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NATIONAL DEFENSE UNIVERSITY

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**Retreat from the Web:
The Shift in United States Air Power Theory**

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Course 5602
Fundamentals of Military Thought and Strategy

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2 November 1998

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 02 NOV 1998		2. REPORT TYPE		3. DATES COVERED 02-11-1998 to 02-11-1998	
4. TITLE AND SUBTITLE Retreat from the Web: The Shift in United States Air Power Theory				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) National War College, 300 5th Avenue, Fort Lesley J. McNair, Washington, DC, 20319-6000				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT see report					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES 15	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

Retreat from the Web: The Shift in Strategic Air power Theory

By
Lt Col Jim Riggins

When blows are planned, whoever contrives them with the greatest appreciation of their consequences will have a great advantage

Frederick the Great¹

Introduction

Ironically, Operation DESERT STORM was at once a victory for air power theorists, and a shift away from fundamental air power theory since 1917. Coalition air power in 1991 did not contribute to the defeat of Iraq by collapsing the nation, but by degrading the military and stripping away Iraq's security. The war's conduct signaled that **United States (U.S.) air power theory is shifting focus toward a counter-military strategy, and away from attacks on the societal fabric or national will**. Five elements justify and cause this change: American morality, lessons of history, costs of nation-building, increased information flow, and evolving technology. This shift is not only appropriate within the current global strategic situation, it should go further. However, this shift is only appropriate today because of the strong relative air power advantage the U.S. holds over potential adversaries. The danger is that this fleeting window of asymmetric superiority will slam shut before war fighting theory sufficiently evolves.

This paper traces the evolution of U.S. air power theory. It will illustrate the recent shift in air power theory today and discuss why the change should progress even more. The paper's scope is limited, however, to a discussion of conventional, inter-state warfare between modern nations—the “major theater war” construct of current Department of Defense strategic planning.²

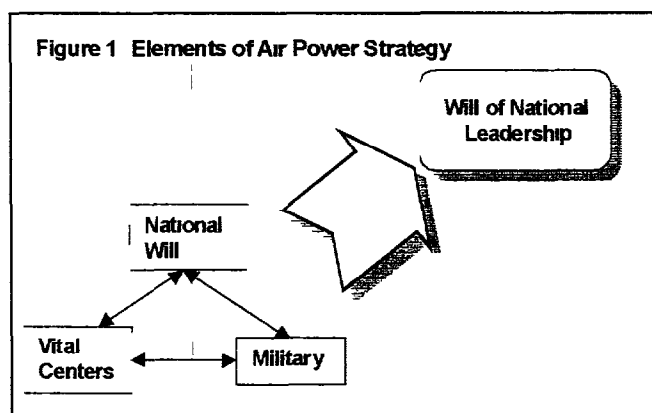
Evolution of United States Air Power Theory

A modern state is such a complex and interdependent fabric that it offers a target highly sensitive to a sudden and overwhelming blow from the air

B.H. Liddell Hart³

The military strategic *end* in war remains constant: Capitulaton and the imposition of our will on the political leadership of the adversary. However, the strategic level *ways* to accomplish such

imposition continuously evolve. Various philosophies differ in the degree to which air power can and should influence each of three aspects of a modern industrial adversary to compel a certain behavior:



As illustrated in Figure 1, the three elements are the nation's vital centers providing economic strength and allowing the society to function, the national will, and the military. The debates on the capacity of air power to influence each of these elements began early in U.S. combat aviation history.

World War I America's entry into the war in 1917 signaled the birth of U.S. air power doctrine, as well as the debate on the proper use of air power which continues to this day. While General John J. Pershing, commander of the Allied Expeditionary Forces (AEF), firmly held the belief that the role of aviation was the direct support of army units⁴, he afforded some latitude to his First Army Air Service commander, General William Mitchell. Mitchell accepted the importance of aviation to the ground combat units. But, he envisioned defeating an enemy not by bombing its troops, but "ultimately in 'hitting an enemy's great nerve centers at the very beginning of the war so as to paralyze them to the greatest extent possible'"⁵.

Lieutenant Colonel Edgar S. Gorrell of the Air Service's Technical Section converted Mitchell's vision from theory to a plan. Recognizing that the German army relied on a few key war industries and transportation nodes, Gorrell and his staff developed an air operations plan focusing strategic bombing against these targets. The plan directed sequential air attacks against the four key regions of Dusseldorf, Cologne, Mannheim, and the Saar⁶.

Mitchell and Gorrell developed two significant, though unproven, features of strategic air thought. First, air power could impart significantly more influence on the outcome of a war by attacking into the heart of an enemy nation versus attacking soldiers on the front line. Second, the

crucial targets in the enemy nation were those industries upon which its army relied, such as munition plants. They emphasized, then, the indirect attack of the army, not the nation's paralysis or collapse, and on physical war making capacity, not the national will. These concepts would change and evolve in the years building up to WW II as industrial societies became more complex and contributed more to the conduct of war.

The Inter-War Years The foundation of U S air power doctrinal development between the wars lay in the Air Corps Tactical School (ACTS), established in 1920. Military theorists such as Mitchell, Major General Sir Hugh M. Trenchard, Italian Air Marshall Giulio Douhet, J. F. C. Fuller, and B. H. Liddell Hart each drew their own specific lessons from WW I as to the potential of air attacks. Their writings influenced the ACTS officers to varying degrees. They each concluded that strategic bombing served as a powerful *means* to defeat an industrialized nation-state in a manner less costly than the bloody trench combat of the WW I, but they differed in their theories on the appropriate *ways* to employ that bombing. They differed in their opinions as to what constituted a strategic center of gravity (COG) for a nation-state, the vital centers (industry, communications, oil, food centers, etc.), the national will, the army, or a combination of the three.

In the U S, the ACTS prepared a course text in 1926 titled *Employment of Combined Air Force* which emphasized the destruction of the enemy's morale, not his armies, as the goal of war and of strategic air power. The means of breaking the morale was through attacks on the enemy nation's vital centers, industry and transportation, but not necessarily through direct attack on civilians.⁷

In the 1930s ACTS thought shifted to the "industrial web theory," a concept closely modeled from Gorrell's recently rediscovered strategic bombing plan of WW I. The industrial web theory stipulated that

(1) In "modern warfare," the military, political, economic, and social facets of a nation's existence were so "closely and absolutely interdependent" that interruption of the delicate balance could suffice to defeat an enemy state, (2) strategic bombing, precisely aimed at these "vital centers" of an enemy's industrial complex, could wreck

the fragile equilibrium and hence destroy the enemy state's war-making capability, and (3) such destruction would also wreck the enemy nation's capacity to sustain normal day-to-day life, which would in turn destroy the will of its populace to fight ⁸

This theory clearly sought the collapse of the nation, not the destruction of the army, as its end state. Collapse would occur through the destruction of national "organic systems"⁹ and not merely war materiel factories. Additionally, the theory reflected the American military reluctance to target civilians physically.

The ACTS faculty analyzed the most efficient and effective means to defeat a modern nation. Their theory was as much a study in what constitutes victory in war—understanding the source of a nation's strength and its vulnerabilities—as it was a concept on how to employ aircraft. These thoughts emanated primarily from air power theorists because air power offered the technology that met the requirements of the theory. War would constitute the real test for these air power concepts.

World War II In 1941 the Air War Plans Division (AWPD), under Captain (later General) Haywood S. Hansell, developed a European operations plan. This plan sought the "breakdown of the industrial and economic structure of Germany" by attacking "a system of objectives vital to the continued German war effort and to the means of livelihood of the German people."¹⁰ Additionally, Hansell believed that direct bombing of cities could be used as a last resort, but his division "never accepted attack on civilian populations as the main method of air warfare."¹¹

The Combined Bomber Offensive Plan of June 1943, concentrated on the primary targets of the ball-bearing industry (highest priority), German aircraft industry and air force, oil (both synthetic and natural), steel production, and transportation.¹² Throughout 1944 and 1945, the bombing offensive struck numerous secondary target systems such as submarine production, V-1 and V-2 rocket production and launch facilities, automobile plants, and a host of smaller industries.¹³ Finally, as conceptualized in the earliest AWPD plan, and as a last resort, the U.S. participated in direct incendiary attacks of German cities.¹⁴

The *United States Strategic Bombing Surveys* (USSBS) of WW II concluded that the strategic bombing efforts in Europe were critical to victory, albeit with room for improvement, thus validating the pre-war doctrine of ACTS and the AWPD. While the attacks on most systems were ineffective due to German rebuilding and dispersal efforts, as well as slack in the production potential, the attacks on two key categories proved essential: oil and transportation.¹⁵ The USSBS stated that even though Germany still had a fielded army at the end of the war, “with the impending collapse of the supporting economy, indications are convincing that they would have had to cease fighting within a few months.”¹⁶

Just as significant, however, is the USSBS conclusion on the psychological domain aspect of the industrial-web theory:

The mental reaction of the German people to air attack is significant. Under ruthless Nazi control they showed surprising resistance to the terror and hardships of repeated air attack, to the destruction of their homes and belongings, and to the conditions under which they were reduced to live. Their morale, their belief in ultimate victory or satisfactory compromise, and their confidence in their leaders declined, but they continued to work efficiently as long as the physical means of production remained. The power of a police state over its people cannot be underestimated.¹⁷

The results of this war and those to come support the notion that predicting and measuring the impact of bombing on the intangible of national will is difficult, if not impossible.

In the Pacific, Japan proved even more susceptible to the concepts of the industrial-web theory. Strategic bombing of the Japanese mainland devastated the country. The physical destruction of the bombing combined with the interdiction of Japanese shipping brought industry to a near standstill. The attacks on urban centers, combined with low food production and increased disease, greatly deteriorated civilian morale. The USSBS research indicates that by June 1945, 68 percent of the Japanese believed Japan would lose the war, and “over one-half attributed the principal cause to air attacks, other than the atomic bombing attacks. Sixty-four percent of the population stated that they had reached a point prior to surrender where they felt personally unable to go on with the war.”¹⁸

The WW II case study illustrates the difficulty in predicting a cause and effect relationship when planning air operations. Strategic bombing of Germany's "industrial web" crippled Germany in some key areas, but left others relatively unaffected. Attacks on the social fabric crushed civilian morale, however, they did not lead to the desired *objective* of capitulation without a fight to Berlin. Where the concept failed, in the minds of the air theorists, it failed because technology, in terms of precision and the ability to attack persistently, had not yet caught up to the doctrine. Because of the large number of aircraft required to strike individual target sets, the Allies had to strike them in sequence, allowing the enemy to repair, recover, harden, and disperse in the intervals between strikes. However, to the U S Army Air Forces, the contributions of strategic bombing to victory in both theaters validated their air power theories.

Operation DESERT STORM Precision guided munitions (PGMs) and stealth technology provided the U S the means to execute the essence of the industrial web theory against Iraq in Operation DESERT STORM (ODS), means which were unavailable in WW II. The U S air concept, however, evolved beyond the pre-WW II ACTS doctrine to the Instant Thunder plan proposed by Colonel John M. Warden III in his role as Deputy Director of Plans for Warfighting Concepts at Headquarters United States Air Force.

Warden agreed with the ACTS theorists that the key to quick, decisive victory against a modern nation-state was strategic air attack against vital elements of the society, and not using air power solely in direct support of the army. Warden differed, however, in his priorities of the "vital elements" and the method of attack. Warden modeled the modern nation as a system of five centers of gravity. In decreasing priority, they included military and civil leadership, key production (which Warden later changed to "organic essentials"), infrastructure, population, and fielded military forces.¹⁹ Unlike the architects of the industrial web theory, Warden considered national leadership the most important COG.²⁰

The second subtle but more significant difference between the two theories concerns the method of attacking the key targets. The industrial web theory sought the sudden destruction of the key war industries and organic systems to deny both the enemy the capability to wage war, and to make the cost of war unbearable to the leaders and population. Warden proposed the parallel, near simultaneous attack against the nation's key strategic and operational vulnerabilities to neutralize the national leadership and paralyze the entire societal system.²¹ Regardless of the COG under attack, "all actions are aimed against the mind of the enemy command or against the enemy system as a whole. Thus, an attack against industry or infrastructure is not primarily conducted because of the effect it might or might not have on fielded forces."²² Additionally, if the paralysis does not convince the leadership to sue for peace, it helps create the conditions to destroy the enemy's forces in a more efficient and less costly manner.

Warden's theory as applied to Instant Thunder envisioned attacks against eighty-four Iraqi targets designed to isolate Saddam Hussein from his military and the Iraqi people.²³ *Leadership* targets included the Saddam regime and its associated command, control, and telecommunications.²⁴ *Key production* targets included oil, electricity, and nuclear, biological, chemical weapon production facilities, supply depots, factories, and repair shops.²⁵ Instant Thunder targeted rail yards and rail and highway bridges under *infrastructure*.²⁶ The Instant Thunder plan specified no *population* targets because the National Command Authority dictated minimum civilian casualties and collateral damage as an objective. Warden believed, however, that Instant Thunder attacks in the other areas would indirectly target the minds of the population, psychologically alienating them from the Saddam regime.²⁷ Finally, *fielded military forces* included Iraqi airfields, the air defense headquarters, air defense sector operations centers, surface-to-air missile systems, and chemical and biological weapons plus associated delivery platforms.²⁸

The essence of Warden's strategic concept remained in the actual operations although

air planners added Iraqi ground units to the list after direction from General Colin Powell. The strategic air effort disrupted senior military and civilian command and control, shut down the Baghdad electrical power grid, and cut off Iraq's petroleum production.²⁹ The shock to the Iraqi system was swift, and the paralysis came quickly. However, the paralysis did not compel Saddam to withdraw from Kuwait, and no evidence exists that extending the air phase would have led to that action. What is clear, is that the instant shock and paralysis, followed by relentless pressure, allowed significant destruction, degradation, and demoralization of Iraqi units (from the air), greatly facilitating the eventual ground operations.

Justification for Theory Evolution

The reasons for the shift back to the counter-military focus consist of five interrelated elements—the moral element of avoiding direct or indirect pain of populations, lessons from history, costs involved with post conflict reconstruction, increased ability to observe the horrors of war, and introduction of precision weapon technologies.

The first reason comes from the consistently strong belief Americans maintain in just war theory. The *jus in bello* notion of protecting non-combatant populations in war appears throughout the nation's history, even though it has never been a simple task. Recent examples of this philosophy include the trials of those U.S. soldiers involved in the My Lai massacre of March 1968 during the Vietnam conflict, and the public outcry over the deaths of Iraqi civilians in the Al Firdos command and control bunker on 13 February 1991 during the Persian Gulf War. As the American public perceives improved technological capability to avoid the widespread destruction of previous wars, the demand for strict discrimination increases. The American sense of "fairness" in a high technology conflict even extends to the enemy military. The images of the "Highway of Death" containing the carnage of destroyed vehicles as the Iraqi army fled Kuwait generated a negative response from the American public.

The second reason is the lesson from history that impacting a nation's will in a predictable way through force is impossible. Perhaps the greatest failure of Douhet's theory is his over-simplified notion of being able to cause immediate moral collapse of a society through bombing. The major wars of this century have proven that individuals and societies can withstand tremendous physical, mental, and economic pain before succumbing. Additionally, history has shown that the time required to sufficiently pressure a population, when able to at all, is long and incongruent with the American notion of "quick, decisive" combat. And, even after passing the threshold of pain, populations do not always respond as predicted. North Korea today provides a valuable example. The degree of economic collapse, suffering, and starvation already exceeds that which many strategists would say is necessary in a nation-state conflict to stimulate a popular uprising against the government. And yet, North Korea continues to survive under totalitarian rule.

The third reason is that of the cost of reconstruction. The broad aim of any war, at the grand strategic level, will always be to create a better peace after the conflict. Destruction of a military or a nation may occur, but should never be an end in itself. Even after the defeat of Nazi Germany in WW II, the economic devastation of Europe nearly resulted in Communist revolutions in France, Italy, western Germany, and Greece. Only the influx of billions of dollars of U.S. funds for reconstruction staved off the revolts. It would have been hard to claim success in WW II if "victory" resulted in the loss of continental Europe to the Soviet sphere. The U.S. has a long history this century of spending enormous sums of money to rebuild nations after conflict. The U.S. economy was able to absorb such a burden after the two world wars and Korean conflict, but not without strain. However, air strategists today sense that the ability exists to achieve desired strategic and operational effects without large scale destruction.

The next reason for the shift in air power theory is technology that allows public observation of war in almost real time. This aspect intertwines with the previous two in that the U.S. public must have

knowledge and visualization of the horrors of war to spark the large-scale outcry against the war's conduct. Today's high technology media provides such a capability. A democratic U.S. government and military must constantly consider domestic politics when planning and executing the ends, ways, and means of any conflict. The modern media greatly influences these domestic politics and public opinion. Likewise, military strategists must balance the means necessary to achieve objectives, with the impact of such means on public support of the effort.

The final reason for the shift is advancement in air power technology that allows a greater degree of discrimination in the conduct of war. This fact, combined with the public's ability to view this technology in action made a significant and lasting impression during the Persian Gulf War.

The precision and damage limitation particularly impressed reporters in Baghdad and those who visited the city afterward. Michael Kelly, a freelance writer reporting for the *New Republic*, was in Baghdad during the initial F-117 and TLAM [Tomahawk Land Attack Missile] attacks. On the morning after the first night's strikes, he watched smoke pouring from the Ministry of Defense, which had taken a TLAM hit, and saw, in quick succession, two more TLAMs leave it "a burning rubble." But, he noted, "the hospital next to it though, was untouched, and so were the homes crowded around it." It was this aspect of modern air power that seemed to stun observers—that attackers could strike targets deep within urban areas without causing the kind of wracking devastation that had characterized the city raids—even the "precise ones—of the Second World War."³⁰

With the advent of precision munitions, and their perceived success in Iraq, public tolerance is extremely low for a return to the widespread devastation of previous wars. While the specific nature of adversary, conflict, and environment that enabled successful precision air power in Iraq will never be repeated, that war has already conditioned the American public. The *expectation* of quicker, cleaner war with fewer civilian casualties and lower collateral damage resulted from DESERT STORM. Now that precision attack allows far greater discrimination, the nation demands it.

Conclusions

The shift in strategic level focus to a greater emphasis on disabling the adversary military is both feasible and appropriate. Air theorists in the first half of this century did not abandon such a focus

because it would fail to achieve the strategic objectives. They moved away from this focus because the means did not exist to execute the strategy. In other words, rapidly crushing the enemy's military in Napoleonic fashion was still the desired strategy, but when the character of industrialized warfare no longer allowed that, a shift to the "societal heart" seemed like a reasonable alternative. But, the compromise did not live up to promise. From Hansell to Warden, air power theorists were consistently frustrated by the difficulty of achieving predictable psychological outcomes from physical destruction. The greatest air power success in DESERT STORM was not even one expected or desired by Col Warden. It was the direct (force destruction) and indirect (command and control disruption, interdiction, psychological effects) weakening of Iraqi ground units, producing a far less capable Iraqi military to face Coalition ground forces. What ultimately imposed the Coalition's will on the Iraqi government was the defeat and threatened annihilation of the southern Iraqi army, not the strategic paralysis of the nation.

What allows the U.S. today to increase its emphasis in a major conflict on defeating the enemy's military is quantitative and qualitative advantage in air power. It is a period in history where the U.S. does not face an adversary that can challenge it for command of the air. This in turn rewards U.S. strategists with an asymmetric advantage where they can apply air power against ground and naval forces. Contributing to the rapid defeat of large militaries with air power still requires a great deal of art and strategic thought, and must be tailored to specific situations. It requires much more sophistication than inefficiently destroying individual vehicles or troops through air attack. Defeat of a military does not always require its destruction.

When the U.S. loses its advantage in air power, and it will, if history is any guide, the theoretical weight of effort between national will, military, and national vital centers will again have to shift. Until that happens, a retreat from the industrial web is certainly appropriate.

Endnotes

¹ Charles M. Westenhoff, ed., Military Air power: The CADRE Digest of Air power Opinions and Thoughts (Maxwell Air Force Base, Alabama: Air University Press, 1990), p. 10

² This is not a trivial assumption for it implies that conventional *inter-state* war against an industrialized nation is the prevalent form of war the U.S. will face in the future. Such an assumption ignores the trend of increasing U.S. involvement in *intra-state* conventional and unconventional war. However, a thorough discussion of shifting theory in such wars is beyond the scope of this short paper.

³ Westenhoff, ed., Military Air power: The CADRE Digest of Air power Opinions and Thoughts, p. 33

⁴ Thomas H. Greer, The Development of Air Doctrine in the Army Air Arm 1917-1941 (Washington, D.C.: Office of Air Force History, United States Air Force, 1985), pp. 3-4

⁵ Greer, Development of Air Doctrine, p. 9

⁶ Mark Clodfelter, "Pinpointing Devastation: American Air Campaign Planning before Pearl Harbor," The Journal of Military History 58 (January 1994): 80. Pershing, however, never implemented Gorrell's plan. Faced with a shortage of bombers through simple lack of production, he feared the Air Service could not provide the necessary support to the Army and execute strategic bombing (p. 82).

⁷ Greer, Development of Air Doctrine, p. 41. Note that the U.S. concept differed from Douhet's in the degree to which direct targeting of populations was acceptable. Douhet based his concept of strategic combat on the premise that future wars would be between modern nation-states; such war would involve the full mobilization of the nation, thereby making all citizens subject to attack, and the will of a nation lies in the will of its population. Douhet proposed direct attacks on cities using explosive, incendiary, and chemical weapons as the means to "crush the material and moral resistance of the enemy" (Douhet, Command of the Air, p. 125).

⁸ Clodfelter, "Pinpointing Devastation," p. 84

⁹ Haywood S. Hansell Jr., The Strategic Air War Against Germany and Japan: A Memoir, ed. Richard H. Kohn and Joseph P. Harahan (Washington, D.C.: Office of Air Force History, United States Air Force, 1986), p. 12

¹⁰ Hansell, Strategic Air War Against Germany and Japan, p. 33-34

¹¹ Hansell, Strategic Air War Against Germany and Japan, p. 36

¹² United States Air Force, The United States Strategic Bombing Surveys, (Maxwell Air Force Base, Alabama: Air University Press, 1987), pp. 14-32

¹³ United States Air Force, United States Strategic Bombing Surveys, pp. 28-30

¹⁴ United States Air Force, United States Strategic Bombing Surveys, pp. 35-36. The Survey estimates the total bombing casualties from October 1, 1943 to January 31, 1945 to be 305,000 killed, 780,000 wounded, and 7,500,000 left homeless. This damage resulted from both Royal Air Force and U.S. Army Air Force bombing (p. 36).

¹⁵ United States Air Force, United States Strategic Bombing Surveys, pp. 20-25. Petroleum production was concentrated in 13 synthetic plants and the Ploesti oil fields of Rumania and Hungary. In 1944 Allied attacks reduced production from the synthetic plants from 316,000 tons per month to 5,000 tons. By 1945 the German Army virtually ground to a halt due to the lack of gasoline. An unexpected side effect of the attacks on synthetic oil production was the severe impact it had on the production of synthetic nitrogen, methanol, and rubber. The loss of much of their nitrogen and methanol production created a shortage of ammunition, explosives, and fertilizer.

¹⁶ United States Air Force, United States Strategic Bombing Surveys, p. 38

¹⁷ United States Air Force, United States Strategic Bombing Surveys, p. 39

¹⁸ United States Air Force, United States Strategic Bombing Surveys, p. 95

¹⁹ John A. Warden III, "The Enemy as a System," Airpower Journal IX (Spring 1995), pp. 44-49

²⁰ The differences and similarities between the strategic air doctrine and its application in WW II and ODS are worth noting. While many target categories were similar in both wars, the objective of attacking those targets differed. In ODS Warden identified the Saddam regime as the primary COG, with attacks on the infrastructure contributing to isolating Saddam through physical destruction and psychological impact. The WW II air planners viewed the key industries and organic systems as the critical centers of gravity. The aim of their destruction was also twofold: to destroy the capability of the army to continue the war and to crush the will of the populace. This difference in the doctrines was influenced by the technology available to execute the doctrine and the differences in the character of the two wars. The authors of the WW II

strategic bombing concepts were convinced, as was Warden, that airpower alone could conceivably end the war but they also realized that they did not have the technology to achieve this theoretical goal. Bombing accuracies were so poor that the U.S. could not produce sufficient quantities of bombers to achieve the simultaneous destruction of all the identified organic system nodes. They therefore had to adopt a sequential approach which required time, time that permitted the Axis armies to continue the fight, develop new tactics, and repair bomb damage.

²¹ About parallel warfare, Warden states

States have a small number of vital targets at the strategic level—in the neighborhood of a few hundred with an average of perhaps 10 aimpoints per vital target. These targets tend to be small, very expensive, have few backups, and are hard to repair. If a significant percentage is struck in parallel, the damage becomes insuperable. Contrast parallel attack with serial attack in which only one or two targets come under attack in a given day (or longer). The enemy can alleviate the effects of serial attacks by dispersal over time, by increasing the defenses of targets that are likely to be attacked, by concentrating his resources to repair damage to single targets, and by conducting counteroffensives. Parallel attack deprives him of the ability to respond effectively, and the greater the percentage of targets hit in a single blow, the more nearly impossible his response. (Warden, "The Enemy as a System," p. 54.)

²² Warden, "The Enemy as a System," p. 51.

²³ Cohen, Eliot A., director, Gulf War Air Power Survey, Vol I Planning and Command and Control (Washington: Department of the Air Force, 1993), p. 112. This number would rise significantly before the war started as new intelligence information arrived and CENTCOM revised their plan.

²⁴ The most efficient means of attacking telecommunications on a widespread basis appeared to be through attacking the electrical power grid, an element of the key production ring. Instant Thunder's goal was "to reduce Baghdad's power supply by sixty percent and Iraq's as a whole by thirty-five percent." See Cohen, Gulf War Air Power Survey, Vol I Planning, p. 116.

²⁵ Cohen, Gulf War Air Power Survey, Vol I Planning, p. 119.

²⁶ Cohen, Gulf War Air Power Survey, Vol I Planning, p. 120.

²⁷ By *not* attacking the populace through either direct, destructive means, or producing long-term damage to their national essentials such as electricity, Warden hoped to isolate the central leadership COG from the rest of the nation. In general, his model does not discount direct attacks on the population as was performed in the total war of the 1940s. However, the model is situational and based on a detailed analysis of the character of the conflict and the enemy. In the case of ODS, a limited war from America's perspective, the planners and national political leadership did not consider the Iraqi population to be belligerents, and therefore were not subject to attack. Additionally, it was clear to the planners that the fragile national and coalition will could not withstand the impact of large numbers of civilian casualties. See Cohen, Gulf War Air Power Survey, Vol I Planning, p. 120.

²⁸ Cohen, Gulf War Air Power Survey, Vol I Planning, p. 120. Significant in their absence from the original plan, according to the GWAPS, were Iraqi army maneuver unit targets. The GWAPS states that with the exception of attacks on Iraq's air defenses and its deployed chemical weapons, Warden's campaign would leave Iraq's fielded forces intact. He expected Iraq to withdraw from Kuwait without much of a fight. See Cohen, Gulf War Air Power Survey, Vol I Planning, p. 112. Colonel Richard Reynolds, Heart of the Storm, provides a more detailed and accurate account of this subject. On 10 August 1990, Warden briefed General Schwarzkopf that the "ground forces in Kuwait and those in Iraq near or on the border would be attacked only if they attempted to move forward into Saudi Arabia" (p. 55). During an 11 Aug briefing to General Colin Powell, Chairman of the JCS, Warden explained that he wanted to hit the Republican Guard in Iraq but was opposed to taking out the ground forces along the front lines in southern Kuwait. The colonel was convinced that if anyone could overthrow Saddam, it was the conscripted army he would leave as cannon fodder to replace his elite Republican Guard invasion force when the latter pulled back from the front. (p. 72) Powell responded with the guidance that the Iraqi army must be destroyed, and not simply allowed to withdraw. From this point forward, Warden planned for a second phase, *after* the strategic attacks, which would destroy the Iraqi army. Warden's debates with other senior USAF officers, including Lt General Charles Horner, commander of U.S. Air Forces Central Command, was not that the USAF would ignore the enemy army, but that those attacks were secondary to the strategic effort. The debate begun between Pershing and Mitchell in WWI had never really been laid to rest. See Richard T. Reynolds, Heart of the Storm: The Genesis of the Air Campaign Against Iraq, (Maxwell Air Force Base, Alabama: Air University Press, 1995), pp. 54-129.

²⁹ Richard P. Hallion, Storm Over Iraq, Air Power and the Gulf War (Washington: Smithsonian Institution, 1992), pp. 191-193.

³⁰ Hallion, Storm Over Iraq, p. 197.

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