tab B-1-b, "Combined Offensive," AFHRA, 145.82-42 (hereafter cited as AWPD-42, tab B-1-b).

30. "It is perfectly feasible to conduct precise bombing operations against selected precision targets, from altitudes of 20,000 to 25,000 feet, in the face of antiaircraft artillery and fighter defenses." AWPD-42, tab C, "Bombing Accuracy," AFHRA, 145.82-42. "The average circular error to be expected in the long run from 20,000 feet is 1,000 feet. This is 1.5 times the average practice error."

31. Hansell, 78.

32. *Ibid.*, 85.

33. German leaders' biggest criticism is "that we did not persist sufficiently, particularly at first, in our attacks either on a certain target complex or on individual targets themselves. The lack or delay in repeat attacks on definite targets was considered by the enemy one of the weakest points in our strategy. "The Allied Offensive against Germany and Principal Criticisms by the Enemy Leaders, 1942-1945," 1 June 1945, AFHRA, 510.04-4.

34. AWPD-42, tab B-1-a.

35. Quoted in Tami Davis Biddle, "British and American Approaches to Strategic Bombing: Their Origins and Implementation in the World War II Combined Bomber Offensive," in John Gooch, ed., *Airpower Theory and Practice* (London: Frank Cass and Co., 1995), 107.

36. These assertions are echoed in the "Plan for the Defeat of the Axis Powers," 1 December 1942, intelligence section, Army Air Force, AFHRA, 142.04-11.

37. Parks, 168.

38. "Comments on AWPD-42," AFHRA, 145.82-42, annex 1.

39. Christopher R. Gabel, "Combined Bomber Offensive, 1943," *Military Review* 73, no. 6 (June 1993): 75.

40. Fabyanic, 140.

41. Glock, 20.

42. Hansell, 204. He further asserted that more formidable obstacles to prosecution of the strategic air war emerged, "the determination of higher authorities and commanders to direct the power of the strategic air forces away from their primary objective and apply in support of ground operations." Hansell, 184.

43. Watts, 17.

44. *Ibid.*, 22.

45. Fabyanic, 130.

46. Watts, 22.

47. *Ibid.*, 23.

48. *Ibid.*, 44.

49. *Ibid.*, 23. Watts also wrote “the air power assumptions embedded in AWPDP-1 continued to dominate the Air Force doctrine long after service independence from the US Army in 1947.” *Ibid.*, 85.

50. The autonomy drive had a great influence after World War II on the collective frame of mind of airmen and their approach to the question of independence. Herman S. Wolk, *Planning and Organizing the Postwar Air Force, 1943–1947* (Washington, D.C.: Office of Air Force History, 1984), 6. World War II validated the views of ACTS and led to creation of a single wartime organization responsible for collection and analysis of intelligence for air targeting. Glock, 26–27. Wolk also wrote that in a reorganization proposal after the war introduced by Generals Vandenberg and Norstadt, there was a need to form a separate “Strategic Air Force.” Wolk, 131. The AAF viewed in 1947 the ongoing struggles with the Navy over roles and missions as a vital part of the drive for equality with the other services. *Ibid.*, 179.

51. Wolk, 214.

52. Carl A. Spaatz, “Evolution of Air Power: Our Urgent Need for an Air Force Second to None,” *Military Affairs*, spring 1947, AFHRA, 175.6309.

53. The airmen were sincerely behind what they sought to achieve. USAAF emphasis on precision bombing undoubtedly was necessary, too, as a leadership tool to press on regardless and to do the best job under difficult circumstances. Parks, 168.

54. Wolk, 167. Watts wrote, “behind the abstract doctrine that enough mass, defensive firepower, and the proper formations would enable unescorted bombers to penetrate any defense lay a refusal to admit that the enemy’s reactions could fundamentally threaten bomber operations.” Watts, 71. Watts questions the vindication of ACTS theories: “There appears to be precious little in the conduct of the daylight bomber offensive against Germany through June 1944 that vindicates the theory of precision, industrial bombardment developed at the Air Corps Tactical School.” Watts, 85. Accusations also came from other sources, such as that the errors of all planners included assumptions that Germany was under considerable economic strain early in the war, that immediate pressure on select aspects of the industrial base would prove fatal, overestimating the destructive effects and accuracy of bombing, suggestions that the bomber would successfully penetrate enemy fighter defenses, and finally, the critical importance of collective risk discounted factors of significance and fostered the development of errors on assumptions of what American airpower could do. Fabyanic, 196–205. Fabyanic wrote that the real lesson of air war in Europe was that daylight operations against an enemy with air superiority could not be conducted without suffering unbearable losses. *Ibid.*, 74. “Many unknowns faced by the planners was [were] a natural consequence of their efforts to formulate a battle plan for history’s first major air offensive.” *Ibid.*, 186. Fabyanic says that in the search for vital centers, planners analyzed the US economy, and they demonstrated the need for air intelligence. *Ibid.*, 187. He further asserts that the strength of AWPDP-1 was the accuracy to which they picked the vital targets. *Ibid.*, 196. Biddle characterizes the experience as follows: World War II airpower was characterized by a struggle to understand and master new instruments and methods of warfare, by large-scale battles of attrition, and by critical importance of defensive techniques. Biddle, 128. “Two World Wars showed that the proper selection of vital targets is critical to the successful application of airpower.” Glock, 20.

Chapter 4

Korea and Vietnam: The Bridge

Air power must not be applied except against the industrial power of the nation; it must not be applied unless you are going to win the war with it. . . . You must leave no stone unturned to spread the gospel and to do it in a proper way. Let us not claim that all you need is air power, because that is bunk. . . . It is your duty because . . . the only thing that is going to save the United States is an understanding of this thing.

—Gen Hoyt S. Vandenberg

The above statement by then-Air Force chief of staff Gen Hoyt S. Vandenberg suggests that leading airmen after World War II continued to view airpower in the same manner that began with Gorrell in World War I and evolved over the next three decades. The belief, based on conclusions drawn from World War II, that airpower could be decisive when employed against the “industrial fabric” of a nation prevailed among airmen in the early 1950s.

Airmen’s philosophies did not seem to be altered by the successful struggle for independence. Watts wrote that “the air power assumptions embedded in AWPD-1 continued to dominate Air Force doctrine long after service independence from the US Army in 1947.”¹ Secretary of the Navy Francis Matthews lamented to Cong. Carl Vinson concerning airmen’s beliefs, “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.”² The doctrine of strategic bombing and the industrial web, or vital target sets and their interdependence, was alive and well. The problem for airmen was that looming conflicts in Korea and Vietnam did not involve industrially advanced foes, which was one key assumption of the strategic bombing theory. Additionally, Korea was primarily a conventional-style war, whereas initially the Vietnam War was a guerrilla-type conflict.

The Air Force considered World War II—total war with no limits—as the norm and limited war along with its political restrictions as an aberration. To the Air Force, war should be fought to win, free from fears of a super-power clash. It appears as if this “political naïveté” is part of Air Force culture. If war truly is a continuation of politics, then the belief that there should be no political restrictions on conducting an air war is groundless. Nevertheless, as a result of ACTS and USAAF World War II experiences, postwar planning and doctrine continued to stress the destruction of an enemy’s capabilities to fight through attacks on vital economic centers.

The Air Force survived the Korean War and entered the 1960s fully entrenched in the nuclear paradigm, strategic bombing in its most absolute

form. Professor Mowbray wrote that “the mid-fifties were not one of those times in which innovative thinking in the Air Force was very highly prized. The strategic airmen still owned the Air Force, body and soul, and they knew what the answers were.”³ The Korean War had produced no consensus about the role of airpower, and the Air Force forgot many of the lessons from that aberration.⁴ Precision, strategic bombing theories that were consistent in the Air Service, USAAF, and now the Air Force, however, came to the forefront again in Vietnam. From the outset, airmen wanted a massive and rapid strategic air campaign against key military, industrial, and economic targets in the heartland of North Vietnam.⁵ In both Korea and Vietnam, specific conditions of each conflict challenged the critical tenets of US airpower theory—strategic bombing, precision, and the importance of targeting.

Strategic Bombing

General Vandenberg summed up the Air Force’s position concerning aerial attack in Korea “the proper way to use air power is initially to stop the flow of supplies and ammunition, guns, equipment of all types, at its source.”⁶ However, as Robert Frank Futrell points out, the North Koreans had no industrial base to speak of, and their source of military equipment came from communist production centers outside Korea.⁷ Those centers were off limits to American bombers and thus provided the North Koreans a logistical and industrial sanctuary. This was a unique problem with which planners in World War II did not have to contend. The effort to attack the supply of war materiel to the North Koreans would have to focus on interdiction of the lines of communication (LOC) inside the country itself. Gen George E. Stratemeyer, commander of Far East Air Forces (FEAF), lamented that “it is axiomatic that tactical operations on the battlefield cannot be fully effective unless there is simultaneous interdiction and destruction of sources behind the battlefield.”⁸ Futrell also wrote that “USAF commanders recognized that strategic air attacks aimed at the enemy’s military, industrial, political, and economic system could not be decisive in Korea . . . Any industries in North Korea operating directly or indirectly in support of the Red regime’s war effort, however, had to be destroyed at the earliest possible moment. Under no circumstances could the Red Koreans be allowed the luxury of an uninterrupted industrial system in support of their forces in the field.”⁹

After the North Korean invasion of the South in the summer of 1950, American strategic bombers were used to support the US Eighth Army in Pusan, but strategic bombing was also attempted against North Korea. However, by July 1950, Gen Douglas MacArthur approved only “special strategic missions” because the B-29 had to support the Eighth Army.¹⁰ Also in July, General Stratemeyer wrote in his diary, referring to his agreement with General MacArthur, commander in chief, Far East, concerning the use of B-29s in battlefield support roles. Stratemeyer wrote, “while

General Vandenberg was here we should not discuss the improper use of B-29s as I agreed with General MacArthur to use them as close support because of the ground situation.”¹¹ Obviously airmen were still sensitive to the diversion of strategic bombers away from the strategic bombing campaign for ground support, similar to the situation in World War II and preparation for the Normandy invasion. Nevertheless, as early as September 1950, air planners had run short of strategic targets in North Korea. By mid October, most B-29 combat crews thought their jobs in Korea were finished. In late October, General Stratemyer stood down the whole FEAF B-29 command.¹²

The defeat of Republic of Korea armed forces in the fall of 1950 entailed an immediate modification of air objectives in October. The Joint Chiefs of Staff (JCS) “canceled all strategic air attacks against North Korean objectives.”¹³ Strategic bombing efforts were hampered by the sanctuaries given to the North Koreans in Communist China and the Soviet Union. The airmen, nevertheless, were clinging to ideas of bombing vital target sets, as they had done in World War II. However, political protection given to those targets put boundaries of politically realistic limitations on their plans. The same types of restrictions would also frustrate air planners during the Vietnam conflict.

The concept of strategic bombing in Vietnam during the early part of the war was affected by diplomatic “interference” with the targeting process. The military had only limited control of the execution of Operation Rolling Thunder because the US government felt compelled to control the situation to avoid conflict with China or the Soviet Union. From 1965 to 1968, Rolling Thunder employed the gradual escalation of airpower against the North Vietnamese to try to convince the Hanoi government to stop supporting aggression against South Vietnam. The political restrictions on targets, tactics, and even weapons were chosen by civilians and given to President Lyndon B. Johnson, raising cries in the military that the war in Vietnam was run from Washington.

Air Force planners hoped that by destroying what they perceived to be vital elements of North Vietnamese industry, they could gain the unconditional triumph promised by Air Force strategic bombing doctrine.¹⁴ “Gen John P. McConnell, Air Force chief of staff, proposed to make Rolling Thunder a ‘fast/full squeeze,’ hard-hitting campaign against 94 air targets grouped into basic categories of airfields, LOCs, military installations, industrial installations, and armed reconnaissance routes” over a 28-day period (table 3).¹⁵ Strategic bombing doctrine remained geared to a fast-paced conventional war against an advanced industrial nation, but the conviction within Air Force leadership that such doctrine was appropriate for any kind of conflict unfortunately remained popular after Korea.¹⁶ Lessons from Korea that airpower is subject to political constraints and has limited capability in limited wars were forgotten.

However, President Johnson’s attitude toward the air war led to frustration for Air Force leaders. He stated, “I won’t let those Air Force generals

Table 3
JCS Ninety-Four Target Scheme

Airfields
Lines of Communication
Military Installations
Industrial Installations
Armed Reconnaissance Routes
Results: End the war by employing airpower intensively against strategic targets in North Vietnam through a concentrated strategic air offensive.

Source: Robert Frank Futrell, *Concepts, Ideas, Doctrine, vol. 2, Basic Thinking in the United States Air Force, 1961–1984* (Maxwell AFB, Ala.: Air University Press, 1989), 259.

bomb even the smallest outhouse without checking with me.”¹⁷ The JCS 94-target list was never executed to their satisfaction (table 4) and provided the excuse for airpower’s perceived limitations in Rolling Thunder. Air leaders viewed that operation, in theory, as *the* means to secure “a stable and independent noncommunist government in the South.”¹⁸

Later Air Force operations included Linebacker I and II, which were efforts by the Nixon administration in mid- and late 1972 to use airpower, including strategic bombing, against the North in order to get an acceptable agreement with the communists on a cease-fire following an American withdrawal from Vietnam. A consensus emerged within the Air Force almost immediately after the bombing that the perceived success of Linebacker II in December 1972 apparently had validated the traditional Air Force doctrine of strategic bombing. The Air Force interpretation of

Table 4
JCS Four-Phase Air Campaign Proposal

PHASES	TARGETS	OBJECTIVES
One	Lines of communication (LOC) below the 20th parallel	Reduce the flow of logistics by battering the LOCs with almost continuous attacks, and provide a clear indication to the North Vietnamese that we would increase the scope and intensity of the war if they continued their efforts to overthrow the government of South Vietnam.
Two	Northeast and northwest railroads to China	By cutting these rail lines, they would be hitting the logistical system at its most vulnerable points and would be bringing the war closer to the people and the government, thereby attacking both the means and the will of the North Vietnamese to fight.
Three	Ports, mine seaward approaches, ammunition, and supply areas in the Hanoi–Haiphong area	They would expect the North Vietnamese to decide that South Vietnam was no longer worth the price. By the end of phase three, most of the targets on the 94-target list would have been struck.
Four	Industrial targets outside populated areas	The Joint Chiefs of Staff also wanted to hit any earlier targets that had not been fully destroyed or had been repaired.
The president and secretary of defense elected only to increase the pressure on LOCs below the 20th parallel.		

Source: William W. Momyer, *Air Power in Three Wars* (Washington, D.C.: Department of the Air Force, 1978), 19.

Linebacker II stressed the success of the campaign as part of the overall continuity of the efficiency of strategic airpower doctrine.¹⁹ Peace talks that occurred shortly after the B-52 raids and other bombing missions were the basis for this belief.

Precision Bombing

The relative lack of vital strategic target sets in North Korea affected airmen's views on precision bombing. Intelligence officers recommended attacks by area rather than by target systems because of the concentration of industrial targets in five North Korean locales.²⁰ Maj Gen Emmett O'Donnell, commander of FEAF Bomber Command in July 1950, supported the concept of area attacks with incendiary munitions.²¹ These beliefs had as their origin the fire bombings that occurred in World War II against Japan. Successful area bombing of Japanese industrial cities, such as Tokyo, appears to have led to this view concerning area bombing rather than precision bombing.

Even though precision bombing was desired, airmen were frustrated because of the lack of strategic targets they could hit. The nature of the targets in Korea were seen by the Air Force not as limits of airpower, but as an anomaly. Precision bombing efforts were more evident in the Vietnam War.

The tremendous rush of technology concerning laser-guided bombs (LGB) in the Vietnam era created a modern vision of airpower that focused on the lethality of its weaponry.²² In Vietnam LGBs fulfilled the Air Force's long-standing desire for precision bombing. This capability matured throughout the next two decades and became the cornerstone of Instant Thunder. LGB technology had allowed the concept of precision bombing envisioned in ACTS and the AWPD war plans to become a reality. Political guidance against hitting civilians, which is part of the reason to pursue precision capabilities, provides a critical link across the entire airpower history spectrum from World War II to Desert Storm in the development of precision bombardment.

Targeting

At the outset, there was no air plan for Korea because FEAF target selection folders had neglected it.²³ Only 53 targets in Korea had folders, and those were outdated. General Headquarters Far East Command thus assumed responsibility for targeting. However, of the 220 primary and secondary targets that the group nominated, 20 percent did not even exist, and the remaining targets were often unsuitable for air attack.²⁴

As AWPD-1/42 proved in World War II, the war in Korea revealed that proper selection of vital targets is critical to successful application of airpower. However, strategic bombing essentially became interdiction, illus-

trated by Operation Strangle, an attempt to interdict Communist communications between railheads near the 39th parallel and the front lines.²⁵ Watts, however, suggests the thinking behind Operation Strangle was no different than that of AWPD-1. He asserts there was continued optimism about what airpower could do, and similarities of seeing the vital centers within the rail system as of supreme importance were evident. The concept of using strategic bombing against vital center targets through precision attack, as in World War II, was not executed according to airmen's expectations for many reasons, including the nature of the conflict, target accessibility, and "political interference." However, even if "proper" targets were selected, the nature of those targets, weather, and political restrictions precluded hitting them. The same types of problems and restrictions could be found in Vietnam.

Targeting criteria in Vietnam was formulated to achieve the following: (a) reduce North Vietnamese support of Communist operations in Laos and South Vietnam; (b) limit North Vietnamese capabilities to take direct action against Laos and South Vietnam; and (c) impair North Vietnam's capacity to continue as an industrially viable state.²⁶

The JCS 94-target list against North Vietnam aimed for destruction that would lead to defeat of the enemy. The JCS 94-target scheme was developed to destroy North Vietnam industrial assets using selective bombing. They would shock Hanoi into compliance with demands by destroying their means to fight.²⁷ After General McConnell proposed the 94-target plan, the JCS extended it into phases. By the end of phase three, most of the 94-target list would have been struck. Target sets, however, were developed without considering the nature of the society or the nature of the war. Panacea, silver-bullet-type targets were proposed, along with inflated claims on what airpower would do if they were destroyed. In his memoirs, former Air Force chief of staff Gen Curtis E. LeMay remarked that he could have bombed the North Vietnamese "back into the Stone Age" by destroying the 94 targets.²⁸ These were common tendencies among airpower zealots across the years, including the ACTS faculty and AWPD-1/42 and Instant Thunder planners.

Summary

Indeed my personal experience during 100 missions in the F-4 over North Vietnam, as well as that of other Air Force aviators who flew combat there, strongly suggests that the mindset of AWPD-1 continues to dominate Air Force thinking to this day, despite the fact that the nuclear missile age has been upon us for two decades.

—Barry D. Watts

Gen Nathan F. Twining, then-vice chief of staff, complained that the full effect of air striking power could not be achieved with the United Nations's air effort being limited to the confines of Korea.²⁹ This belief that airpower

was hampered by political restrictions led to feelings within the Air Force that Korea was an aberration and was not to be viewed as a practical application of strategic airpower.

Mowbray wrote that after the Korean War, Air Force thinking and doctrinal development “was influenced by the fact that airpower had not done very well in Korea in light of what it promised and could not deliver. Operation Strangle is the most notorious example of that failure.”³⁰ Nevertheless, airmen continued to think in terms of strategic airpower throughout the 1950s, and this was reflected in doctrine manuals. AFMAN 1-8, *Strategic Air Operations*, published in 1954, was the first attempt at codifying formal doctrine on strategic air operations. Mowbray wrote that it “sounded so much like the ACTS faculty of the 1930s that it might well have been written by them.”³¹

Airmen turned to the perceived lessons of strategic bombing in World War II for the air campaign against Korea and to World War II and Korea for the bombing of North Vietnam. Air Force doctrine before Vietnam reflected the theories of Douhet and Mitchell. These theories stressed that:

- (1) Air superiority has to be achieved.
- (2) Airpower should be employed using large numbers of bombers and concentrated for maximum effort.
- (3) Airpower must destroy targets crucial to an enemy's war-making capability or will to fight.
- (4) Bombers are the decisive weapon of airpower and when properly employed would reach its objectives.³²

It is important to note that all these theories were based on war between modern industrial powers. Mark Clodfelter suggested that the convictions that manufacturing and distribution of goods are keys to war-fighting capability and will remain firmly plastered as a cornerstone of Air Force thinking. In equating the economic well-being of Vietnam to industrial targets, the 94-target scheme had embodied the essence of those theories.³³ Gen William W. Momyer, Seventh Air Force commander in Southeast Asia, suggested the experience of strategic bombing in Europe and Japan during World War II, together with the “evidence from the skies over Hanoi in Dec[ember] 1972, validated the view that airpower in its own right could produce decisive results.”³⁴

Many Air Force leaders believed that Linebacker II vindicated not only strategic bombing as a political tool but also the tenets of Air Force bombing doctrine.³⁵ General LeMay stated, “We could have ended it [the Vietnam War] in any 10-day period you wanted to, but they would never bomb the target list we had.”³⁶ Adm U. S. Grant Sharp, commander in chief, Pacific Command (CINCPAC) and the operational director of Rolling Thunder, stated that such an effort after the Tet offensive would have won the war.³⁷ The point each of these men made was that restricted airpower would not solve the crisis.³⁸ Would unrestricted airpower win? This question still remains and is debated today.

The similarities of airmen's views on the nature of air war in Korea and Vietnam reflected a continuation of the ideas from ACTS and World War II

experiences. Watts wrote, “As for fundamental Air Force thinking about conventional conflict since service independence in 1947, neither the Korean nor Vietnam Wars saw any real falling away from Air Corps Tactical School beliefs about the unprecedented decisiveness of well-targeted, well-executed bombardment attacks.”³⁹ However, the failure of airpower in Vietnam perceived outside Air Force circles haunted airmen for the next two decades. Instant Thunder—so named and planned as the antithesis of Rolling Thunder—was the chance, in the eyes of some air planners, to dispel the Vietnam stigma and put the Cold War aberrations to rest once and for all.

Notes

1. Barry D. Watts, *The Foundations of US Air Doctrine: The Problem of Friction in War* (Maxwell AFB, Ala.: Air University Press, 1984), 85.
2. Robert Frank Futrell, *Ideas, Concepts, Doctrine*, vol. 1, *Basic Thinking in the United States Air Force, 1907–1960* (Maxwell AFB, Ala.: Air University Press, 1989), 251.
3. James A. Mowbray, “Air Force Doctrine Problems: 1926–Present,” *Airpower Journal* 9, no. 4 (winter 1995): 27.
4. Raymond W. Leonard, “Learning from History: Linebacker II and US Air Force Doctrine,” *Journal of Military History* 58, no. 2 (April 1994): 271.
5. John D. Morrocco, “From Vietnam to Desert Storm,” *Air Force Magazine* 75, no. 1 (January 1992): 71.
6. Quoted in Robert Frank Futrell, *The United States Air Force in Korea: 1950–1953*, rev. ed. (Washington, D.C.: Office of Air Force History, 1983), 183.
7. Futrell, *The United States Air Force in Korea*, 181 and 195. North Korea drew most of its logistics support outside its borders. Therefore, the strategic bombing campaign lacked decisiveness in terms of the ground fighting in South Korea.
8. Futrell, *The United States Air Force in Korea*, 183.
9. *Ibid.* USAF had to support initial years of Korean War hostilities from stored stocks of equipment left over from World War II.
10. Futrell, *The United States Air Force in Korea*, 186.
11. Diary of Gen George E. Stratemeyer, 12 July 1950, AFHRA, 168.7018–16.
12. Futrell, *The United States Air Force in Korea*, 192 and 207.
13. *Ibid.*, 167.
14. Mark Clodfelter, *The Limits of Airpower: The American Bombing of North Vietnam* (New York: The Free Press, 1989), 144.
15. Robert Frank Futrell, *Ideas, Concepts, Doctrine*, vol. 2, *Basic Thinking in the United States Air Force, 1961–1984* (Maxwell AFB, Ala.: Air University Press, 1989), 259.
16. *Ibid.*, 210.
17. Quoted in Morrocco, 73.
18. Clodfelter, 76.
19. Leonard, 269 and 278.
20. Futrell, *The United States Air Force in Korea*, 185.
21. *Ibid.*, 186 and 187. Washington directed no incendiaries.
22. Clodfelter, 203.
23. Futrell, *The United States Air Force in Korea*, 186.
24. John R. Glock, “Evolution of Air Force Targeting,” *Airpower Journal* 8, no. 3 (fall 1994): 21.
25. Futrell, *The United States Air Force in Korea*, 437.

26. Col Dennis M. Drew, *Rolling Thunder 1965: Anatomy of a Failure* (Maxwell AFB, Ala.: Air University Press, 1986), 29.

27. Clodfelter, 43 and 127. Clodfelter suggested that the “negative goals” of preventing Soviet or Chinese intervention in Vietnam and thus causing World War III had become a goal equal in importance to that of establishing South Vietnam independence. This contradiction caused the limited application of force throughout the campaign known as Rolling Thunder—limitations that frustrated airpower planners.

28. Clodfelter, 77.

29. *Ibid.*

30. Mowbray, 28.

31. *Ibid.*, 29. In view of the budgeting situation and the need to emphasize both the air striking and air defense forces, the Air Force had no choice but to further reduce the priority of the tactical air forces. Futrell, *Ideas, Concepts, Doctrine*, 1: 287 and 381. “Tactical air and strategic air are merely handles which have been developed to identify different functions, each of which is indispensable and each of which fits into the overall integrated structure of air power.” General Weyland said, “In a long term war, tactical air power will contribute more to the success of ground forces and overall mission of theater commander through a well-planned interdiction campaign than by any other mission short of the attainment of air superiority.” Futrell, *The United States Air Force in Korea*, 125 and 151–52. General Stratemeyer strongly asserted that some single air commander had to have sole responsibility for the overall air campaign in Korea. They were seeking to maintain unity of air action between FEAF and naval forces.

32. Leonard, 270–71.

33. *Ibid.*, 77.

34. Leonard, 282.

35. Clodfelter, 201. Clodfelter also suggests that until air commanders and civilian officials alike realize that airpower is unlikely to provide either “cheapness” or “victory” in a guerrilla war and that success in such a conflict may well equate to a stalemate, the prospect of an aerial Verdun will endure.

36. Quoted in Leonard, 273.

37. Clodfelter, 144.

38. *Ibid.*, 47. One of the most controversial aspects of the Vietnam War revolved around questions of the value of airpower. The limits of airpower were made painfully apparent in that conflict. Morrocco, 68.

39. Watts, 45–46.

Chapter 5

Instant Thunder

Air Force planning has, unfortunately, in rough terms since—I think almost since World War II—tended to become more and more tactical. The trend has been to move away from excellent strategic thinking in the 1930s towards pure tactical thinking—and the tactical thinking got pretty good.

—Col John A. Warden III

Airmen's beliefs since Vietnam are explored in this chapter, and Watts's ideas are expanded. Col John A. Warden III stated that "at a strategic level, there is less difference between one country and another than, say, at a tactical level, and if you succeed in taking away the enemy's strategically important things, you can just plain prevent him from having the ability to do subsequent things, especially offensive things."¹ These ideas were the bedrock of Instant Thunder and reflect the influence of the industrial web theory from days afar. As has been shown, the belief that the enemy is vulnerable at the strategic level without directly attacking enemy forces in the field has been a common thread throughout Air Force thought. Warden stated, "there is a big group within the Air Force that say, 'well, you never win a war until there is a man with a bayonet on the enemy soil,' which is sheer and utter nonsense."² Winning the war with "inside-out warfare" or by destroying the enemy's capabilities to wage war were common in both Instant Thunder and AWPD-1/42.

The Air Force entered the Gulf War more prepared to apply aerospace forces than at any time in the past.³ However, as Gen Charles G. Boyd, deputy commander in chief, US European Command and former commander of Air University stated, there were two groups of airmen—each holding its own view at opposite ends of the airpower spectrum. The first, and less influential, group's beliefs were based on views of early air pioneers in their vision that airpower was best applied in a comprehensive, unitary way to achieve strategic results. The second, and much more dominant, group tended to think of airpower in its tactical application as a supportive element of a larger surface (land or maritime) campaign.⁴ The first group of thinkers was best illustrated by Colonel Warden in this statement: "by the time that we really started seriously talking about air power at an operational level and then beyond, it was almost like talking about a new subject. I mean, I know that there are lots of people around the Air Force at Air University and so on that were talking about this, but they were such small pockets that at any given group of 100 Air Force officers, if you stood up and said, 'Air power,' then, you were probably saying something new to 99 out of 100 of them."⁵ The other group consisted primarily of the "old

heads” from the Air Force’s Tactical Air Command (TAC). Thus evolved an internal Air Force conflict over the application of airpower in the Gulf.⁶

Instant Thunder was the product of a group of planners that worked in a Pentagon office known as Checkmate. The plan was primarily Warden’s idea, but he is reluctant to take too much of the credit. “It was not Checkmate that was the primary player, it was really XOXW (Warfighting Concepts Development). There were as many people from outside of Checkmate as there were within Checkmate.”⁷ Warden wanted to use Checkmate as “the division that would allow me to look at operational level concepts. I wanted to identify some examples of centers of gravity, then I wanted to develop the plan to attack those things. I was thinking about that division as being kind of the connection between the almost ethereal world of long-range plans and strategy and so on and the operating world. There had to be some bridge in there.”⁸

Instant Thunder was intended to be the antithesis of Rolling Thunder, the graduated, escalatory air war over North Vietnam. “That meant it was not Vietnam. That meant we were going to do it right this time.”⁹ The perceived failure of airpower in Vietnam had long been an “albatross around the Air Force’s neck.”¹⁰ Warden stated that “it [Vietnam] had evolved into something that had no strategic overlay whatsoever to it, and it was just—again, my own thought on it was that I was going to do everything I could to avoid ever getting involved in that kind of thing, and we were going to win if we did it again.”¹¹

Warden based the initial Instant Thunder plan on concepts first laid out in his book, *The Air Campaign: Planning for Combat*, published in 1988. The air campaign developed during the five months of Desert Shield and continued to evolve throughout the war. Each key leader recognized the advantage airpower gave the United States, but each had his own view of how to employ airpower. Gen Charles A. “Chuck” Horner, CENTAF commander and joint force air component commander for forces assembled in the Gulf, initially had to stay in Saudi Arabia, so the joint chiefs needed to look at the strategic targeting plan. This led to Warden’s opportunity to get involved.¹² Warden thought the Air Force needed “to think more and more about strategic warfare as being *the* form of warfare.” He continued that the “Instant Thunder build-up was clearly identified as a strategic campaign on the order of what was attempted in World War II with Germany and Japan.”¹³ Without the air campaign, “the war would have ended inconclusively. We would have gotten Kuwait back, but Iraq would not have been hurt strategically. There was a high probability of that.”¹⁴ Warden’s thinking is very similar to AWPD-1/42 planners in that the strategic level of war and the desired effects of the bombing campaign were paramount, not just the target sets. This stood in marked contrast to those thinkers more concerned with air support of ground forces.¹⁵

Colonel Warden’s interpretation of history and his personal experiences led to his theories that resulted in Instant Thunder. He made clear in interviews conducted for the *Gulf War Air Power Survey (GWAPS)* that the

World War II *US Strategic Bombing Survey*, as well as the thinking of General Hansell, had heavily influenced his writing of *The Air Campaign* and in his thinking of how the air campaign against Iraq should be designed.¹⁶ During Warden's days at the Air Force Academy, he felt there was "a tendency then, and there still is, to downplay the significance of strategic bombing against Germany and Japan."¹⁷ These influences, along with his experiences in Vietnam and support from many high-ranking Air Force generals, were instrumental in making Instant Thunder a strategic air campaign that would rival Eighth Air Force's exploits in World War II.

Gen Michael J. "Mike" Dugan, Air Force chief of staff, and Gen John M. "Mike" Loh were very enthusiastic and very aggressive in promoting Instant Thunder. Warden says Gen Colin L. Powell, chairman of the JCS, reacted to the plan from a "standpoint, this air thing is, 'Hey, who cares what the air—let the Air Force play with this. This is not real anyway.' " Warden thought Powell was intending to fight the air campaign for Army parochial reasons because he did not want a war to be won by airpower alone. Powell reacted to the initial briefing by asking "OK, day 6. What now? I want smoking tanks as kilometer fence posts all the way to Baghdad. I can't recommend only the strategic air campaign to the President." As a result, Warden included Iraqi fielded forces in the Instant Thunder plan. Additionally, Powell directed Warden to make Instant Thunder a joint plan.¹⁸

To Horner, strategic meant nuclear, and there was no difference anymore between strategic and tactical. "Anyone who uses the word *strategic* doesn't know what they're talking about. Let's not use the terms *strategic* or *tactical*. Targets are targets."¹⁹ Warden describes a person with this mind-set as "a fellow that is a technician . . . he doesn't understand what the targets are or why they're there and that they shouldn't even be called targets."²⁰

Warden believed in mass and taking the offensive. "It was operational art to maneuver the Air Forces in order to strike the strategic targets."²¹ Warden believed that the capability to move beyond blitzkrieg to "hyperwar" existed, and terms such as *strategic paralysis* and *parallel attack* describe the intent of Instant Thunder. On the surface, these terms appear to describe the concept of large bomber formations, attacking in mass and with relative precision, to defeat the enemy from within. Warden's notion of "inside-out warfare" is similar to the "industrial web" concept that originated in the 1930s at ACTS.²² Warden, so confident in his plan, said, "I do not believe he [President Bush] would have gone to war had he not had the air campaign."²³

Warden's crusade to get Instant Thunder approved was not unlike Hal George's quest for approval of AWPD-1. Warden said, "We were going to bring the Air Force back into prominence. To bring it back into prominence we have got to develop the concepts that will work in the real world, and we want to win wars for the country, so it was very clear where we needed to go."²⁴ Colonel George was thinking in terms of an independent Air Force, whereas Warden was seeking Air Force dominance. The thinking about

the dominance and efficacy of airpower that was so prominent in the 1930s and 1940s evolved over the years and was alive and well in 1990.

A common thread between Instant Thunder and AWPD-1/42 was the overarching belief that airpower could win the war alone and should not be diverted to attack enemy forces in the field.²⁵ Warden stated that “the strategic campaign was sufficient and that there was no necessity to attack the Iraqi forces in Kuwait because pretty soon they would have to go home, and that, in fact, you *wanted* them to go home because if they went home under the right conditions, they would be the people that would rebuild Iraq.”²⁶ General Spaatz’s fight to avoid diverting strategic bombers from attacking the German fuel industry to battlefield preparation for the Normandy invasion is clearly analogous to Warden’s thinking. As airmen sought to understand how best to wage war in a unique medium, that process included developing and refining theories of air warfare.²⁷ Indeed, like many before, Warden took ideas from the past and modified and rearticulated them into a concept that fits contemporary technology and threat arenas.

The Checkmate Plan

We had a pretty strong feeling that in many cases, airpower—from all the services—would not be a support organization, but in fact would be the medium that would be the decisive thing in warfare.

—Col John A. Warden III

Checkmate proposed Instant Thunder as a strategic air campaign to Gen H. Norman Schwarzkopf, commander in chief, US Central Command.²⁸ Warden was very optimistic about the length of the anticipated air campaign, which he thought might win the war without component participation other than the Air Force. Warden stated, “At the end of 6 to 9 days, we assumed that there was a high probability that there would have been a coup of some sort and that Saddam Hussein would have been overthrown,” or that if he was not, he would be suing for peace. We expected the Iraqis to lose offensive capability in Kuwait, and that “it would be an emasculated country that would be in an impossible position for an extended period of time.”²⁹ Warden also promised that “we can be ready to execute within a certain number of time, 7 or 8 days, if we change the flow.”³⁰ He also stated, “He will not have any offensive power nor will he have any strategic defense. He will not be able to march outside of his own country. He will not have a nuclear program. He will not have a biological program. He may still be in power, but he isn’t any threat to anyone outside his own country.”³¹ Additionally, logistically it was supportable by the end of August.³² These grand promises were similar to those made by AWPD planners and airmen within the JCS promoting the JCS’s 94-target scheme in Vietnam about numbers of sorties and targets required for victory. For

example, Hansell wanted a “building up” period followed by an undisturbed period of aerial bombardment (table 5).

As a result of Checkmate’s brainstorming sessions, planners thought Instant Thunder would become a viable air campaign against Iraq.³³ “The general concept was, ‘Okay, we have got to do air superiority, the mass, the concentration; take out the air defenses, all of those other kinds of things.’ ”³⁴ The method was to “accomplish as many objectives as possible with combined air operations in order to avoid to [the] maximum extent, heavy casualties that might be associated with [an] allied ground assault on [the] Iraqi Army.”³⁵ The Strategic Concept of Operations was to “conduct powerful and focused attacks on strategic centers of gravity in Iraq

Table 5
Instant Thunder Phasing and Expected Results

Phase One: Strategic Operations
Focus on Iraq; few attacks against Kuwait.
Destroy air offensive and defensive capabilities.
Destroy national-level internal and external communications.
Disrupt internal security-control mechanisms.
Seriously damage nuclear, biological, and chemical research, production, and storage.
Impede movement of military and civilian goods and services.
Phase Two: Suppression of Enemy Air Defenses over Kuwait City
Phase Three: Air Attacks on Ground Forces in Kuwait and Vicinity
Part One
Destroy command and control.
Destroy supply system.
Destroy armor and artillery.
Kill personnel.
Destroy Republican Guards in southern Iraq as effective fighting force.
Eliminate significant source of support for Hussein and his regime.
Demoralize forces in Kuwait for probable surrender.
Part Two (If part one does not achieve political objectives or is not executed)
Attack Iraqi forces in Kuwait.
Allow Iraqi forces in Kuwait three options:
<ul style="list-style-type: none"> • retreat to north (allies can permit retreat or hinder), • surrender in place, or • suffer near-complete destruction.
Facilitate low-casualty reoccupation of Kuwait by Kuwaitis and Arabs.
Phase Four: Ground Occupation of Kuwait by Allies

Source: Adapted from *Strategic Air Campaign Instant Thunder Briefing*, vol. 1 of 11, Air University, Maxwell AFB, Ala., 13 April 1991.

over a short period of time (days not weeks).³⁶ The intent of Instant Thunder was to conduct powerful and focused air attacks on enemy strategic centers of gravity. There would be around-the-clock operations against leadership targets, strategic air defenses, and electrical targets with the aim of achieving strategic paralysis and air superiority.³⁷

Instant Thunder was not accepted by all airmen, and criticism came mostly from officers in TAC.³⁸ Gen Buster C. Glosson, head of the Black Hole in Riyadh under General Horner, called it “lacking and shallow; it needs more F-117, F-111, PGMs, and more munitions changes.”³⁹ Glosson, nevertheless, showed much interest in the Checkmate Plan. Weaknesses he saw were that it had too little emphasis on counterair, excessive expectations, and not enough recognition of the staying power of Third World nations. He stated, “We need an air campaign for fifteen rounds, not three; six days is dumb.”⁴⁰ Warden’s initial impression of Glosson was that he “was another TAC general, and he probably didn’t know anything about airpower.” Warden felt “there was an undercurrent in Washington that airpower zealots were once again going to try to take this over.”⁴¹ Warden stated clearly that “our initial thinking on the thing was that we would be able to do it with all air forces, that we didn’t need Navy or Marines or anyone else, that we would be able to do it with Air Force forces.” Warden also stated he thought there was a “high probability that the war could be concluded just with the strategic operations.”⁴²

Gen Robert D. Russ, then-commander of TAC, criticized Instant Thunder saying, “Just to sit down and develop a strategy without any sort of guidance is very difficult at best.”⁴³ In 1988 General Russ asserted, “tactical aviators have two primary jobs: to provide air defense for the North American continent and support the Army in achieving its battlefield objectives.”⁴⁴ TAC skeptics of Instant Thunder felt it was “too violent” and not in the best interest of the Air Force, that it lacked a “tactical” perspective, as they defined it, and that it was a new twist on the old Douhetian theories of indiscriminate bombing. They were worried about coordination with the Army.⁴⁵ Russ said, however, that “I didn’t have any major problem with it. In my mind, they were not developing a definitive war plan. They were developing a concept.”⁴⁶ Warden asserts Gen Larry D. Welch, General Horner, and General Russ “were concerned that it was an over committal of Air Force capability just like had been done in the past and that something needed to be done to ensure that we didn’t fall into that trap.”⁴⁷

General Russ had his own ideas and proposed a plan featuring “demonstrative attacks” and “escalating offensive operations.”⁴⁸ The TAC plan’s overall objective was to “demonstrate to Saddam Hussein that we had the ability with airpower to operate anywhere in his country, at any time and destroy whatever we wanted.”⁴⁹

Horner also was very negative about the plan.⁵⁰ He was thinking more in terms of tactical employment instead of strategic effects sought by Warden. Horner was responsible for defending Saudi Arabia. The threat of 27 Iraqi divisions in Kuwait was on his mind, so his staff worked on a D-day

game plan that was defensive in nature.⁵¹ The concept was a hard initial thrust against Iraqi ground forces, and airpower would concentrate on attacking Iraqi resupply lines in order to slow the Iraqi advance into Saudi Arabia and cut sustainment. Air operations would be combined with a ground war of maneuver.⁵² The basis of Horner's irritation with Instant Thunder was that it implied the air campaign could liberate Kuwait alone. "If your army is getting overrun, who gives a [expletive deleted] what you take out deep . . . it developed the idea that air power was going to smash Iraq, and they were all going to give up and go home. Well, that is pure bull. I mean, anybody could see that." When Horner first heard the proposed Instant Thunder concept briefing he said to "take the political stuff out because it's not the business of the Air Force." Warden replied, "you can't separate them [politics and military action] at a strategic level."⁵³ Horner wondered, "why were those guys up in the air staff putting some sort of a plan together, one? And, two, such a cockamamie plan, strategic and all this other nonsense kind of stuff in it."⁵⁴

Warden anticipated friction from Horner about the plan because "Horner had a reputation for being sort of a nasty kind of fellow, and because . . . here his boss [Schwarzkopf] has turned to somebody else to create a plan and is sending him over [to Riyadh] with it."⁵⁵ Warden thought Horner seriously overestimated Iraqi capabilities and underestimated those of airpower. "In general, he wasn't thinking at the strategic level."⁵⁶ Horner would later change the name of Instant Thunder to "Offensive Campaign Phase I."⁵⁷ Warden's concepts, however, remained mostly unchanged and integral to the execution of the Gulf War air campaign.

Precision Bombing

The amount of precision bombing accomplished in the Gulf War is the culmination of many years of hypothesizing, theorizing, and experimenting by the Air Force since the concept became the cornerstone of Air Force strategic bombing doctrine. The precision bombing envisioned by the ACTS faculty and AWPD-1/42 planners, unlike today's capabilities, was not technologically possible during their time. Nevertheless, during the Gulf War, a combination of stealth technology, which enhances the chances of penetrating enemy defenses, and remarkably accurate PGMs seems to have fulfilled the Air Force's doctrine of precision bombing.

The primary time to use PGMs is when a miss would cause collateral damage and unacceptable side effects.⁵⁸ General Russ stated, "People have said before, 'We don't need precision munitions. We can build that into the airplanes.' The answer to that is, 'Wrong.' We do need precision. You can send only one aircraft with precision. We need a precision capability that can be used 24 hours a day in adverse weather situations."⁵⁹ In the 1930s and 1940s, precision was to come from the aircraft itself via the bombsight, and there was general underdevelopment in the weapons themselves. General Russ rightly stated that munitions are also critical to

achieving precision bombing. Nonetheless, the general continuity of thought on precision bombing is evident although methods have changed due primarily to technological advances.

In World War II, the B-17 had a circular error probable (CEP) of 3,300 feet, and bomber fleets required 9,070 bombs to achieve the desired level of destruction of a single target. In Korea and Vietnam, the F-84 and F-105 had a CEP of 400 feet, with 176 bombs dropped for the same desired effect as in the B-17 during World War II. In Desert Storm, the F-117 could achieve a direct hit with one bomb, achieving what the B-17 did with 9,070 bombs dropped.⁶⁰ Warden and other airpower advocates argue that today's advanced technologies—stealth and PGMs, in particular—have altered the whole notion of mass and concentration. Theoretically, a single aircraft can now achieve with a single bomb what took hundreds of bombers and their crews to do one-half century ago. The two primary obstacles to fulfilling ACTS's vision, getting to the target and hitting it, appear to be a thing of the past. That is, until our opponents find ways to counter these new weapons.

An excellent example of precision in the Gulf War was the campaign to destroy the Iraqi air force on the ground in its hardened shelters. This Douhet-like approach to achieving air supremacy was entirely effective, thanks to technology and resultant coalition air superiority that allowed the bombing to continue. Warden stated, "there was a lot of intense emphasis on destroying the Iraqi air force on the ground by bombing the airplanes through the shelters, using the -111s [F-111s] and the -117s [F-117s]."⁶¹

The Instant Thunder strategic bombing campaign provided the concept that supposedly would cause Iraq to be defeated from within. Richard P. Hallion wrote that "pictures of bombs threading their way down ventilator shafts, elevator shafts, and bunker doors demonstrates more eloquently than any amount of written analysis how effectively and devastatingly air warfare could strike."⁶²

Strategic Attack

Warden predicted that 20 aircraft would be lost during the six- to nine-day campaign.⁶³ The strategic air campaign (1) struck 45 key targets in Baghdad to take out command and control (C²); (2) shut down the Baghdad electrical grid, which was vital to war production; (3) targeted fuel and lubricants, and refined oil production was cut to zero by day 10; (4) interdicted most of the Iraqi transportation to and from Kuwait; and (5) destroyed the Iraqi air force.⁶⁴ Precision capabilities limited both collateral damage and Iraqi civilian casualties. The F-117 made up 2.5 percent of the force available and attacked 31 percent of the targets on day one.⁶⁵ This capability has, perhaps temporarily, given the Air Force the penetration capability that the USAAF envisioned in the 1930s and 1940s when the B-17 was considered the answer to strategic bombardment.

Warden's critique of his fellow air brethren is quite harsh. He stated that "a significant number of officers in the Air Force *plain did not understand how to use airpower.*"⁶⁶ Warden commented that officers in the Air Force were repeating the notion "that had become the conventional wisdom: The strategic bombing campaign didn't defeat Germany and Japan . . . the anti-airpower things had become the prevailing wisdom in the Air Force, so anytime that you presented anything outside of that, you immediately were suspect."⁶⁷ These comments, as critical as they are, cut directly to the heart of the argument concerning airpower's ability to win wars by itself. In reality, airpower alone did not defeat any of the powers in World War II, nor did it in the Gulf War.

Targeting

Beyond the phases and the strategic objectives, the air campaign needed target sets that aimed at getting "max synergism and interrelated danger from air strikes."⁶⁸ Warden and his staff identified five strategic target categories and initially nine target sets. Warden's group looked at a strategic set of targets that included leadership capabilities and industrial targets. These were based on Warden's five rings, inside-out targeting theory (table 6).⁶⁹

The true "target" really was Saddam Hussein and his regime; to isolate and incapacitate it. The intent was "to inflict strategic paralysis on his regime so it wasn't even able to perform the normal functions of government."⁷⁰ The evolution of the targeting scheme was apparent over time, especially when the original 84 targets grew to 218 in October, 237 in December, and 481 by 15 January.⁷¹ Those targets were, by then, under the direction of Horner and Glosson in Riyadh, but Warden was still using "back channels" to make inputs to the targeting process.⁷² Warden continued to communicate with his contacts in Riyadh, particularly Col David A. Deptula, regarding target planning.

Table 6
Instant Thunder Target Sets

TARGET SYSTEM	TARGETS
Military/Civil Leadership	C ³ and internal control organs
Key Production	Electrical power, refined oil production. Nuclear/biological/chemical research and development/production
Infrastructure	Transportation nodes, railroads, bridges
Population	Population with "War with regime not people" message
Fielded Military Forces	Air defenses, air force, army forces, and naval forces

Concerning target selection, General Russ stated that “then you have people in the White House sitting on the floor trying to figure out what targets they are going to try to hit. *This is just the wrong way to fight a war!*”⁷³ Russ wanted to make sure that “we didn’t have someone picking targets in Washington, like they did in Vietnam, and the poor guy out in the field saying, ‘that is the dumbest thing I have ever seen.’”⁷⁴ After the Al Firdos bunker incident, in which many Iraqi civilians were killed, General Powell insisted the Joint Staff review future strategic targets.⁷⁵ This was not unlike the situation during Rolling Thunder in the 1960s.

The “focal point” of operations was to be the Iraqi centers of gravity as the planners perceived them. Targets included the national command authorities; command, control, and communications (C³); strategic air defense; airfields; Iraqi nuclear, biological, and chemical (NBC) research and production facilities; naval forces and port facilities; military storage and production facilities; railroads and bridges; electric facilities; oil refineries and distribution facilities;⁷⁶ and, later, the Republican Guard forces.⁷⁷ “Saddam Hussein’s Iraq was an ideal target for an air force ‘sporting stealth and PGMs’ with enormous penetrating power and backed by an array of satellites.”⁷⁸

On the economic side of the targeting process, electricity and oil were targeted as they were in World War II. *GWAPS*, however, makes light of the fact that there was a certain irony because the *Strategic Bombing Survey* singled out electricity as a target for long-term impact on industrial production. In Iraq, however, they were looking for immediate effects, and there was little military industrial production in Iraq.⁷⁹ Warden’s systems approach provided new insights different from AWPD theories concerning targeting oil and electricity. Warden wanted to paralyze the enemy’s system, whereas AWPD planners wanted to directly impact the enemy’s war-fighting capabilities. The intent of the plans, however, was basically the same—put pressure on the enemy’s war-making capabilities with airpower.

Fear of the diversion of air assets to target fielded forces was evident during Instant Thunder planning. General Schwarzkopf wanted to bomb the Republican Guard early on, but Horner and Glosson held the line on the first night of the air campaign. There would be no diversion of airpower to bombing ground forces at night.⁸⁰ Warden said that “Integral to the strategic campaign, the destruction of the strategic air defense system and the strategic offense system, there had been some discussion about the Republican Guard and the decision that I had reached was that, although conceptually it might be important to Saddam Hussein, there was no way that you could legitimately target it from the air.”⁸¹ “We had solved now one of the serious problems from World War II; that we had agreement from the two principals, from Powell and from Schwarzkopf, that we were not going to divert the strategic campaign, even if there was an Iraqi ground attack.”⁸²

Warden had told General Powell, “now, General, one of the things we really need to be careful about is that if there’s some action on the ground,

you can't re-role the strategic air campaign. You've got to press with the strategic air campaign. We made that mistake in World War II and we don't want to do that again."⁸³ A major difference in diverting strategic airpower in World War II and Desert Storm was that in Europe, B-17s and B-24s were diverted to support fielded forces. In Desert Storm, however, the Air Force had sufficient firepower, such as in the A-10, to strike Iraqi troop columns or other targets.

One diversion of airpower that did occur in the Gulf was the Scud hunt.⁸⁴ This is remarkably similar to the diversion of strategic bombers in World War II to attempt to destroy Hitler's V-1 and V-2 platforms. These types of diversions were politically necessary due to the strategic impact the missiles had on the wars. The destructive capability was small with both the missiles of World War II and the Iraqi army, but the psychological and international impact of both cases was tremendous. Warden said that "although we were intensely aware that finding the [Scud] launchers was going to be very, very difficult, we knew that; so we knew it was going to be tough to find the things that we hadn't anticipated or that it was going to be as labor intensive as it became." Warden continued that Scud hunting was "a tactical employment; tactical use of the airplanes and not a very efficient use of them because they are going out hunting, and you don't know whether they are going to find anything or not."⁸⁵ Warden's statement ignores political realities, such as the need to calm Israel after it was hit by Scuds, the nature of the conflict, and the nature of the enemy. Also, the coalition partner—Saudi Arabia—was being hit by Scuds. If you want coalition partners to trust you, you have to deal with their morale concerns. Airpower is a versatile method of attacking the enemy, and Warden seems focused strictly on the "system" approach to fighting the air war.

Another enduring concept airmen have embraced over the years is C² of airpower. Centralized control and decentralized execution were accomplished in the Gulf and seems, to many, to have vindicated the concept. There was, however, a debate concerning giving airpower control to corps commanders. Warden stated, "the corps commanders start influencing more and more the way the air is used in Kuwait, and it's used wrong because these guys have a very, very narrow focus."⁸⁶ Allied airpower in North Africa in the 1940s provides a useful precedent concerning centralized control of air forces and is one of the first attempts at using the concept, though certainly not the title, of a JFACC. This debate about control of airpower has raged over the years and continues today. Nevertheless, the idea of airpower controlled by airmen in a centralized fashion is consistent since the early years of airpower.⁸⁷

GWAPS identified several perceived weaknesses of the initial Instant Thunder plan. Criticisms included that it was overly optimistic; it underestimated the number of targets an air campaign would have to attack; the estimate of time for such a campaign failed to account for the frictions of war; and finally, planners paid little attention to the ground threat.⁸⁸

Overly optimistic claims from air planners is nothing new. The same criticisms were levied against the AWPD-1/42 plans.

Conclusion

To validate the Air Force doctrine that was at the heart of creating an independent Air Force the true doctrine of the independent campaign of strategic bombardment, or precision strategic bombardment, then that was absolutely validated. That, to me, is where real Air Force doctrine was, although it had become so subsumed that it was virtually lost from the organism.

—Col John A. Warden III

According to the Air Staff, some of the lessons [re]learned from the Gulf War included the importance of air superiority, the global reach of air operations, the flexibility in airpower execution, the contribution of stealth technology, and the destructive power of PGMs.⁸⁹ Colonel Deptula, Warden confidant and Black Hole planner, also was very upbeat about the war's outcome. Deptula proclaimed "this campaign began with airpower, was prosecuted by airpower, and has succeeded because of airpower."⁹⁰ Warden added that "the Gulf War proved to airpower advocates that airpower was the dominant force in the world and was going to be so for a long time; not forever, but for a long time; that you could win wars with airpower; that strategic attack was the essence of warfare; and a whole lot of good, but lesser things."⁹¹

Most importantly, airpower advocates—other than Warden and Deptula, "true believers"—felt that Desert Storm validated the concepts from early thinkers like Billy Mitchell and Hansell. They believed further that the strategic attack theory had been validated and paralysis of the enemy can be imposed from the air.⁹² Col Phillip S. Meilinger, dean of the USAF School of Advanced Airpower Studies, wrote that Desert Storm clearly demonstrated how airpower has affected the traditional meaning of military objectives. The air campaign thoroughly disrupted the Iraqi C³ network, as well as the transportation infrastructure—two strategic centers of gravity.⁹³ The continuity of thinking concerning vital targets and strategic attack through precision bombardment from early air pioneers to today's advocates is born out by Instant Thunder. Meilinger further suggested that Desert Storm ushered in a new era in warfare. "We need to foster in all our personnel a sense of air-mindedness," he wrote.⁹⁴ Meilinger summarized the thoughts of strategic airpower thinkers as follows: "The Iraqi dilemma teaches us the goal of the air commander is to always operate at the strategic level of war, focusing on strategic objectives but at the same time forcing the enemy to fight at the tactical level."⁹⁵

Col Richard T. Reynolds wrote in his book, *Heart of the Storm*, that "airmen, long uneasy about the lingering inconclusiveness of past applications of their form of military power, now had what they believed to be an example of air power decisiveness so indisputably successful as to close

the case forever.”⁹⁶ However, some senior air commanders—especially Horner and Glosson—refused to claim too much for airpower because they thought it was better to let the air campaign speak for itself rather than publicly declare airpower’s decisiveness.⁹⁷ Certainly the consistency of thought is there when comparing AWPD-1/42 to Instant Thunder. Precision bombing, strategic attack, air superiority, and targeting are enduring concepts.⁹⁸

Despite postwar criticisms, the key to the success of airpower in the Gulf was the foresight evident in planning the air campaign.⁹⁹ The Instant Thunder plan relied on the faith that airpower could win the war without the need for a ground invasion.¹⁰⁰ Those thoughts were strikingly similar to what AWPD-1 planners sought in 1939 and 1940.¹⁰¹ There does not, however, appear to be any major “revolution” from the Gulf War concerning airpower. Stealth combined with PGMs, seen by many as revolutionary, are simply technological applications that make the conduct of strategic air attack different than in the 1940s. However, it appears Instant Thunder was just a rearticulation of the ACTS concepts modified to current threats and technological capabilities.

Notes

1. Col John A. Warden III, Instant Thunder author, transcript of oral history interview K239.0472-114, 9, by Lt Col Suzanne Gehri, 22 October 1991, 58, Air Force Historical Research Agency (AFHRA), Maxwell AFB, Ala. (hereafter cited as Warden interview no. 2).

2. Col John A. Warden III, Instant Thunder author, transcript of oral history interview K239.0472-115, 48, by Lt Col Suzanne Gehri, 10 December 1991, AFHRA, Maxwell AFB, Ala. (hereafter cited as Warden interview no. 3).

3. John R. Glock, “The Evolution of Air Force Targeting,” *Airpower Journal* 8, no. 3 (fall 1994): 24.

4. Col Richard T. Reynolds, *Heart of the Storm: The Genesis of the Air Campaign against Iraq* (Maxwell AFB, Ala.: Air University Press, January 1995), xi and 48. Colonel Boyd thought a lot of folks, including a sizable contingent of Air Force people, were suspicious of any view that made airpower anything more than an adjunct to ground operations. In his view, this permanent subordination of airpower to ground attack was crippling and dysfunctional.

5. Col John A. Warden III, Instant Thunder author, transcript of oral history interview K239.0472-113, 18, by Lt Col Suzanne Gehri, Lt Col Edward C. Mann, and Lt Col Richard T. Reynolds, 30 May 1991, AFHRA, Maxwell AFB, Ala. (hereafter cited as Warden interview no. 1). There is a fundamental tension between the competing demands of a strategic air offensive under the JFACC direction and eventual tactical air operations focused on support of ground forces. Fundamental doctrine issues were not resolved. James A. Winnefeld and Dana J. Johnson, “Unity of Control: Joint Air Operations in the Gulf,” *Joint Force Quarterly*, no. 1 (summer 1993): 96. General Loh said “it is a highly integrated plan like the Bekaa Valley but more *massive* than Linebacker.” Lt Gen Tom Kelly, USA, had an alternative viewpoint: “Air power never worked in the past by itself. . . . This isn’t going to work. Air power can’t be decisive,” Reynolds, 52, 71, and 73. Lt Gen Lee Butler called it, “Excellent, excellent! This is the exact opposite of what we did in Vietnam! This is what we want!”

6. Reynolds, 49.

7. Warden interview no. 1, 87.

8. Warden interview no. 2, 18.
9. Col James P. Coyne, USAF, retired, "Plan of Attack," *Air Force Magazine* 75, no. 4 (April 1992): 41.
10. Warden continued, "This is not your Rolling Thunder. This is real war, and one of the things we want to emphasize right from the beginning is that *this is not Vietnam*. This is doing it right. This is using air power." Warden interview no. 2, 52–53. September 1990—Gen Michael J. "Mike" Dugan, Air Force chief of staff, made it clear the mistakes of Vietnam would not be repeated. Lt Gen Jimmie Adams said the lessons from Vietnam were that gradualism does not work. "While everyone wants to hold up Vietnam as the example showing that airpower can't do it all, the lesson that we learned out of the war was that airpower can't do it all if it isn't applied correctly." John D. Morrocco, "From Vietnam to Desert Storm," *Air Force Magazine* 75, no. 1 (January 1992): 70–71.
11. Warden interview no. 1, 8.
12. Diane T. Putney, "From Instant Thunder to Desert Storm: Developing the Gulf War Air Campaign's Phases," *Air Power History* 41, no. 3 (fall 1994): 40.
13. Warden interview no. 1, 70 and 75.
14. Warden interview no. 2, 30.
15. *Ibid.*, 78. There was a general feeling, and I have heard Welch [Gen Larry D.] say basically that we are fire support.
16. *Gulf War Air Power Survey (GWAPS)*, vol. 2, *Operations and Effects and Effectiveness* (Washington, D.C.: Government Printing Office, 1993), 21–22.
17. Warden interview no. 1, 2 and 6.
18. Lt Gen Jimmie Adams, Warden's direct boss via Maj Gen Robert M. "Minter" Alexander, was not very enthusiastic. Warden interview no. 3, 2. "Loh and [Secretary] Rice both were—they were four-square air power men without any question, and Rice was willing to go out on a limb to talk to people." Warden interview no. 1, 100–103. Powell is portrayed as being less receptive, but said it is a good plan—fine piece of work. Now had 10 target sets—84 targets. Putney, 42.
19. Gen Charles A. "Chuck" Horner, USAF, retired, voiced these views in a roundtable discussion with SAAS Class 5 on 21 November 1995; and see also Reynolds, 92.
20. Warden interview no. 1, 75. Warden was aware of the fact that the air campaign did not follow the Army's air/land battle doctrine. Coyne, 42. General Schwarzkopf to General Loh, "We can't go out in piecemeal with an air/land battle plan. I have got to hit him at his heart." Reynolds, 24.
21. Warden interview no. 1, 49–54, 64, and 80.
22. In fighting for Air Force control of the strategic mission, Warden sounded like Spaatz and Eaker when he stated that an argument today is "whether, in fact, the theater commander ought to have responsibility for strategic attack or whether that ought to be basically withheld from Washington the way it was in World War II with the Eighth Air Force commander executing, but still being directed." Warden interview no. 1, 71.
23. Warden interview no. 3, 80. "Although we tend to think of military forces as being the most vital in war, in fact they are means to an end. That is, their only function is to protect their own inner rings or to threaten those of an enemy." Warden's Five Rings Theory. See Putney, 41. Prior to the ascendancy of airpower, one had to destroy fielded forces—with airpower, this was no longer the case. All aspects of a nation-state were equally vulnerable to attack and destruction by airpower from the very onset of hostilities. Reynolds, 17.
24. Warden interview no. 2, 28. "Military plans have little to do with military. I mean, that only 5 percent of it is getting the military convinced and selling them on that. The other 95 percent is getting the civilians to sign on to it." "You've got to identify the people that are going to have a say in whether the plan gets approved or not, and you can't just phone over and make an appointment with the president." Warden interview no. 1, 94–95. Warden was influenced by Liddell Hart and very much so by MacArthur's approach to war. *Ibid.*, 13. Warden says his ideas for a concentration of effort and the idea of fighting for

political aims and the center of gravity and actually trying to surrender without killing came from J. F. C. Fuller's *The Generalship of Alexander the Great*. Warden interview no. 2, 3.

25. According to *GWAPS*, some within the Air Force, such as Warden, believed that airpower alone could defeat Saddam Hussein. What their arguments missed was the role the ground war would play in convincing the world—especially the Arab world—of complete defeat of Iraq's army. Secretary of Defense Dick Cheney fired Air Force Chief of Staff Gen Michael J. Dugan for talking to reporters about the possibility of defeating Iraq with an air campaign. *GWAPS*, 32 and 48.

26. Warden interview no. 3, 39.

27. Timothy G. Murphy, "Critique of the Air Campaign," *Airpower Journal* 8, no. 1 (spring 1994): 68. The United States has embraced deep attack, primarily based on airpower, as a central focus of our military strategy to defeat any future regional enemies. Thomas R. McCabe, "Limits of Deep Attack," *Airpower Journal* 7, no. 3 (fall 1993): 11.

28. General Schwarzkopf stated that "airpower gave the United States an 'overwhelming advantage' over Iraq." General Schwarzkopf saw Instant Thunder as a retaliatory plan and phase one of the Desert Storm offensive war plan. He therefore gave 100 percent approval of Instant Thunder. Putney, 40–44. Warden told Schwarzkopf, "Look, general, you have the opportunity now to carry off the most brilliant operation that any American general has executed since Douglas MacArthur went ashore at Inchon." Warden interview no. 2, 95–96.

29. Warden interview no. 2, 57; and see also Putney, 41.

30. Warden interview no. 2, 70. Phase one, titled Strategic Operations, was to last six days with 4,200 sorties flown. Briefing, AFHRA, subject: Strategic Air Campaign Instant Thunder, vol. 1 of 11, MISC-51, v.1 (hereafter cited as Instant Thunder briefing, vol. 1). Sanitized and declassified by the AFHRA for the author in accordance with (IAW) Department of Defense (DOD) security classification guidance for post-Operation Desert Storm information.

31. Warden interview no. 3, 10.

32. *Ibid.*, 30.

33. Coyne, 40.

34. Warden interview no. 3, 41 and 73. Warden surmised that, "Anybody with a grain of sense, as soon as they recognize that they are going to lose air superiority and there is nothing they can do to stop it, ought to surrender."

35. Briefing, AFHRA, subject: Strategic Air Campaign Instant Thunder, vol. 3 of 11, MISC-51, vol. 3 (hereafter cited as Instant Thunder briefing, vol. 3). Sanitized and declassified by the AFHRA for the author IAW DOD security classification guidance for post-Operation Desert Storm information.

36. *Ibid.*

37. *GWAPS*, 23. The psychological operations are as important as the bombing operations. Warden interview no. 3, 55.

38. Notes dated 29 November 1990; Quoted as Brig Gen Buster C. Glosson comments on Instant Thunder, AFHRA, TF5-1-41; and *GWAPS*, 28.

39. Warden did not like to work with TAC and stated, "It was not worthwhile talking to the TAC people because when you talked to them, if you suggested they do something, the general response was to tell you why it was too hard or why you shouldn't be doing it or why you shouldn't have the idea." Warden interview no. 3, 72. Warden also stated the TAC position was that "they agreed with the whole briefing, with everything after the last slide, and that they didn't think the air staff had any business whatsoever in being involved with this, in developing an air campaign, but if it was going to develop an air campaign, it ought to be one that was based on supporting the ground commander's scheme of offensive maneuver. He [Russ] let it be known that that was *the* senior TAC position on the whole thing." Warden interview no. 1, 110.

40. *GWAPS*, 28.

41. Warden interview no. 3, 8 and 31. The undercurrent was probably justified due to the nature of Warden's comments. Warden interview no. 2, 42 and 71.

42. The undercurrent was probably justified due to the nature of Warden's comments. Warden interview no. 2, 42 and 71. Warden stated that he thought there was a "high probability that the war could be concluded just with the strategic operations."

43. Gen Robert D. Russ, former commander USAF TAC, transcript of oral history interview by Lt Col Suzanne Gehri, Lt Col Edward C. Mann, and Lt Col Richard T. Reynolds, 9 December 1991, K239.0472-104, 8, AFHRA, Maxwell AFB, Ala. (hereafter cited as Russ interview). Russ said, "As far as I'm concerned, TAC is the best organized, the best trained, the best led it's ever been, and I don't see any need to make any changes." Warden quoting Russ in Warden interview no. 1, 109. Russ's biggest concern was Horner had no input and he would have to execute it. "I was somewhat unhappy with it initially but not necessarily because I thought they did a poor job. I was unhappy because I thought that the fellow who ought to have the biggest input into the plan was Chuck Horner." Russ interview, 19. See also Reynolds, 40-41 and 102. Russ also had another grave concern—Instant Thunder went from peace to all-out war with no intervening steps.

44. Quoted in Stephen J. McNamara, *Air Power's Gordian Knot: Centralized versus Organic Control* (Maxwell AFB, Ala.: Air University Press, 1994), 146; and Russ interview, 23. Russ responded to criticisms by stating that "I had a gut feeling that there was a group of hair-on-fire majors in Washington that were going to win the war all by themselves. They were going to have the Air Force win the war."

45. Reynolds, 39-40; and Russ interview, 22. Russ also stated, "I tried to provide a selective way in which we could judiciously apply airpower and not simply apply overpowering force because you have public opinion and other things to worry about."

46. Russ interview, 18-22; and Reynolds, 125. Horner referred to it as a target list, not a full-blown plan.

47. Russ interview, 26-27.

48. Putney, 40; see also *GWAPS*, 25; and Russ interview, 10-12. General Russ stated, "One option we should look at is a demonstration of power." General Russ wanted to destroy the Iraqi nuclear reactor hit earlier by the Israelis to "destroy something that would trigger a favorable world reaction. First of all, it shows the tremendous capability that we have. It shows we have the ability to knock out anything we want, at any time we want. Secondly, the results of an attack like this would do what I believe world opinion wanted: to rid the nuclear weapons capability in Iraq."

49. "My idea was *not* to hit one target and then next time hit two targets and next time hit three targets. It was to demonstrate to not only Saddam Hussein but to the world what we can do. We have a *tremendous capability* in airpower, and Saddam Hussein needs to really pay attention to us." Russ interview, 13-14.

50. Russ described Horner as "a meat and potatoes guy. Horner is a warrior. He was *the premier tactical warrior*." Russ interview, 27-28.

51. Putney, 43-44.

52. Reynolds, 11.

53. Warden interview no. 3, 54 and 56. Warden felt Horner did not appear interested in employing airpower much beyond the battlefield support for the Army. But he would steadily move towards a larger conception of airpower beyond merely attacking Iraqi ground forces. *GWAPS*, 27.

54. Warden interview no. 1, 110.

55. *Ibid.*, 125.

56. Warden interview no. 3, 4.

57. Glosson was put in charge of a special planning group called the Black Hole to continue development of the strategic targeting plan. Putney, 44. Col David A. Deptula and Glosson eventually settled on a 31-day air campaign. Notes dated 29 November 1990. Quoted as Brig Gen Buster C. Glosson comments on Instant Thunder, AFHRA, TF5-1-41. The Black Hole conceptualized five basic objectives: isolate and incapacitate; air superiority;

weapons of mass destruction; eliminate offensive capability; and render army in KTO ineffective. Coyne, 45. In the end, the Black Hole made a considerable effort to move beyond self-imposed limitations and maximize the potential of aircraft and weapons technology. *GWAPS*, 52.

58. Briefing, 20 May 1991, AFHRA, TF5-1-41.

59. Russ interview, 60.

60. CEP is the radial distance from a point in which 50 percent of all bombs will land; the effect on quantity with 90 percent probability of hit with a 2,000-pound bomb. Instant Thunder briefing, vol. 3.

61. Warden interview no. 3, 96.

62. Richard P. Hallion, *Storm over Iraq* (Washington: Smithsonian Institution Press, 1992), 197. Hallion continued, "The effectiveness and precision of coalition air strikes convincingly demonstrated that such results were not fanciful but, rather, the objective reality of modern war." *Ibid.*, 200.

63. Warden interview no. 3, 35. One Navy view of the plan is that it is not all clear that airpower caused the massive surrenders of Iraqi troops. "While Checkmate planners were busy applying doctrine, a joint-led Navy organization called SPEAR did a heroic job of convincing Air Force leaders to change the initial air campaign tactics. We will never know what would have been the outcome of the Checkmate plan had it been carried out as initially drawn up, but it is clear the extremely low rate of coalition air losses is directly attributable to the so-far unacknowledged efforts of the small but influential SPEAR team." Book review, Robert C. Rubel, *A Dazzling Vision of Antiseptic Warfare*, a book review of *Storm over Iraq* by Richard P. Hallion in *Naval War College Review* 47, no. 1 (winter 1994): 107.

64. Hallion, 190-93.

65. Briefing, 20 May 1991, AFHRA, TF5-1-41.

66. Warden also stated, "the strategic war, if you do it right, is a very fast-paced war, and you have got to stay ahead of the enemy." Warden interview no. 3, 31 and 102.

67. Warden interview no. 3, 36.

68. *GWAPS*, 38.

69. Leadership, system essentials, infrastructure, population, and fielded forces. See Col John A. Warden III, "Enemy as a System," *Airpower Journal* 9, vol. 1 (spring 1995): 40-55. TAC called the Five Rings Theory an "academic bunch of crap." Quoted in Reynolds, 49.

70. Coyne, 41.

71. Ninety-three percent of Warden's 12 August 1990 air staff target list was eventually hit. Thirty percent of the original July Central Command joint targeting list was struck. The Ninth Air Force Tactical Intelligence Squadron produced the Iraqi target study in June 1990. Forty percent of the targets struck were not in the database. But 97 percent of those in the Iraqi study were hit. Glock, 24.

72. The Instant Thunder plan eventually included over 600 targets, half of which would be struck in a war lasting six weeks instead of six days. There turned out to be 22,000 air strikes to prepare the battlefield for the Army. Paul D. Wolfowitz and Ronald H. Cole, "Managing the Schwarzkopf Account, Atkinson as Crusader," book review of *Crusade* by Rick Atkinson in *Joint Force Quarterly*, no. 3 (winter 1993/1994): 124 and 126. Colonel Deptula, however, said, "We are not 'preparing the battlefield,' we are destroying it." Quoted in Hallion, 209.

73. Russ interview, 67.

74. *Ibid.*, 20-21. Interestingly, on p. 26 Russ describes Warden as "a long way from a war fighter!" This is according to the "rank and file" in the fighter community. Generals Glosston and Horner thought one of the most important factors in the success of the war was the absence of top-level interference in the planning and day-to-day execution of the air campaign. Morrocco, 73.

75. Wolfowitz and Cole, 126.

76. *GWAPS*, 38-39.

77. Briefing, 20 May 1991.

78. Lt Col Mark Clodfelter and Lt Col John M. Fawcett Jr., "The RMA (Revolution in Military Affairs) and Air Force Roles, Missions, and Doctrine," *Parameters* 25, no. 2 (summer 1995): 26.

79. *GWAPS*, 24.

80. *Ibid.*, 44.

81. Warden interview no. 2, 56.

82. *Ibid.*, 72.

83. Warden interview no. 1, 99. Ground commanders nominated targets in front of them, which threatened to reduce theater-wide impacts of carefully structured air campaign with target priorities on General Schwarzkopf's overall theater needs rather than the perceived tactical needs of any one subordinate ground commander. Hallion, 206-7. General Alexander said to make sure operations to achieve tactical level objectives don't compromise success of the strategic air campaign. Reynolds, 73.

84. Horner and Glosson added Scuds to phase one, so now there were 12 target sets (original 10 in Instant Thunder and two in-theater). There were no clear break points in the phases. Phase four tactical air support of the ground phase was planned by CENTAF staff at Riyadh. Putney, 45-46. CENTAF focused on tactical, not strategic. CENTAF was stuck in the weeds. Reynolds, 125.

85. Warden interview no. 3, 111-12.

86. *Ibid.*, 119. USAF staff officers on the JFACC staff maintained the overriding goal was to increase the number of quality weapons on Iraqi targets regardless of which service provided the strike aircraft. By 24 February and the start of the ground campaign, Iraqi ground forces had been fixed and pounded to the point of being largely neutralized. "Few ground commanders in history have been better served by their air brethren." Winnefeld and Johnson, 98. After 38 days of bombing, the allied ground offensive was able to roll over a disorganized and demoralized Iraqi army. Morrocco, 71. "Desert Storm vindicated the Air Force doctrine of unity of theater air coordination and control and, up to a point, its strategic concept of air operations separate from ground operations. We can rejoice in progress since Vietnam in achieving a high degree of jointness in the command and control of air operations, but it is too soon to say that we have done all or even most of what needs to be done." Winnefeld and Johnson, 93 and 99.

87. A key element was General Schwarzkopf creating a single air boss. For the first time, US air was under the same operational plan; a change from Vietnam where each service ran its own air war. Lt Gen Michael A. Nelson, later Ninth Air Force commander, said, "You need some king who has the coordinating and command and control authority to make things happen in a cohesive and coherent way." Morrocco, 72. The Air Force focused on utilization of all in-theater tactical air resources and remained adamant on the need for centralized allocation and tasking authority. Coordination control-interservice relationships in Korean War, "Mission Direction" in Vietnam. Winnefeld and Johnson, 92 and 96.

88. *GWAPS*, 25.

89. Briefing, 20 May 1991. Warden on early doctrine: The 1984 Air Force 1-1 was "so unspecific that there was no real solid thread, core, belief that was incorporated in it other than that air power was good." Warden interview no. 2, 60-61.

90. Reynolds, 69.

91. Warden interview no. 3, 124-25. There were claims that it was a revolution in warfare: Surprise, concentration, simultaneity from stealth, precision, and penetration. Instant Thunder briefing, vol. 3.

92. Instant Thunder briefing, vol. 3. The Gulf War "almost—but not quite—laid to rest a fifty-year-old controversy about military power." John T. Correll, "Airpower, One Year Later," *Air Force Magazine*, February 1992, 6. Victory through airpower—Douhet and Mitchell—was largely realized in the war with Iraq. After 40 years of unfilled promises, airpower achieved nearly all that its most vocal advocates had said it could do. Morrocco,

71-72. "In the end, the advantage air power gave the United States during the Gulf War and the liberation of Kuwait is overwhelming." Putney, 48.

93. Col Phillip S. Meilinger, "Towards a New Airpower Lexicon or Interdiction: An Idea Whose Time Has Finally Gone?" *Airpower Journal* 7, no. 2 (summer 1993): 42. Meilinger also wrote that Saddam knew there was no hope of challenging the coalition in the air but could not sit passively and watch his military dismembered by airpower. Khafji was the only major Iraqi ground assault of the war, and it was detected and then destroyed exclusively by airpower. *Ibid.*, 42 and 45.

94. *Ibid.*, 47.

95. *Ibid.*, 45. The JFACC fights the entire width, depth, and height of the theater. Lt Col Maris McCrabb, "Air Campaign Planning," *Airpower Journal* 7, no. 2 (summer 1993): 16.

96. Reynolds, 11.

97. *GWAPS*, 32.

98. Views on air superiority: (1) a rollback campaign, and (2) MAP envisioned attacking heart of enemy's integrated air defenses system with F-117s at the beginning of the war. *GWAPS*, 50.

99. Maj Mason Carpenter and Maj George T. McClain, "Air Command and Staff College Air Campaign Course: The Air Corps Tactical School Reborn?" *Airpower Journal* 7, no. 3 (fall 1993): 72-73. Horner used "level of effort" to illustrate progress—phases merged. Air war planning process was both complex and evolutionary. All recognized the great advantages airpower gave the United States—some questioned the necessity for phase four. Deptula stated, "The way I see it, our task is to ensure that no one is at home when the ground forces arrive to knock on the door." Secretary of the Air Force Donald B. Rice believed if phases one through three failed, we should do three over and over. Even President George Bush said, "Why not do phases one, two, three, then stop?" Powell and General Schwarzkopf convinced him of the necessity. Putney, 47-48.

100. Horner did not know if there would be a ground war. "But, you are foolish not to plan for it." Putney, 48. Dugan pushed for a pure air option. Gen Merrill McPeak also believed airpower could do the job. Morocco, 71.

101. "There is a place for air operations, separate from the land and naval operations in theater contingency planning. This is not to argue that air ops are all that will be needed in most cases. But an air-only operation is an option—either as a precursor or as a stand-alone element of theater strategy." Winnefeld and Johnson, 88.

Chapter 6

Conclusions and Implications

Desert Storm demonstrated the true strength of joint operations. Not the notion that each service must participate in equal parts in every operation in every war, but that we use the proper tools at the proper time.

—President George H. W. Bush

Is there a consistency of thought among American airmen revealed in the war plans for and the employment of American airpower in World War II and the Gulf War? Do they reveal a prevailing, consistent thought on airpower theory and the nature of warfare? The purpose of this study attempted to answer these questions and to determine whether the Air Force concept of war has changed significantly over the years. The intent was to determine whether there is a universal or prevalent view or a unifying theme of airpower among American airmen that is timeless in nature and independent of technology or political goals. The benefits derived from this study will hopefully be found useful to contemporary airmen and can be used in modern airpower thought and campaign planning.

The reasonable conclusion, given the evidence, is that there is a consistency of thought among American airmen revealed in the war plans for the employment of American airpower in World War II and the Gulf War. There are many contextual similarities between AWPD-1/42 and Instant Thunder. Both campaigns revolved around precision, strategic bombing; both were affected by diversions of airpower to attack ground forces and/or missile launchers; both required battlefield preparation for a ground invasion; both relied on the importance of air superiority; and both were planned initially when the air option was really the only one feasible at the outset.

One area where consistency is shown is in strategic bombing beliefs.¹ The strategic bombing “lobby” in the Air Force is still as powerful today as it was in the initial years.² AWPD-1/42 featured massive bombing raids intended to attack the enemy’s vital centers and cause a collapse of the enemy from within. Colonel Warden and his ideas in Instant Thunder were along the same lines, except he advocated using “parallel attack” rather than “serial attack” to inflict “strategic paralysis” to get synergistic effects from the bombing campaign.³ The idea was to hit the “centers of gravity” and, once again, cause the enemy to collapse from within.⁴ These concepts can be thought of as “inside-out warfare” and “hyperwar,” a tempo of warfare that Warden sees as a recent phenomenon.⁵

Another area of consistency is precision bombing and targeting.⁶ Both plans relied heavily on current levels of precision to achieve maximum

effects yet limit collateral damage. The target sets of both air campaigns featured targets suited for precision bombing. Technology in the 1990s, however, allows much greater precision than that available in the 1930s and 1940s.⁷ Hallion wrote, “Airpower produces the conditions conducive to both defeat and victory by destroying enemy parts of resistance, communication, leadership, morale, and means of supply, among others.”⁸ These conditions are most efficiently achieved through precision bombing.

Both, AWPD planners and Instant Thunder advocates, showed sensitivity to aircraft vulnerabilities to enemy air defenses. In World War II, planners utilized existing technology embodied in heavily armed B-17s flying in tight formations for maximum defensive firepower. When that proved inadequate, fighter escorts were used to reduce the terrible losses inflicted on Allied bombers by German defenses. In the Gulf, however, electronic countermeasures and stealth technology were used extensively to aid in penetration with resounding success.

Planners of both campaigns also expressed concerns about the diversion of air assets to support ground forces and away from the “main” strategic bombing campaign.⁹ Airmen in both periods resisted force-on-force targeting of armies.¹⁰ Colonel Meilinger summed up the prevalent Air Force position on the issue: “In essence, airpower should maximize its unique ability to affect an enemy’s strategic centers of gravity by striving to bypass the operational levels of war whenever possible and by ignoring the tactical level—except in those rare instances when friendly surface forces are in extremis.”¹¹ This argument boils down to C² issues. Airmen believe airpower should be controlled by airmen to exploit its special capabilities.¹² Consistent over the years has been the idea that centralized control and decentralized execution are the best ways to control airpower. It should be noted, however, that this feeling is not unanimous within the airpower community.

Integral also to control of airpower is political interference or control. Anthony Lake, national security advisor to President William J. “Bill” Clinton, said, “Policy, of course, does not succeed or fail in a vacuum. Public opinion and Congress rightly play central roles in how [the] US wields its power abroad.”¹³ Airmen over the years have winced at the thought of public officials interfering in an air campaign. But as some critics indicate, advocates of unlimited airpower forget Clausewitz’s dictum that war is ultimately an instrument of policy and must always be subordinate to it.¹⁴ Frederick the Great summed the idea up when he stated that “diplomacy without arms is music without instruments.”¹⁵ Taking the time and resources to hunt Scuds in the Gulf reflected this; airmen’s reaction to it was indicative of their failure, at times, to consider warfare in the broadest context.

Proper objectives are crucial in air war. This is another enduring concept common to both AWPD-1/42 and Instant Thunder. Colonel Meilinger wrote, “Airplanes have the unique ability to strike strategic objectives and operate at the strategic level of war—the only decisive arena of conflict.”¹⁶

As novelist Tom Clancy stated in his book, *Debt of Honor*, “if you can discern the objective, if you can figure out what they want, then you can deny it to them. That’s how you start to defeat an enemy.”¹⁷ The ideas of strategic effects and the objectives to achieve them are still the cornerstone of air campaign planning today. Col Maris McCrabb of the School of Advanced Airpower Studies wrote “the most important part of air campaign planning is determining the objectives. Period.”¹⁸

From World War II to Instant Thunder, airpower advocates believed that airpower was the dominant force in warfare, and ultimately it could win wars unilaterally. However, any attempt to extrapolate the nature of future conflict from Desert Shield and Desert Storm is fraught with danger.¹⁹ The views of airpower dominance and unassisted victory can be considered as somewhat parochial, extremist views. These views are naturally voiced loudest by the most avid, outspoken airpower propagandists. Hallion is an excellent example: “Today, air power is the dominant form of military power. Air power has clearly proven its ability not merely to be *decisive* in war . . . but to be the *determinant* of victory in war.”²⁰ However, Gen Merrill “Tony” McPeak, former Air Force chief of staff, offers the view that loaded terms such as *decisive*, *predominant force*, and *independent operations* give the Air Force too many enemies, cause too many arguments, and, therefore, should be avoided.²¹

Eliot C. Cohen is more cautious in his assessment of airpower. “The fantasy of the near bloodless use of force is . . . the most dangerous legacy of the Persian Gulf War.”²² Other prominent figures bring out the pointlessness of claiming too much for airpower. Gen John M. Shalikashvili, chairman of the Joint Chiefs of Staff, stated, “I do not consider the Air Force a predominant force; but, I have never considered it anything but equal, either.”²³ This debate about the efficacy of airpower could come from insecurities in either airpower advocates or those who feel threatened by airpower. Colonel McCrabb summarized an appropriate viewpoint of the situation: “To insist that one key capability dominates all others is both myopic and dysfunctional to this process [Air Campaign Planning]. Rather than argue over the decisiveness of air, ground, or sea forces, we should choose the smart way to meet the challenge. That done, we can fight the campaign with minimal loss of life and achieve our nation’s objectives. All else is rubbish.”²⁴

Warden struck many—in and out of the Air Force—as being an extremist, much in the same way their contemporaries saw the World War II airmen. Earlier in 1990, even though Warden believed he was acting in the best interest of the Air Force when he advocated Instant Thunder, consistency of thought with past views of air warfare was present. However, the result was that many people were angered at the method he used to promote the plan but not necessarily the ideas being pushed. Perhaps airpower advocates could use preparation in marketing techniques to express their ideas in a more palatable manner.

An area of interest today is whether Warden is the new airpower theorist to replace Douhet or Mitchell, or is he just an outspoken airpower zealot? Is Warden on the leading edge of another assessment that might change the Air Force and move beyond Douhet and Mitchell? Warden says, "I think we are beyond Douhet and Mitchell. I think we have already done that. Now whether it sticks or not, that is hard to tell."²⁵ Warden thinks the previous question is hard to answer, "but parallel warfare is on another plane."²⁶ It would appear on the surface that Warden's concepts are nothing new and are simply restatements of past views. The benefit of decades of experience and technological development made Warden's ideas feasible. However, ACTS instructors envisioned many decades ago the type of warfare that Warden advocates. The implications for contemporary airmen are that the Air Force really has not progressed that much in ideas, independent of technology or political goals. Whether that is good or bad depends on where one's loyalties lie.

As Louis J. Halle indicated, "we fail to see the historic significance in current events until it becomes manifest in their consequences."²⁷ Perhaps the consistency of thought among airmen over the years is overshadowed by the fact that we enjoy an abundance of airpower assets, and thus, the debates are somewhat futile. However, Thucydides espoused a warning on the subject when he wrote, "So superfluously abundant were the resources from which the genius of Pericles had foreseen as easy triumph in the war over the unaided forces of the Peloponnesians."²⁸ The message here is the United States can afford great doctrinal mistakes because of its abundant resources. This may not be true in future conflicts.

In conclusion, the implications of this study for doctrinal thought are numerous.²⁹ Many think the Air Force is leading in a military revolution.³⁰ Warden warns, however, that "all revolutions always, always, always, have a counter revolution and have counter revolutions."³¹ However, Watts suggests that the "seminal beliefs of US air power theorists underwent little evolution from the late 1920s through the early 1960s."³² The same is true for the 1990s if one accepts the theory that Instant Thunder was a rearticulation or repackaging of enduring concepts from the 1930s. AFMAN 1-1 states: "Doctrine should be alive—growing, evolving, and maturing. New experiences, reinterpretations of former experiences, advances in technology, changes in threats, and cultural changes can all require alterations to parts of our doctrine even as other parts remain constant. If we allow our thinking about aerospace power to stagnate, our doctrine can become dogma."³³

The Air Force has shown certain tendencies over the years. These include (1) viewing the enemy as a static system; (2) a preference for an "air alone" approach; and (3) a mechanistic view of war that has evolved from early days. The dangers in this are many. These tendencies could lead to a breakdown in jointness, weak application of operational art, and a continuing attempt to put square pegs into round holes, such as industrial nation targeting versus a Third World nation. Most importantly, it

also leads to ignoring politics and political or coalition considerations. Dogmatic, “one size fits all” doctrine can lead to a loss of flexibility; the one characteristic airpower propagandists continually advocate.

There appears to be an ongoing nagging of the continuity of thought of airmen revolving around target sets and aircraft platforms. This could lead to doctrinal rigidity, and the continuity of thought brought out in this study could easily become that dogma to which AFMAN 1-1 refers. I. B. Holley Jr. wrote that “if doctrine ever becomes mandatory, it will curb initiative and lead to lockstep performance—if it is not ignored entirely.”³⁴ Clodfelter suggested, “The major determinant in choosing doctrine is the likelihood that so-called revolutionary technologies and Air Force roles may shape the outcome of a future conflict for the United States.”³⁵ Some argue the problems with the Air Force are not with doctrine but with technology. Now, with PGMs and advanced avionics, strategic airpower as envisioned in the 1930s could be feasible. “The capability to put any asset that the enemy possesses at extreme risk, at any time, largely fulfills the theory of strategic airpower expressed by aviation pioneers and visionaries.”³⁶ However, as Earl H. Tilford Jr. warns, “As long as air power enthusiasts cling to Linebacker II as evidence to support the hallowed doctrine of strategic bombing, what history can teach them about Vietnam and air power will go unlearned. If that is so, the setup [of Vietnam] may not yet be complete.”³⁷ The setup very well may now be coming from the Gulf War.

Notes

1. Strategic bombing is not even in the airmen’s lexicon now. Phillip S. Meilinger, “Towards a New Airpower Lexicon,” *Airpower Journal* 7, no. 2 (summer 1993): 43; and Richard P. Hallion, *Storm over Iraq: Air Power and the Gulf War* (Washington, D.C.: Smithsonian Institution Press, 1992), 264. Hallion believes that in modern airpower the distinction between tactical and strategic is permanently blurred.

2. Raymond W. Leonard, “Learning from History: Linebacker II and U.S. Air Force Doctrine,” *Journal of Military History* 58, no. 2 (April 1994): 303. An early 1990s version of “The Bomber Roadmap” envisions a new core mission for bombers—sustained theater air warfare. The justification for bombers—carry out sustained conventional air attacks without lengthy buildup of military assets and in areas without infrastructure—“show of force” operations. The thinking is that the fleet must be able to destroy targets that could cause unacceptable damage to US forces if permitted to survive. Included targets are facilities for production, support or use of mass destruction arms, massed enemy forces, enemy command and control, air defense, air attack assets, and war industries. (Whole argument from industrial bombing to air superiority.) Robert S. Dudley, “The Bomber Roadmap,” *Air Force Magazine* 75, no. 9 (September 1992): 42–43. The danger in this thinking is that it reverts to the dangerous belief that “the bomber always gets through.” (B-17s relied on firepower; now, the B-2s rely on stealth and precision.)

3. Warden believes that paralysis of an opponent is more likely to result if enemy leadership can be severed from key instruments of power, such as organic essential, infrastructure, population, and fielded military forces. Mark Clodfelter and John M. Fawcett, “The RMA and Air Force Roles, Missions, and Doctrine,” *Parameters* 25, no. 2 (summer 1995): 23. The Air Force emphasizes that its ambitious transformation of the bomber force is not a plan for the distant future but for the here and now. Dudley, 43.

4. Clodfelter and Fawcett like to caution against “panacea” or silver-bullet-type targets—liken information dominance to thoughts early on about the industrial web theories. Clodfelter and Fawcett, 29.

5. Warden stated, “The world has just witnessed a new kind of warfare—hyperwar. One that capitalizes on high technology, unprecedented accuracy, operational and strategic surprise through stealth, and the ability to bring all of an enemy’s key operational and strategic nodes under near-simultaneous attack.” John A. Warden III, “Employing Air Power in the Twenty-first Century,” in Richard H. Shultz Jr. and Robert L. Pfaltzgraff Jr., eds., *The Future of Air Power in the Aftermath of the Gulf War* (Maxwell AFB, Ala.: Air University Press, 1992): 23.

6. An enduring lesson learned about delivery accuracy during the last eight decades is that the greater the accuracy of our weapons, the more accurate we need our targeting to be. John R. Glock, “The Evolution of Air Force Targeting,” *Airpower Journal* 8, no. 3 (fall 1994): 26. Hallion, citing a post-Gulf War study, [says] every developed nation has a remarkably similar number of key targets (about 500) and aiming points (about 3,000). The concentration of these targets is such to render these nations vulnerable to the same paralytic destruction that visited Iraq. Hallion, 267.

7. Agrarian and semi-industrial countries may be immune to stealth and precision. Clodfelter and Fawcett, 27. We must address how stealth and PGMs have altered the nature of warfare. It masks another more critical lesson—the importance of targeting. Glock, 26. “No matter how clear our military doctrine, that decision has and should always come down to a judgment that weighs the importance of a particular mission, defined in terms of our interest, against its personnel costs.” Anthony Lake, “American Power and American Diplomacy,” *Fletcher Forum* (summer/fall 1995): 89.

8. Hallion, 253.

9. Meilinger, 41, 43. Meilinger responds on ties to surface forces, “We have thus forced ourselves to compete in the surface ballpark (theater construct) using surface rules of play (AirLand Battle and “joint” doctrine) and having umpires (the theater commanders), all of whom are from surface forces. There is no logical reason for continuing to believe that war can be decided only by the clash of surface forces.” Robert C. Rubel, “A Dazzling Vision of Antiseptic Warfare,” a book review of *Storm over Iraq* by Richard P. Hallion, in *Naval War College Review*, 106–7. Rubel says, “The nature of coalition ground maneuver and technical superiority of our weapons were at least as important as air action and share a responsibility for the stunning success enjoyed.”

10. “I feel today that we did not need a ground campaign, and I knew we didn’t need one then.” Col John A. Warden III, Instant Thunder author, transcript of oral history interview K239.0472-115, by Lt Col Suzanne Gehri, 10 Dec 91, 113, Air Force Historical Research Agency (AFHRA), Maxwell AFB, Ala. (hereafter cited as Warden interview no. 3). Meilinger, 43. JFCs should view airpower as a weapon of choice to avoid bloody land engagement.

11. Meilinger, 45.

12. Ibid.

13. “When we use force . . . we must use it unflinchingly.” Lake, 92–93. Lake approved of NATO’s decision on the use of airpower. It substantially eased the pressures on Sarajevo, prevented the fall of Gorazde, and provided the foundation for last spring’s agreement between the Bosnians and Bosnian Croats to end their conflict and form a federation. Lake, 92.

14. MacKubin Thomas Owens, “Lessons of the Gulf War,” *Strategic Review*, winter 1992, 51. This is a review essay on the following books: *On Strategy II: A Critical Analysis of the Gulf War* by Col Harry G. Summers; *Desert Victory: The War for Kuwait* by Norman Friedman; *Thunder in the Desert: The Strategy and Tactics of the Gulf War* by James Blackwell; *From Shield to Storm: High-Tech Weapons, Military Strategy and Coalition Warfare in the Persian Gulf* by James F. Dunnigan and Austin Bay; *Military Lessons of the Gulf War* by Bruce W. Watson; *The Gulf War: Military Lessons Learned*, from the Center for

Strategic and International Studies; and *Conduct of the Persian Gulf Conflict: An Interim Report to Congress*.

15. Quoted in Lake, 94. Airpower's ability to compel one to do one's will is clearly limited by the existing political conditions, both international and domestic. Owens, 53.

16. Meilinger, 43.

17. Quoted in Clodfelter and Fawcett, 22.

18. Maris McCrabb, "Air Campaign Planning," *Airpower Journal* 7, no. 2 (summer 1993): 18.

19. Owens, 54.

20. Hallion, 264. Meilinger wrote that the unique feature of airpower is the ability to operate at the strategic level. Airpower affects three strategic pillars: (1) level of military capability remaining; (2) industrial capability required to maintain forces; and (3) the will of people to continue the struggle. He continues that airpower's true theater is the globe. "We need to foster in all our personnel a sense of air-mindedness." Meilinger, 47. Hallion is criticized in a book review. "When making claims for the effectiveness of airpower it is also easy to hide asked questions and unchallenged assumptions with such broad concepts as 'Five Strategic Rings.' Hallion reveals a dazzling vision of antiseptic warfare because of panacea targets." Rubel, 107-8.

21. Gen Merrill McPeak, USAF, retired, voiced this view during a session with the School of Advanced Airpower Studies (SAAS), Maxwell AFB, Ala., 2 February 1996.

22. Eliot C. Cohen, "The Mystique of U.S. Air Power," *Foreign Affairs* 73 (January-February 1994): 121. "To extrapolate from the Gulf experience to argue that airpower is the only meaningful component of national power is to set the nation up for failure. If there is one enduring lesson of the Gulf War, it is that the United States must maintain a broad spectrum of general purpose forces that permit flexibility in responding to regional contingencies." Owens, 53-54.

23. Gen John H. Shalikashvili, luncheon with SAAS 29 January 1996; and John T. Correll, "Airpower, One Year Later," *Air Force Magazine*, February 1992, 6. Correll wrote, "It is pointless to argue about whether any of the individual services is automatically 'decisive' in isolation. Modern warfare is a combined-arms proposition." Military reform analyst Jeffrey Record attacks airpower and challenges the justification of the Air Force existence as a separate service.

24. McCrabb, 22. McCrabb praised airpower when he also wrote, "The Air Force has special capabilities. First, we can attack key enemy centers of gravity throughout the full breadth and depth of the theater and throughout the full spectrum of strategic, operational, and tactical levels of war. Second, we have hardware (and we are developing new hardware) that allows us to exploit the information differential that exists between us and our enemy." He continued that "force interactions" are where we can attack with our strength against the enemy's weakness and that we can protect ourselves against his strength. *Ibid.*, 14.

25. Warden interview no. 3, 126; and Clodfelter and Fawcett, 23. Some claim Desert Storm was a revolution in warfare that vindicated Mitchell and Douhet.

26. Warden interview no. 3, 126.

27. Louis J. Halle, *The Cold War as History* (New York: Harper and Row Publishers, 1967; 1971), 128. Halle also wrote that our perspective of current events—in terms of which men act. Perspective of history—in terms of which actions are recalled and judged. Halle, 118.

28. Quoted in Halle, 275.

29. Some believe Air Force doctrine is going towards an emphasis on information warfare. Information warfare emphasizes a big difference in the way current doctrine is written. Dramatic change in air doctrine revolving about information is a mistake. Focus on information dominance and possibly lose ability to wage war against "unsophisticated" opponents who will likely challenge American interests in the next decade. The proposed new doctrine states that "the first consideration for the air commander is the necessity for

information superiority. Clodfelter and Fawcett, 24–29. For an interesting view on this subject, see Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the 21st Century* (New York: Little, Brown and Co., 1993).

30. Indications are if force is geared to the perceived RMA may, in certain criteria, be ill suited to accomplish basic airpower roles and missions, which in turn could hamper its ability to achieve the fundamental mission of defending the US “through control and exploitation of air and space.” Clodfelter and Fawcett, 22.

31. Warden interview no. 3, 127.

32. Barry D. Watts, *The Foundations of U.S. Air Doctrine: The Problem of Friction in War* (Maxwell AFB, Ala.: Air University Press, December 1984), 45. Watts wrote, “I can only conclude that the implicit presumption of US aviators and air power theorists that warfare can be treated as an exhaustively determinant phenomenon was fundamentally mistaken. While the conduct of war clearly involves engineering, it cannot be reduced to engineering.” Watts, 108. Watts argues we must get away from mechanistic thinking and become more deterministic. Watts, 117. Watts’s theme throughout the book is airmen thinking in terms of numbers of targets and target systems is too mechanistic.

33. Air Force Manual 1-1, *Basic Aerospace Doctrine of the United States*, vol. 1, March 1992, vii.

34. I. B. Holley Jr., “A Modest Proposal: Making Doctrine More Memorable,” *Airpower Journal* 9, no. 4 (winter 1995): 18.

35. Quoted in Clodfelter and Fawcett, 25. Air Force technology tailored to current Air Force doctrine and backed by adequate training should suffice to stymie adversaries with large-scale, conventional warfare-oriented armor and mechanized structured forces. The real problem for Air Force planners is what to do about the long-range future. The key is not technological change; the key is changing the Air Force mind-set about how to organize and use the weapons at hand. *Ibid.*, 27.

36. Leonard, 303.

37. Earl H. Tilford Jr., *SETUP: What the Air Force Did in Vietnam and Why* (Maxwell AFB, Ala.: Air University Press, June 1991), 297.