Strategic Attack

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FOREWORD

Strategic attack is not defined by the weapons or delivery systems used—their type, range, speed, or destructiveness—but by their effective contribution to directly achieving national or theater strategic objectives. Air and space forces, with their responsiveness, range, and unique ability to exploit the third dimension, can transcend normal operating limitations imposed on land and maritime forces in attaining strategic objectives. Aerospace forces possess the unique capability to strike at the heart of the enemy; disrupt critical command, control, and communications and war-sustaining capabilities; and avoid a sequential fight through layers of surface forces to reach the objective. The proper use of aerospace power is vital to successful strategic attack and to the success of the military operation. This document discusses fundamental operational-level doctrine to plan and conduct successful strategic attack operations across the range of military operations. The doctrine presented in this publication reflects what historically is the Air Force's most decisive combat mission and function.

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20 May 1998

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INTRODUCTION

PURPOSE

This document establishes operational doctrine for United States Air Force strategic attack operations. It articulates fundamental Air Force principles for the application of combat force and provides commanders operational-level guidance on the employment and integration of Air Force resources to achieve desired objectives. It addresses two interrelated subjects: 1) experience provides the best lessons in how to apply aerospace forces in the attainment of strategic effects, and 2) such lessons have been, and must continue to be, modified in light of advances in technology. This applies in the context of military operations other than war or across the spectrum of warfighting.

APPLICATION

This Air Force Doctrine Document (AFDD) applies to all active duty, Air Force Reserve, Air National Guard, and civilian Air Force personnel. The doctrine in this document is authoritative but not directive. Therefore, commanders need to consider not only the contents of this AFDD, but also the particular situation when accomplishing their missions.

SCOPE

This doctrine provides guidance in planning and conducting strategic attack operations in support of national and joint force commander campaign objectives.

Traditionally, heavy, long-range bombers, such as this B–29 over Korea, could perform strategic attack. In modern warfare, the effect desired will determine the weapon used in executing the strategic attack function.

CHAPTER ONE

BACKGROUND

> ***Air power is used most effectively when it is concentrated in unexpected ways on targets of real value; you go in where you are not expected, you hit hard, and you live off the confusion you create.***
>
> **Air Marshal R.G. Funnell, AC**

STRATEGIC ATTACK

Experience in conflicts as diverse as World War II and Operations Desert Storm and Deliberate Force has proved that the **strategic application of aerospace power has had a decisive impact on war.** In this context, "decisiveness" in war should not be measured merely by targets destroyed, casualties inflicted, or territory occupied, but by achievement of national objectives. Therefore, *strategic attack is defined as those operations intended to directly achieve strategic effects by striking directly at the enemy's centers of gravity (COGs). These operations are designed to achieve their objectives without first having to directly engage the adversary's fielded military forces in extended operations at the operational and tactical levels of war.* While it is often applied by theater commanders in concert with surface fire and maneuver at the operational and tactical levels, strategic attack may be employed effectively without engaging the enemy's fielded forces.

Strategic attack has historically attempted to avoid the carnage of symmetric force-on-force surface operations by engaging the adversary's COGs directly. *COGs are defined as those characteristics, capabilities, or localities from which a force derives its freedom of action, physical strength, or will to fight.* Targeted COGs are the focus of operations designed to achieve the objectives established by senior political and military leaders, especially in limited or military operations other than war (MOOTW) scenarios, ideally they should be the focus of strategic operations designed to achieve those objectives.

Strategic attack also offers the possibility of directly defeating an adversary's strategy. In the modern era, that adversary may be a large nation state with a highly sophisticated political, economic, and

F–111s flew from the United Kingdom to strike targets in Libya during Operation EL DORADO CANYON.

military structure or a transnational threat, such as a state-sponsored terrorist organization. Regardless of the opponent, the purpose would be the same—*to directly achieve national or theater strategic objectives (or thwart an opponent's objectives) without having to first resort to classic attrition warfare.*

Strategic attack functions as an integral part of theater warfare involving joint and/or multinational operations; however, the concept of strategic attack is just as applicable to single Service operations in pursuit of national strategic objectives and in some instances to single Service and joint MOOTW. The objectives may span from the global to the tactical level. Operation EL DORADO CANYON is an example of a MOOTW conducted to attain strategic goals. This limited retaliatory strike on Libya in 1986 was an exclusive application of joint Air Force and Navy airpower to punish Libyan national leadership for attacks on US personnel and to persuade Libyan leaders to halt support for terrorist activities.

Perhaps the most famous examples of classic wartime strategic air attack were the massed raids against Germany and Japan during World War II involving at times many hundreds of aircraft with the strategic objective of directly affecting the enemy's capability and will to continue the war. Of course, the strategic air campaign against Japan culminated in

the use of what many consider to be the "ultimate" strategic weapon: the atomic bombs dropped on Hiroshima and Nagasaki.

As with any statement of doctrine, the reader must remember three points. First, *the precepts discussed herein must be adapted to the situation commanders face in accomplishing their missions and should take into account advances in technology that may affect how and with what resources strategic attacks are conducted.* Second, while strategic air attack should be accorded primacy in many situations—particularly since it can limit an opponent's "decision space," provide decision makers with the maximum amount of "branches and sequels" in a crisis, and accomplish a large variety of tasks across a range of military operations—*it is not always the most expeditious means to accomplish all of the joint force commanders's (JFC) warfighting objectives.* Finally, it is important to remember that **strategic attack is only a subset of strategic control.** The Berlin Airlift is a successful example of how aerospace power can profoundly shape and control events without necessarily having to resort to aerial attacks. The true versatility of aerospace power is its ability to accomplish a large variety of tasks and produce a range of effects across the spectrum of military operations.

Early bombers, such as this Keystone bomber, helped develop aerial strategic attack theory but often failed to fulfill the dreams of airpower theorists.

HISTORY

Aerial strategic attack theory was founded in the ideas of the airpower advocates of the 1920s—Giulio Douhet, Brigadier General Billy Mitchell, and Air Marshal Hugh Trenchard—and the theory (high-altitude precision bombardment) was developed at the US Air Corps Tactical School in the 1930s. These advocates differed over what to target but agreed on the **central theme that long-range bombers could prevent the carnage of prolonged surface warfare,** as suffered by all sides in World War I. This would be done by *bypassing the traditional elements of national military power (deployed land and sea forces) and directly targeting the enemy nation's heartland to attack its industrial and agricultural infrastructure and, according to some theorists, the morale of its population.*

World War II

By 1941, the Army Air Forces had developed a strategy based on the theory of strategic attack that advocated high-altitude, daylight precision strikes against the enemy nation by massed formations of unescorted but heavily armed bombers. The targets would be Germany's and Japan's "industrial and economic infrastructure" with emphasis on specific critical nodes that (in theory) would cause the collapse of the enemy's war-making capability.

Europe

Target objectives such as the ball bearing industry, aircraft factories, transportation, and oil production were seen as key to crippling the German war-making capability and were attacked sequentially by massed bomber formations. Eighth Air Force's first large-scale raids of late 1942 and 1943 suffered prohibitive losses (29 percent on one raid) for a number of reasons: the "Mighty Eighth's" target base was too large; its bombing, navigation, and munitions technologies were too primitive; the size of its bomber formations was actually too small; and its unescorted bombers had to deal with a determined, highly trained, and well-equipped German fighter force operating over land they occupied and controlled. Additionally, selected COG targets proved considerably more difficult to destroy than initially predicted. This was due to several factors: the absence of air superiority as a necessary precondition for success; poorer bombing accuracy than originally predicted by prewar analysis; the inconsistent application of force against a single target set (often due to the diversion of bombers to support ground and naval operations); the redundancy and excess capacity of the target systems themselves; the immature and recently created Allied strategic intelligence capability; and the determination of German leaders and people to keep their factories and systems operating (even if inefficiently dispersed or buried underground). The end result was an unexpected need to revisit targets often identified through trial and error and viewed in isolation from other target sets.

However, with the addition in 1944 of Fifteenth Air Force, improved navigation-bombing aids and munitions, increasingly sophisticated intelligence gathering and analysis, and long-range P–47 and P–51 fighter escorts, the bomber offensive resumed with much improved effectiveness. The first result of that offensive was obtained **in June 1944 when it**

Boeing B–17 with fighter escort.

accomplished the intermediate objective to destroy the German fighter force and the Allies were able to conduct the Normandy landings virtually unopposed by the *Luftwaffe*. Germany had concentrated two-thirds of the *Luftwaffe* to oppose the strategic air offensive and was literally destroyed when it flew in the face of the heavily armed bombers and their highly capable fighter escorts.

With the demise of the *Luftwaffe*, by the early spring of 1945 the combination of the relentless bomber offensive and the brutal two-front ground war left Germany on its knees. After a realignment in target priorities (from ball bearings, to aircraft manufacture, to oil production and transportation) and a release from supporting the Normandy invasion and the breakout from Western France, the bomber assault finally succeeded in shutting down German oil production and its transportation grid, thus devastating the nation's economic structure. *Allied ground forces provided the killing stroke, but the environment they operated in was positively shaped by the absolute air superiority over what was considered, less than two years before, the world's best air force, and by the paralyzing impact of the strategic air campaign.*

The Pacific

In late 1944 and 1945, American bombers and their escorts conducted the *coup de grace*—the death blow—to a Japanese nation economically and militarily isolated by Allied air, land, and naval action—a nation that refused to accept its fate. B–29s conducted massive fire bomb raids on

Bock's car: The B–29 that dropped the atomic bomb on Nagasaki.

Japan's major cities in an attempt to destroy both national morale and the economic structure that fed parts for its war machine from small "backyard" suppliers imbedded in the urban structure. The effects were devastating as one city after another was gutted under an umbrella of American air superiority over the Japanese homeland. Mines dropped from B–29s trapped ships in Japanese harbors and paralyzed shipping along the Japanese coast, the Inland Sea, and the Sea of Japan. The air and naval stranglehold over Japan's lines of communication produced a lack of parts and fuel that grounded Japanese airpower and left the remnants of its navy bottled up in port.

Some attribute Japan's final demise to the atomic bomb attacks on Hiroshima and Nagasaki. Others maintain the fire bomb raids, continued naval blockade, and entry of the Soviet Union into the war against Japan would have had the same effect within a few weeks—forcing Japan's leaders to recognize their nation's grim fate. President Truman authorized use of the atomic bombs in an attempt to shock the Japanese and avoid an estimated one million or more Allied troop casualties that would result from invading Japan. Shortly after the attacks on Hiroshima and Nagasaki, Japan's Emperor Hirohito was convinced that further resistance was futile and took an unprecedented step in modern Japanese history by intervening to bring about the surrender of his nation to save the lives of his people from additional attacks and the bloody land invasion that was sure to come.

Korea and Vietnam

Limited strategic air attack operations were conducted during both the Korean and Vietnam conflicts, but did not enjoy the success attained during World War II or Operation Desert Storm (to

Chasan Dam during (left) and after (below) the May 1953 attacks.

some critics, these operations were episodic deep interdiction assaults rather than actual strategic attacks). *In Korea, and later in Vietnam, targeting was tightly controlled*. The failings of strategic attack in these conflicts were largely due to not properly identifying COGs against which to conduct operations. Consequently, strategic attacks resulted in largely tactical effects. In Korea, some of the classic strategic targets of World War II such as power plants, dams, and ammunition factories were attacked, but these targets were not vital to the enemy war effort and, although important, did not truly represent enemy COGs. There was no "industrial web" similar to those in Germany and Japan; the majority of Korea's war-making supplies were imported. The "deep interdiction" targets in or near China that provided North Korea with its true war-making potential were kept off limits. *As a result, the war was eventually stalemated by classic attrition warfare, and strategic attack*

The F–86 eventually gave the United States air superiority during the Korean War.

had only a minimal effect on the outcome. The exception was the spring 1953 attacks on the Toksan and Chasan dams that flooded major transportation routes and vital farmland and was a significant factor in bringing North Korea back to the negotiating table.

In Vietnam, **restricted COGs also severely limited the effectiveness of strategic attack**. The Operation ROLLING THUNDER campaign against North Vietnam during the mid 1960s is seen by some as nothing more than deep interdiction, since it concentrated primarily on destroying military forces in the North before they could be applied in the South. Others saw it as a strategic campaign, since its avowed purpose was to convince North Vietnamese leaders through the gradual escalation of the air war in the North that further conflict was fruitless. Operation ROLLING THUNDER failed to hit vital targets and consequently failed to convince North Vietnam's leadership that the United States was serious in its endeavors. *In Vietnam, the truly strategic targets—those affecting the will and capability of national leaders to conduct warfare, such as ports, supply depots in or near major metropolitan areas, and crucial land supply lines from China—were initially off limits and were not struck until very late in the war (Operations LINEBACKER and LINEBACKER II).* Again, the failure to properly employ strategic attack against enemy COGs early in the war more often resulted in strategic attack producing tactical rather than strategic effects. Once employed against COGs, the effects of strategic attack became more decisive. *Many observers claimed the results of these strategic attacks to be "the decisive element" in achieving the limited objective of a peace treaty.*

The Vietnam conflict began the change in how airpower planners thought about the use of fighters and heavy bombers. Heavy bombers, the weapons of choice for World War II strategic warfare, were

A formation of Vietnam-era F–4 Phantom IIs.

LINEBACKER II

Throughout 1972, the negotiations between North Vietnam, South Vietnam, and the United States had been off-and-on-and-off again, depending on how the war was progressing. Because of the decisive application of American airpower, North Vietnam's offensive of 1972 had withered on the vine, and by the end of October, the negotiations in Paris had resumed. US Secretary of State Henry Kissinger declared that peace was at hand. With all going well, President Nixon halted air operations north of the 20th parallel. Once again, negotiations stalled, and it became obvious that North Vietnam might go on the offensive yet again. Bombing north of the 20th parallel resumed at the direction of the President of the United States.

Nicknamed LINEBACKER II, this operation was unique because of its overtly strategic nature and its objective of forcing North Vietnam to return to the negotiating table. For the first time in the war, B–52s were allowed to strike targets in Hanoi and nearby Haiphong. More than 20,370 tons of bombs were dropped on targets that previously were on the restricted list. These included rail yards; communication facilities; power plants; docks and shipping facilities; warehouses; air defense radar; petroleum, oil, and lubricants (POL); and ammunition supply areas. North Vietnamese airfields and transportation facilities also came under attack, severely degrading their sortie generation capability. Air Force and Navy tactical aircraft flew more than 1,000 sorties, and B–52s flew more than 720 sorties from bases in Guam and Thailand.

Because of initially unimaginative planning (i.e., route selection), the US campaign was expensive. The US lost 26 aircraft; 15 B–52s were lost to SAMs. North Vietnam launched most of its inventory of surface-to-air missiles and opened up with most of its antiaircraft artillery in an attempt to defend itself from the massive air assault. More than 1,000 SAMs were fired, most causing random damage as they plunged back to Earth after missing their targets due to effective US Air Force electronic countermeasures. US losses dropped significantly later in the operation due to a shortage of SAMs, and a change in tactics by US forces.

LINEBACKER II ended 29 December 1972. On 30 December 1972, President Nixon announced that negotiations would resume in Paris between Dr. Kissinger and Le Duc Tho, North Vietnam's special envoy. A cease-fire agreement was signed on 23 January 1973 and took effect on 28 January, Saigon time. Many credit LINEBACKER II for bringing about the end of US military involvement in Vietnam.

not used in strategic attack in North Vietnam until 1972—eight years into the war. Misperceptions of "strategic meaning nuclear" prevented their use until the Operation Linebacker II campaign. Prior to that, fighters and fighter-bombers, the tactical and escort weapons of the 1940s, were used to deliver the Operation Rolling Thunder blows against targets in North Vietnam, while B–52s attacked troop concentrations and supply lines in the south. Toward the end of the conflict, *precision-guided munitions (PGM) made their debut allowing two or three sorties to accomplish what in World War II may have required scores or even hundreds of aircraft.* For instance, it took 177 sorties dropping 380 tons of ordnance to destroy the Paul Doumer Bridge near Hanoi in 1967–68. On 10 May, 16 F–4 sorties released 29 PGMs on the bridge, rendering it unusable. The next day, four F–4 sorties released eight PGMs, plunging three spans into the river and severely damaging three others. These initial limited applications of laser-guided weapons against mainly tactical targets began the technological march towards the strategic attack capabilities demonstrated during the Operation Desert Storm strategic air campaign twenty years later.

The Gulf War (Operation Desert Storm)

> ***Lesson number one from the Gulf War is the value of air power.***
>
> **President George Bush**

The Gulf War demonstrated the successful application of strategic attack when aerospace power was applied synergistically against Iraqi COGs to isolate the Iraqi leadership from its military forces, neutralize key elements of production and national infrastructure, and render the nation virtually defenseless against allied air attack. *The application of new PGMs in strategic attack allowed the coalition effort to become parallel rather than sequential, as fewer assets were required to achieve the desired effects.* By attacking a series of targets and target sets simultaneously, coalition strike aircraft dominated the enemy's decision space, fostering confusion and shock among Iraqi leaders and isolation of their deployed forces. Concurrently with the strategic effort, the same coalition forces conducted a fierce operational-level campaign against the Iraqi forces in Kuwait that cut them off from all supply and convinced many units to give up without a fight. Air Force fighters and bombers, Navy and Marine attack aircraft, coalition aircraft, and, even in some instances, Army attack helicopters were applied by the joint force air

F–117 and laser-guided bombs: stealth technology and precision-guided munitions produced a synergistic revolution in strategic attack.

component commander (JFACC) in a theater-wide air campaign that directly impacted the Iraqi strategic COGs. *In the last analysis Operation Desert Storm proved the ability of aerospace forces to provide not just indispensable contributions to the total joint effort but under the right circumstances to provide the decisive capability in war.*

Air superiority is essential for successful military operations, including strategic attack.

CHAPTER TWO

STRATEGIC ATTACK OPERATIONS

Today we have finished rebuilding the plants, and tomorrow the bombers will come again.

German workers rebuilding synthetic oil plants
The United States Strategic Bombing Surveys
(European War)

OBJECTIVES

Strategic attack can achieve the maximum effect from combined aerospace actions. **The historic focus of classic US strategic attack theory since its development in the 1930s has been on the war-making capacity and the will of the enemy.** American strategic air commanders during World War II concentrated on the industrial web of the enemy in an attempt, through massed sequential attacks, to destroy those key industrial-economic targets that would deny the enemy capability, diminish its combat power, and convince enemy leaders that the cost of continuing the war was too high. Today, while these traditional goals and sequential attack techniques may still have relevance during prolonged major conflicts, *the advent of precision munitions, stealth technology, advanced information warfare (IW) techniques, and near-real-time capable command, control, and intelligence systems has fostered different possibilities.*

For example, **one approach involves the parallel, rather than sequential, attack of a series of targets.** The goal is to cripple the enemy's national political and military leadership's ability to act and bring elements of the national infrastructure and, resources permitting, operational and tactical targets under attack. Through overwhelming parallel attack of critical centers, the enemy's strategy is defeated by reducing or removing its capability to conduct military operations. *No longer must air forces serially destroy each target class before moving on to the next***.** As demonstrated during the initial phase of the Operation DESERT STORM air campaign, near simultaneous attacks on Iraq's air defense system and national command and control infrastructure, as well as transportation and

The F–16 is capable of conducting strategic attack.

electrical power production and distribution, resulted in the virtual paralysis of national leadership.

It must be noted, **it was not the total destruction of a particular target or set of targets that was important but the synergistic effect of a swift, highly effective assault on them all as a system of systems.** *When followed immediately by more traditional interdiction operations against transportation and fielded ground forces, the Iraqi armed forces experienced command isolation, the inability to mass and maneuver (as illustrated by the Battle of Khafji), severed LOCs, and the constant, unopposed threat of physical annihilation.* The ultimate consequence was the collapse of enemy national and military command and control, the inability to stage coordinated large-scale assaults, and minimal losses to coalition ground and air forces.

While it would be unwise, at least for the near term, to count on the ability to repeat such a startling performance in every large-scale conflict scenario, Operation Desert Storm does point out the need for military leaders to accept two facts of recent aerospace power application. These facts are: **(1) aerospace power is decisive, and (2) military thought has evolved away from the need to mass forces on one or two targets at a time to massing the effects of those forces simultaneously at the strategic, operational, and tactical levels of war to paralyze**

opponents and make them ineffective, rather than necessarily having to destroy them.

CENTERS OF GRAVITY

A critical part of strategy development is identification of COGs that can be attacked or disrupted to achieve theater strategic and operational objectives. *COGs are defined as those characteristics, capabilities, or localities from which a military force, nation, or alliance derives its freedom of action, physical strength, or will to fight.* They are those centers of power that if defeated or disrupted will have the most decisive result. Additionally, friendly COGs must be assessed for possible vulnerabilities, to include asymmetric threats. Aerospace power has the ability to attack COGs from the strategic to the operational level, throughout the theater, and engage them either simultaneously or sequentially. In any case, *a thorough understanding of the theater, the enemy, and the friendly situation is required for correct identification of COGs.*

In theater-level warfare, the air commander must have a thorough knowledge of the desired objectives and planned strategies to identify the enemy COGs. *COG analysis ultimately leads to the identification of vital target sets within the individual COGs*. Vital targets are those that, if successfully attacked, will have the greatest adverse effects on the enemy COGs at the operational and strategic levels of war. During small-scale contingencies and humanitarian operations, COG identification is just as important but may be more difficult to ascertain. An example of a humanitarian COG is the basic agricultural capability of a nation, as opposed to the simpler problem of hunger. Identifying the proper COG in this cause-effect relationship leads to a longer-term solution and assists in development of a strategy to make such a nation self-sufficient in feeding its people. Similarly, the proper COG in a peace enforcement contingency is more often the underlying social, religious, ethnic, or political conflict than the resulting acts of violence. In many of these cases, there is very little that can be done due to politico-military constraints. However, an awareness of the COG can help forces in dealing with the problems associated with an operation in a peace enforcement or humanitarian contingency.

The air commander can plan to attack COGs directly, indirectly, or combinations of both. Political considerations, projected loss rates, Laws of Armed Conflict considerations, available forces, etc., may make

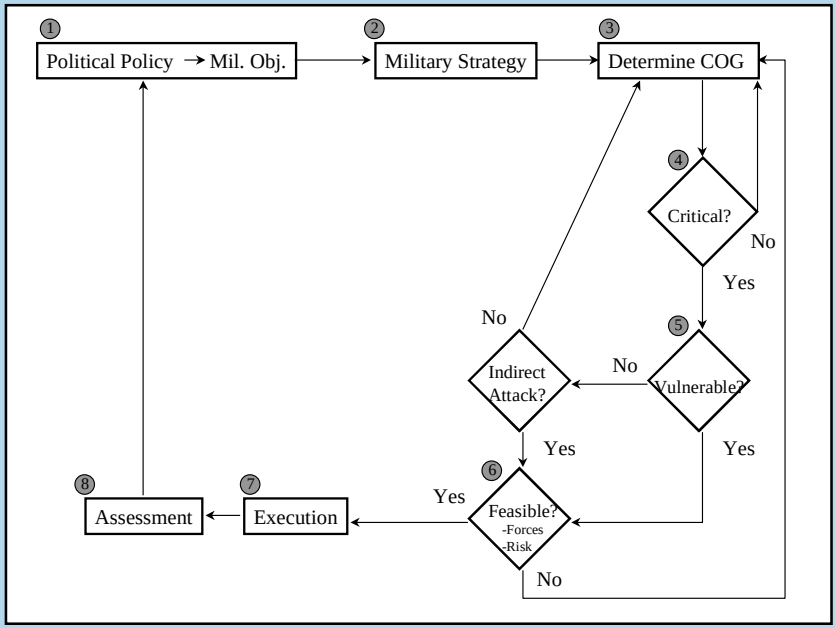
direct attacks on the COG unfeasible, thus forcing indirect methods. As the name implies, *direct attack involves physically attacking a COG or engaging it in decisive combat. Indirect attack, on the other hand, results in the same or similar effects on a COG through attack of its supporting infrastructure and related elements.* Another technique for indirect attack involves attacking targets that may produce a new COG that is more accessible. The intent is to force reliance on a single element, such as a line of communication or source of supply, and then after reliance is at its maximum, either destroy or exploit the newly created COG. For example, in Operation DESERT STORM, successful attack on the Iraqi fiber-optic telecommunications system forced reliance on transparent radio broadcasts and slow courier services for critical theater-level communications. These newly created COGs were then even more accessible for exploitation by friendly forces than the original COG.

The following figure shows the COG identification process from start to finish. Note that analysis must always begin with national policy and military objectives and include assessment of ongoing operations to determine if the COG(s) should be adjusted as the operation progresses. The enemy may take actions that make the original COG no longer critical or develop such defensive or dispersion measures that new methods of attack are required.

CHARACTERISTICS

Air Force basic doctrine describes aerospace power as "an inherently strategic force" and "best used as an offensive weapon." Strategic attack is one of the vital aerospace power functions. **Strategic attack seizes upon the unique capability of aerospace power to achieve decisive effects by striking at the heart of the enemy, disrupting critical command and control (C^2) and war-sustaining capabilities, and avoiding a sequential fight through layers of surface forces to reach the objective.** The strategic application of aerospace forces subjects the entire enemy's homeland to destruction or disruption, in addition to neutralizing fielded military forces. *Thus, strategic attack can perform both a highly effective deterrent role and a punitive role by threatening or extracting a high price for aggression.*

Strategic attack should produce effects well beyond the proportion of effort expended in its execution. *It is the effect of a relatively few well-placed systems, weapons, or actions on a few targets of extreme value that sets strategic attack apart from other functions*. Strategic attack can produce



Developing and Attacking a Center of Gravity

1. Receive overall policy and military guidance.

2. Develop overall military strategy to support the military objectives. Among other factors, the strategy must consider objectives, threats, environment, mechanism, and Law of Armed Conflict.

3. Analyze the adversary for possible COGs.

4. Determine if candidate COGs are truly critical to the enemy strategy.

5. Determine if identified COG(s) or their linkages are vulnerable to direct attack. If not, examine for possible indirect attack.

6. Determine if the method of influencing the COG is feasible, considering such questions as number and quality of friendly forces, rules of engagement, level of conflict, projected losses, etc.

7. Execute the strategy and attack/influence the COG as part of the military operation.

8. Assess the success of the attack and study the overall impact on adversary strategy (operational assessment). Assess adversary reaction to the attack and determine if follow-up attacks are required or if a new COG should be sought.

a massed combat effect without necessarily massing combat forces. By employing precise combat power, lethal and nonlethal, against COGs and other critical targets, strategic attack can achieve decisive strategic effects. Calculated losses to aerospace forces committed to the operation should not be out of proportion to the value of those strategic effects gained from the operation. **If properly applied, strategic attack can be the most efficient means of employing air and space forces.** It provides the theater commander with the option of creating far-reaching effects against an adversary while avoiding excessive loss of life and expenditure of treasure.

Strategic attack can cripple and overwhelm industrialized, technological, or information-based opponents and can most easily compel opponents whose commitment to their cause is less than total. However, there are potential COGs in any adversary, regardless of societal sophistication or national determination; it is a matter (not necessarily simple) of determining the proper aerospace actions that will have the greatest effect on accomplishing national goals. Examples of vulnerable COGs provided by the enemy include heavy industry, national information networks, centralized leadership and support functions, vital transportation systems, specific military or paramilitary formations key to national control (such as Iraq's Republican Guard), critical materiel, and nuclear, biological, and chemical weapon stockpiles. In cases such as Operation Desert Storm, strategic attack carried out against government and military leadership C^2 targets can decapitate command structures, leaving the nation and military forces unable to respond systematically and in unison in a dynamic wartime environment. Additionally, due to the ability of strategic attack to facilitate other military operations and directly attain political objectives, **early and persistent application of strategic attack is highly desirable in most aerospace operations**.

Historically, strategic attack has frequently been a part of theater-level conflict, such as the air war in Europe during World War II or Operation Desert Storm. *In such cases, strategic attack contributes to and benefits from the synergistic effects of other theater operations.* Counterair and counterinformation missions neutralize enemy opposition and allow strategic attack to be carried out with minimum interference. Ground maneuver both benefits from and supports strategic attack by creating a dynamic environment that the enemy must react to with degraded capabilities. Ground maneuver also creates increased demand for war mate-

Long-range bombers, such as this B–1B Lancer, provide a quick-reaction strike capability that can operate from outside the theater and have bombs on target in significantly less time than required by surface forces.

riel, the industrial sources of which have historically been a critical focus of strategic attack.

Strategic attack may also be conducted during more limited contingency strikes with specific key objectives. This was clearly demonstrated during Operation DELIBERATE FORCE in 1995. The objective of the North Atlantic Treaty Organization air campaign was to force Bosnian Serb leaders to the negotiating table. In addition to the immediate tactical and operational effects of attacks against Bosnian Serb military targets, the raids were intended to convince the Serbian national leadership to cease support for Bosnian Serb political and military objectives by extracting a high price both in damage and prestige. For future contingencies, IW operations against an adversary's national C^2, military, or economic COGs may produce significant strategic effects. *In MOOTW, limited stand-alone attacks intended to produce strategic effects may be more desirable and offer the National Command Authorities (NCA) the most effective means of achieving national objectives.*

RESOURCES

Strategic attack is not defined by the weapons or delivery systems used—their type, range, speed, or destructiveness—but by their effective contribution to directly achieving national or theater strategic objectives. Air and space forces, with their responsiveness, range, and unique ability to exploit the third dimension can tran-

scend normal operating limitations imposed on land and maritime forces in attaining strategic objectives.

Aerospace forces **are unrestricted in their movement by surface features that impede speed and range such as mountain ranges, rivers, or dense forests** that limit ground force operations and are quickly adapting technological advances that will enable operations in nearly all weather and day or night conditions. The versatile payload capability of most modern combat aircraft, and increasingly of missiles and unmanned aerial vehicles, furthers their multirole capability. Future applications of space systems such as maneuvering satellites and using a space plane have the potential to reduce the time required for a global response to support strategic operations from hours to minutes.

Strategic attack may be carried out with multiple systems from all Services: Air Force bombers, naval attack aircraft, special operations forces, ballistic and cruise missiles, rockets, information systems, even helicopters and artillery under the right circumstances. Each system and weapon has unique characteristics that should be exploited based on the nature of the specific threat and potential targets. However, **the Air Force is the only US Service specifically directed to "organize, train, equip, and provide forces for" both the "conduct of prompt and sustained combat operations in the air" and "for strategic air and missile warfare."** *Normally aerospace forces will be predominant in strategic attack operations.*

The improved capabilities of precision munitions and stealth technology, combined with accurate, timely intelligence and weather information, *give air forces the ability to strike at critical point targets with a high probability of success.* **The decision to use such precision munitions should balance the need for high accuracy with cost and availability.** Their use, as well as the use of information-based assets and functions, for strategic purposes places high demands on intelligence capabilities to identify key targets, provide precise target locations, and perform timely functional damage assessment.

In many situations, the employment of "massive firepower" using large numbers of nonprecision conventional munitions against area targets can ensure uniform target coverage and maximize destruction. By the same token, using elements of IW such as psychological operations, deception, or electronic attack on adversary information systems may have substan-

Special operations forces are capable of carrying out strategic attack under the right conditions.

tial strategic effects without producing the physical damage characteristic of classical strategic warfare dominated by destructive effects.

Weapons of mass destruction (WMD), defined as nuclear, biological, and chemical, can be applied at all levels of war against a wide variety of targets. **Their political nature and the psychological effects of even limited use make WMD particularly effective in deterrence and strategic application and would likely impart strategic effects even when used at the operational or tactical levels of war.** Therefore, aerospace forces must be prepared to deter their use, defend vital resources, and appropriately respond against any adversary that threatens to use or uses WMD.

Nuclear attack by US aerospace forces can be authorized only by the National Command Authorities and can be accomplished by a variety of strategic and theater delivery systems. *The role of nuclear weapons is deterrence, but if their use is necessary, they should generally focus on vital military, leadership, or industrial targets with maximum effort made to minimize collateral effects.* **The growing threat from the proliferation of WMD requires that aerospace forces be capable of locating and attacking this important enemy COG with a high degree of accuracy while minimizing collateral effects.** Inability to do so may result

Desert Storm: First Night

Early in the morning of 17 January 1991, three US Air Force MH–53J Pave Low helicopters led nine U.S. Army AH–64 Apache helicopters across the Saudi Arabia-Iraq border to attack two Iraqi early warning radar sites. Taking down these two sites opened the door for attacks across Iraq by F–117s, coalition aircraft and Tomahawk missiles. For instance, F–15Es targeted permanent SCUD missile sites that were aimed at Israel, F–117s hit communication sites in Baghdad disconnecting the Iraqi leadership from their forward-deployed forces, and B–52s flying from Diego Garcia hit Iraqi forward airfields and runways. B–52s launched from Barksdale AFB, Louisiana, flew a 14,000-mile round trip mission to hit targets in northern Iraq that could not be reached by forces out of Saudi Arabia.

In sum, the first night's coalition air attack severed Baghdad from the national power grid, disrupted and heavily damaged key elements of the national air defense network, cut a significant percentage of the state's land line communication system, suppressed some Iraqi airfields, and struck the SCUD assembly and launching complexes. After that one aerial action, Iraq's military establishment was on the ropes, mortally wounded, albeit still twitching.

Richard G. Davis
Decisive Force: Strategic Bombing in the Gulf War

in their use against deployed US forces or the deterrence of active defense of legitimate US national interests. Attack of adversary WMD generally requires NCA authorization.

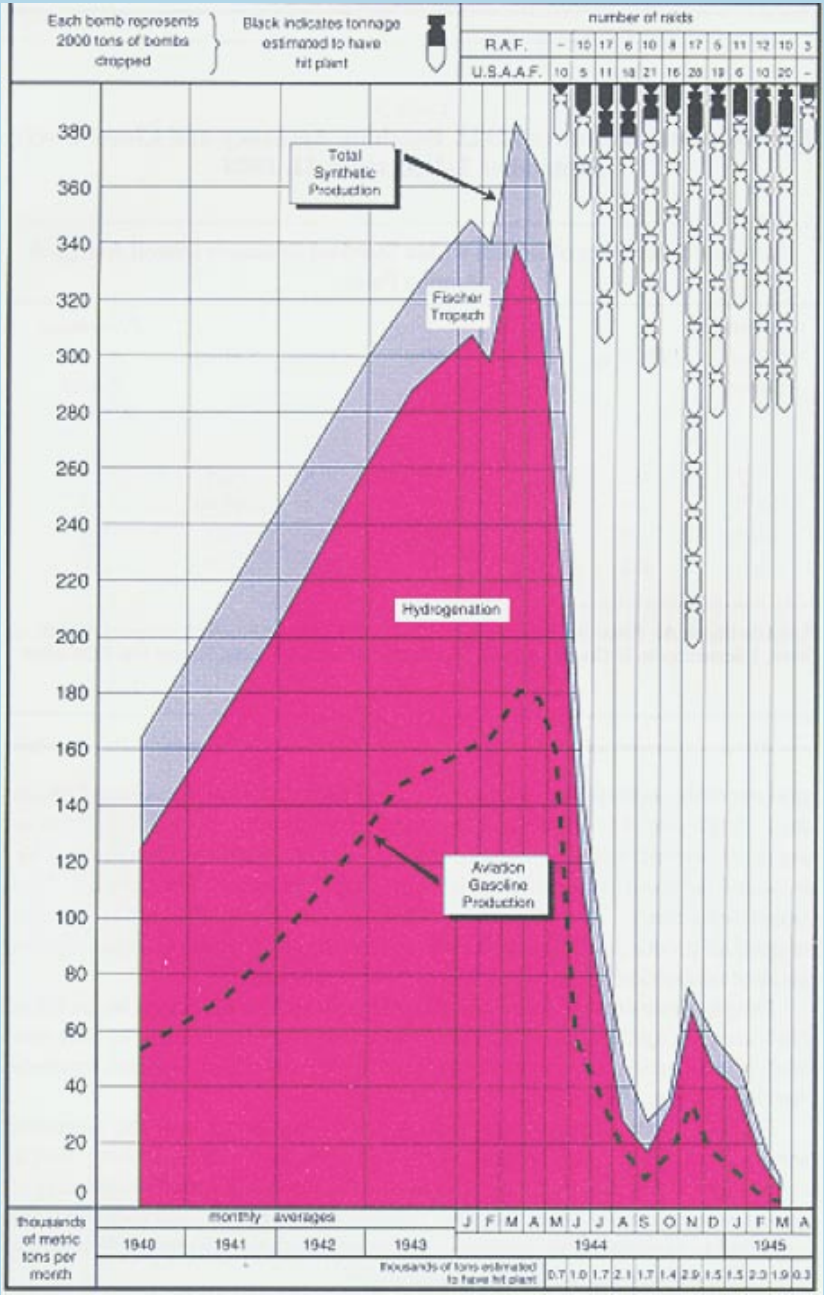
COMPLEMENTARY AND OVERLAPPING OPERATIONS

Strategic attack is complemented by other operations such as counterair, counterspace, counterinformation, counterland, surveillance, and reconnaissance in attaining overall national and theater objectives. Additionally, distinctions between missions such as counterair, counterinformation, interdiction, and strategic attack are often unclear. Accomplishment of objectives associated with such tactical- or operational-level missions has often been either a direct result or a by-

product of strategic attack, while these "tactical" missions have at times also produced strategic effects. Allied air superiority during the Normandy invasion of June 1944 and the attacks on the Iraqi Republican Guard during Operation DESERT STORM highlight the synergy that can be attained from complementary strategic, counterair, and interdiction operations. *The synergistic effect of these operations at the strategic, operational, and tactical levels in a coordinated air operation places maximum stress on the ability of an enemy nation to function and conduct integrated military operations.*

The effects of strategic attack may be enhanced by offensive actions of other force components as a part of the JFC's overall campaign. *In such cases, strategic attack contributes to and benefits from the synergistic effects of other theater operations.* Counterair and counterinformation missions neutralize enemy opposition and allow strategic attack to be carried out with minimum interference. Ground maneuver both benefits from and supports strategic attack by creating a dynamic environment the enemy must react to with degraded capabilities. Land offensives create demands upon enemy fielded forces and speed consumption of vital war materiel, the industrial sources of which have historically been a critical focus of strategic attack. Strategic attack destroys or disrupts such materiel at the source while interdiction is normally directed against forces and materiel in transit. *The net result is that in addition to causing immediate effects on the enemy's homeland, strategic aerospace operations also indirectly affect enemy forces in the field.* For example, destruction of the bridges over the Tigris River in Baghdad crippled the transportation network; therefore, much-needed supplies never reached the Iraqi front line troops. Likewise, the Doolittle Raid on Japan early in World War II produced dramatic strategic effects by forcing Japan to keep military forces in Japan rather than deploying them to front-line units.

Information superiority is attained through offensive and defensive information operations that provide commanders with the ability to operate without interference and to impede the adversary's ability to command and control. Control of the aerospace environments can be further reinforced by attacks that destroy or render COGs unusable. These COGs may be an adversary's military strategy; command, control, communications, computers, and intelligence (C^4I) networks; airfields; ballistic missile launch facilities; space launch and control centers; POL sources, production and storage facilities; and weapons in storage. Thus, superiority and strategic attack are complementary and reinforce each other.



Total German synthetic fuel production, 1940–1945

World War II: Impact of Strategic Attack on German Oil Production

Consumption of oil exceeded production from May 1944 on. Accumulated stocks were rapidly used up, and in six months were practically exhausted. The loss of oil production was sharply felt by the armed forces. In August the final run-in-time for aircraft engines was cut from two hours to one-half hour. For lack of fuel, pilot training, previously cut down, was further curtailed. Through the summer, the movement of German Panzer Divisions in the field was hampered more and more seriously as a result of losses in combat and mounting transportation difficulties, together with the fall in fuel production. By December, according to Speer, the fuel shortage had reached catastrophic proportions. When the Germans launched their counteroffensive on December 16, 1944, their reserves of fuel were insufficient to support the operation. They counted on capturing Allied stocks. Failing in this, many panzer units were lost when they ran out of gasoline.

The United States Strategic Bombing Surveys (European War)

ELEMENTS OF EFFECTIVE OPERATIONS

Effective strategic attack operations depend on the proper identification of COGs and the proper integration of numerous elements: air, space, and information superiority; centralized control and decentralized execution; accurate and timely intelligence; parallel application; persistence of effort; and sufficient logistics support.

Air, Space, and Information Superiority

Air, space, and information superiority are essential for the successful prosecution of all other military operations and may be achieved by both offensive and defensive operations. *The value of air superiority was proven in the skies over Germany during World War II and should never be assumed as "given" in any operation. With air superiority, all friendly forces may conduct more effective operations with minimum opposition.* Even when employing advanced technologies such as stealth aircraft and missiles which, similar to the bombers of the late 1930s, are presently seen as providing essentially their own air superiority, the surface, air, and space threat should be thoroughly analyzed. Appropriate supporting counterair, counterspace, and counter-information should be planned. *Initial air superiority need not be continuous; it must exist only at the time and place necessary to allow successful operations.* Control of the air, space, and information environments can

DESERT STORM:
Impact of Strategic Attack on Electrical System

The electrical attacks proved extremely effective. By 0310L (H + 10) CNN (Cable News Network) reported that Baghdad had completely lost commercial power. Few, if any, electrons flowed through Iraq for the remainder of the six-week war. The loss of electricity shut down the capital's water treatment plants and led to a public health crisis from raw sewage dumped in the Tigris River. It further disrupted the commercially dependent Kari system, forcing its defenders to resort to backup generators. Fluctuating output, the air planners knew, would play hob [cause mischief] with sensitive electronic equipment and computers. The loss of electricity further hampered daily government functions and literally put Iraq's leaders "in the dark." In the following week, Tomahawk land attack missiles and coalition aircraft reduced every major city in Iraq to the same unhappy situation.

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be further reinforced by attacks that destroy or render COGs unusable. Therefore, strategic attack enhances air, space, and information superiority.

Use of uninhabited systems or stealth technology may make it possible to conduct successful strategic attack without complete control of the air. However, these operations can be very costly and do not guarantee success**. Control of the air remains a vital precursor to any military operation.** The decision to conduct strategic attack without control of the air must be viewed as high risk. *Such risks should be balanced against the need to achieve specific critical objectives early in an air operation or campaign prior to achieving air superiority or an acceptable level of air supremacy.* Due to their unique characteristics, cruise and ballistic missiles may be the weapons of choice prior to achieving air superiority. Stealth may effectively assist in attaining air superiority and in attacking targets that are critical to the success of the early campaign. Although strategic attack can be conducted without control of the air, the risk must be weighed against the urgency of the operation and the probability for success.

Centralized Control and Decentralized Execution

A tenet of aerospace power, **centralized control and decentralized execution of aerospace forces, is essential to successful strategic operations**. Attaining strategic objectives requires the aerospace effort

B–52s flying from the continental United States launched conventional air launched cruise missiles against vital Iraqi targets in the opening moments of Operation DESERT STORM.

avoid fragmentation. *Forces available for strategic attack missions are limited in number and can often accomplish other operations, such as counterair, counterinformation, or interdiction, at the operational and tactical levels of war. Additionally, the achievement of national-level goals dictates the strategic operation be conducted in concert with other national- and theater-level military, political, informational, and economic activities.* The attainment of these objectives in concert with the overall aerospace effort and the activities of other components require that responsibility for planning and executing the strategic attack operation must reside in one officer—most properly an aerospace officer. This is recognized in joint doctrine which states the air component commander is the supported commander for strategic operations when air operations constitute the bulk of forces needed to attack enemy COGs.

Decentralized execution *is the delegation of execution authority to responsible and capable lower-level commanders and is essential to achieve effective span of control and to foster initiative, situational responsiveness, and tactical flexibility.* Centralized control and decentralized execution are illustrated by the concept of a 2,000 to 3,000-sortie day in the Gulf War. The single command intent of the JFC was centrally planned then distributed and executed across an entire theater battlespace by more than 500 flight

North Africa: Effects of Centralized Control, Decentralized Execution

General Bernard L. Montgomery, commander of the British Eighth Army, in January 1943, issued a small pamphlet entitled "Some Notes on High Command in War," which described his experience in war. As a result of his experience of cooperating with the British Western Desert Air Force, Montgomery emphasized that the greatest asset of air power was its flexibility. He maintained that this flexibility could be realized only when air power was controlled centrally by an air officer who maintained a close association with the ground commander. "Nothing could be more fatal to successful results," Montgomery wrote, "than to dissipate the air resources into small packets placed under the command of army formation commanders, with each packet working on its own plan."

In February 1943 in North Africa, Major General Carl Spaatz organized the Northwest Africa Allied Air Force and gave it command over a strategic, a coastal, and a tactical air force. In a letter to Arnold dated 7 March 1943, Spaatz emphasized that "the air battle must be won first.... Air units must be centralized and cannot be divided into small packets among several armies or corps.... When the battle situation requires it, all units, including medium and heavy bombardment must support ground operations."

Source: **Robert F. Futrell**
***Ideas, Concepts, Doctrine: Basic Thinking in the United States Air Force 1907-1960*, Volume 1**

Continued on page 29

leads; mission, crew, and flight commanders; and support teams in a continuous application against an entire range of separately engaged enemies. The JFACC proved to be the most efficient means for the JFC to manage the battle across the entire operations area.

Intelligence, Surveillance and Reconnaissance

Intelligence, surveillance, and reconnaissance (ISR) serves a vital role in planning and prosecuting strategic air operations. In fact, it can be argued that the essence of air strategy is to influence the adversary by breaking out target sets on carefully selected COGs. To plan and prosecute an air operation effectively, knowledge of the opponent's history, culture, political structure, economy, and motivations or intentions, in addition to military capabilities, is essential. Weather informa-

This was a change from General Eisenhower's original use of air power where he gave command of the air units assigned to Operation TORCH, to the commanders of the major task forces. The airmen, led by Air Chief Marshall Sir Arthur W. Tedder, the senior officer of the Royal Air Force in the theater, argued that this dispersion of aircraft was the worst of choices in the face of a superior Luftwaffe....The much-respected Allied naval commander in the Mediterranean, Admiral Sir Andrew B. Cunningham, signaled in despair to London that the organization of the air forces in Tunisia was completely chaotic.

The air and ground force commander were co-equal with equal access to the theater commander.... From the perspective of military efficiency, the strength of this system was that the air commander, who controlled separate tactical and strategic air forces, could evaluate requests from the ground commander and integrate them into an effective air strategy designed to support the design of the theater commander.

***Source:* Eduard Mark**
Aerial Interdiction in Three Wars

tion and knowledge of its effects as an intelligence element are especially critical to air campaign planning and prosecution. Weather affects enemy capabilities, decision cycles, and employment plans. Additionally, enemy WMD locations, capabilities, and employment doctrine, as well as active and passive defenses of WMD production and storage sites, are increasingly vital elements of intelligence. Such knowledge allows the commander to focus attacks on vital targets or target systems to produce effects that can have the most decisive impact on achieving established objectives.

Accurate intelligence is the critical factor in planning for strategic attack. Ignorance can lead to false assumptions that can lead to tragic results. Assuming that information superiority and intelligence are better than they actually are can be disastrous. The Germans and the Japanese had full faith in the security of their codes throughout World War II. The Allies' ability to read the Axis message traffic was vital to the success of many Allied operations throughout the war and remained a closely guarded secret until long after the war ended. Problems associated with gaining accurate, timely intelligence persisted in Operation DESERT STORM.

Intelligence must provide the JFC, JFACC, and other component commanders the information necessary to identify critical target systems or COGs. This becomes even more important as the tech-

For two decades, the Defense Meteorological Satellite Program (above) has collected weather for US military operations for peacetime operations and wartime planning targeting requirements.

The U–2 (below) carries various sensors for collecting data.

nology for command, control, communications, computers, intelligence, surveillance, and reconnaissance (C^4ISR) and for precise weapon application raise both the scale and tempo of operations to previously unimagined levels. When the JFC has identified the COGs required to attain objectives, a targeting strategy should be developed. This requires intelligence to identify the component elements of a COG or specific objective (weapons manufacturing plants, bridge complexes, or command centers) and determine the desired effect (total destruction, partial destruction, and disruption). Once specific strategic effects are identified, intelligence provides the precise location of individual target elements, the status of defenses, environmental factors (weather, phase of moon), and any other information necessary for the actual planning and execution of a strike. Measures of merit to track achievement of these effects must also be developed. Finally, in the post-attack environment, intelligence elements assess the level of success, functional and physical, against the selected targets. Such information is vital in determining the necessity and timing for any follow-up strikes against these or other targets. More importantly, a COG or system assessment is required to determine if the desired effect was produced. Additionally, *maintaining data on the opponent's air, space, surface, and information threats to friendly forces is the critical foundation to identifying targets and ultimately mission success.*

Intelligence Support During Operation Desert Storm

The Iraqi nuclear program was massive for most practical purposes, was fiscally unconstrained, was closer to fielding a nuclear weapon, and was less vulnerable to destruction by precision bombing than coalition air commanders and planners or US intelligence specialists realized before Desert Storm. The target list on 16 January 1991 contained two nuclear targets; but after the war, inspectors operating under the United Nations Special Commission eventually uncovered more than twenty sites involved in the Iraqi nuclear program; sixteen of the sites were described as "main facilities."

Overall, the United States did not fully understand the target arrays comprising Iraqi nuclear, biological, chemical, and ballistic missile capabilities before Desert Storm.

Executive Summary
Gulf War Air Power Survey

Parallel Application

Strategic attacks should be simultaneous and continuous against the spectrum of COGs and vital centers and conducted with sufficient force to overwhelm the enemy. Properly executed, parallel attack can present the enemy with multiple crises or confusing information occurring so quickly there is no way to respond to all, or in some cases, any of them. Such a strategy places maximum stress on both enemy defenses and the enemy system as a whole. *Simultaneous parallel operations can be conducted at all levels of operations, not just at the strategic level.* Parallel force application theory is not new. It relies heavily on synergistic application, and its recent emphasis is essentially a product of the advent of high-technology precision weapons and C^4ISR. For parallel strategic operations the swift, massive, and precise application of aerospace power against several critical COGs may be sufficient to produce "shock and awe" in an opponent's national leadership and popula-

tion. As seen in Operation Desert Storm, *it is this shock and resulting organizational paralysis in the enemy that enables successful friendly military operations. Additionally, it provides the leverage for US national leadership to press for favorable conflict resolution.*

Until very recently it was assumed the only way to attain such overwhelming shock and paralysis was through the application of nuclear weapons. In the past, these were the only systems available that could be applied simultaneously with sufficient speed and against a sufficient number of targets to produce a high probability of overwhelming (and paralyzing) success. The advent of precision nonnuclear munitions, cyber and nonlethal weapons, along with improved communication and intelligence capabilities, provides planners with the ability to destroy key targets with minimal collateral damage and loss of life. While this does not eliminate the role of nuclear weapons in deterrence, or their use in certain situations under NCA authority, these new technologies give aerospace power the ability to precisely disrupt or destroy the strategic COGs of the adversary without resorting to the threat or use of nuclear weapons.

Persistence

Persistence is a critical element in ensuring the prolonged effect of strategic attack. While it is the intention of most modern strategic attack operations to quickly attain objectives through swift, parallel, and decisive blows to the adversary's capability to wage war, there will be occasions (due to factors such as enemy resilience, effective defenses, or environmental concerns) when objectives cannot be so quickly attained. Realizing that for many situations strategic attack is the most effective use of limited aerospace forces, *commanders must be willing to persist in strategic operations and resist the temptation to divert resources to other efforts unless such diversions are vital to attaining theater goals or to the survival of an element of the joint force.* Given sufficient time, even the most devastating strategic effects can be circumvented by resourceful enemies; the goal is to keep pressure constant and not allow the enemy to exploit that time.

Aerospace power is uniquely suited to the delivery of persistent lethal and nonlethal force since, unlike surface forces, aerospace forces do not have to occupy the same territory as, or remain in proximity to, enemy forces to bring combat power upon enemy positions. This is especially important to "deep" strategic attack operations. *Commanders must ensure that attacks are carried out with determination and overwhelming force and are supported with all the forces and support*

resources necessary to achieve the objectives. Commanders must also be willing to reattack targets as necessary. Effective employment of ISR assets provides critical information to the JFACC on the results of initial attacks and on the effects achieved over time. Timely functional and physical damage assessments allow a targeting cell to determine the need for specific follow-on strikes while more long-term intelligence assessments allow commanders to judge the effectiveness of the strategic operation and counter enemy attempts to recover and lessen the impact of the original attacks.

Logistics Support

Logistics and other combat support is a key enabler in the planning and execution of effective strategic attack operations. With the increased use of and reliance upon precision munitions and advanced technology and avionics, logistics supportability planning will ensure adequate resources are available. *Logistics support must be integrated with operational planning during course of action selection and campaign plan development.* Key factors affecting logistics supportability include planning beddown of forces and base support; deploying and sustaining munitions and fuel; and lean logistics support for critical spares. Rapid, tailored, time-definite logistics and integrated combat support enable the required flexibility for conducting persistent parallel or sequential operations.

PSYCHOLOGICAL EFFECTS

Psychological effects can have a significant impact on a military campaign. One has only to recall the experiences of Operation Desert Storm when Iraqi SCUD missiles struck Israel. The enemy determined the Gulf coalition itself was a critical COG. Due to their inaccuracy, the SCUD attacks contributed minimally to military operations. Nevertheless, Iraq hoped the attacks would force Israel to enter the war and break the solidarity between western and Arab members of the coalition. Through space-based early warning efforts, political action, and shifts in the air effort to neutralize the SCUD threat, the United Nations coalition kept Israel out of the war and continued to protect it as a COG. The precision, intensity, persistence, and sheer scope of strategic-level air attacks can potentially demoralize governments, populations, and military forces. However, despite attempts to achieve psychological collapse of an adversary through population attack—most notably by the German and British strategic air campaigns of World War II—*the ability of airpower to achieve*

Doolittle Raid on Japan: Effects of Strategic Attack

On 18 April 1942, the unthinkable happened. The Japanese, both military and civilian, thought that the Imperial Japanese Navy was powerful enough to keep all enemy aircraft away from their shores, so the unexpected arrival of American B–25s overhead shocked the Japanese. The raid was small. 16 B–25s, under the command of Lieutenant Colonel Jimmy Doolittle, took off from the USS *Hornet* approximately 600 miles off the coast of Japan. Principal targets were in Tokyo, Kobe, Yokohama, and Nagoya. The actual targets were the morale of the people of Japan and the United States. Admiral Isoroku Yamamoto stated in a letter that "...one has the embarrassing feeling of having been caught napping just when one was feeling confident and in charge of things. Even though there wasn't much damage, it's a disgrace that the skies over the imperial capital should have been defiled without a single airplane being shot down."

Although it lacked the firepower of later attacks, this raid psychologically hindered Japan for the rest of the war and encouraged the Allies, who desperately needed good news. The impact in Japan went beyond its actual military effect. For the remainder of the war, Japan kept desperately needed forces in reserve in Japan in anticipation of future attacks. Additionally, Doolittle's raid greatly influenced Japan's decision to move up the date for the attack on Midway for the fateful battle that was the turning point in the Pacific.

victory through direct psychological impact alone (without resort to use of WMD) has not been substantiated. A prolonged strategic air campaign against morale targets, on the contrary, may serve to stiffen national resolve and neutralize the desired psychological impact as occurred during the Battle of Britain during World War II and Operation Rolling Thunder in Vietnam. Thus, a demoralizing psychological impact can be an elusive objective. **It is the synergistic effect of the psychological element, along with the destruction or disruption of resources, infrastructure, and enemy military capabilities in the field that can work together to give the psychological factor a role in achieving overall campaign goals.**

CHAPTER THREE

COMMAND AND CONTROL

> ***Order or disorder depends on organization.***
>
> **Sun Tzu**

GENERAL

Effective command and control is crucial to the success of strategic attack. *US joint doctrine designates the JFACC as the supported commander for strategic attack when joint air operations constitute the bulk of the capability needed to directly attack enemy strategic centers of gravity.* This means that appropriate forces of all Services in the theater will support this officer who acts for the JFC when accomplishing strategic attack. *The JFACC's strategic operations, in turn, support the entire joint force in the overall campaign.* The concept of centralized control and decentralized execution of aerospace forces is vital to effective strategic operations because the synergy of all applied force elements produces debilitating effects on the adversary's willingness and capability to conduct warfare. The fragmented air command structure and "gradualist" targeting philosophy during the Vietnam War proved that *piecemeal application of force by the various assigned Services and force elements dilutes the effectiveness of the overall operation and often serves to extend the operation with no resolve.*

CENTRALIZED CONTROL AND DECENTRALIZED EXECUTION

Two tenets of aerospace power are flexibility and versatility. Flexibility allows aerospace forces to be applied to multiple missions and tasks often with very little, if any, weapons or systems modification. Even with this inherent flexibility, however, there is rarely enough airpower available to satisfy all demands. Versatility in air and space power stems from the fact that it can be employed equally effectively at the strategic, operational, and tactical levels of warfare. **Centralized control maximizes airpower's potential by emphasizing the integration of limited air and space resources in the air operation planning process.** It also minimizes undue dissipation and fragmentation of effort and ensures coherence and

The Joint Air Operations Center integrates all aerospace operations into one seamless air and space operation based on the joint force commander's direction.

focus on essential national or theater objectives. Because no single commander can personally direct all the detailed actions of a typical complement of available aerospace forces, decentralized execution of air tasks is necessary and is accomplished by delegating appropriate authority for mission execution. **Decentralized execution ensures effective employment of limited assets, allows tactical adaptation, and accommodates the Services' different employment concepts and procedures in a joint environment**.

COMMAND RELATIONSHIPS

American military power is employed under the direction of joint force commanders who are tasked by the NCA. In this context, **aerospace forces must train, equip, and plan for application as an integral element of a joint or multinational force.** However, *particularly for achieving strategic objectives through direct attack, Air Force forces must also be prepared to operate as a single Service under JFC control.* The criteria for either joint force or Service component applications are the expected overall effectiveness and the availability of appropriate forces for the task at hand. In most instances joint operations will rightly predominate, but this requirement should not preclude the effective use of single Service component operations in appropriate instances. *Depending on the situation, the adversary, the weapons to be used (nuclear or conventional), and the objectives to be attained, strategic attack operations may be controlled directly by the NCA or by a designated JFC.*

In any operation, a Commander of Air Force Forces (COMAFFOR) will be assigned and attached to the Air Force component command. **The COMAFFOR will exercise centralized command and control of the**

Air Force forces assigned to a JFC at the unified, subunified, and joint task force level. Air Force forces are temporarily assigned to the COMAFFOR within an expeditionary force structure formed to perform a specified wartime or MOOTW mission. The Air and Space Expeditionary Task Force (ASETF) provides the JFC with a tailored package of aerospace capabilities in an expeditionary force (numbered air force size), wing, or group structure that preserves Air Force unity of command. Force elements within the ASETF are assigned according to their ability to accomplish the missions directed by NCA and joint commanders. ASETF forces are assigned strategic attack missions in accordance with their ability to achieve desired strategic effects.

In joint Service or allied operations, the JFC normally designates a JFACC to ensure the proper application of the joint air effort within the theater of operations. *The JFACC should be the Service component commander with the preponderance of air assets and the C4 infrastructure necessary to plan and conduct theater air operations.* The JFACC's authority, guidance, and responsibilities are assigned by the JFC and include, but are not limited to, recommending apportionment to the JFC and planning, coordinating, allocating, and tasking based on the JFC's apportionment guidance. Although the JFC has great latitude in determining command relationships, the COMAFFOR normally exercises operational control over all assigned and attached US Air Force forces. However, some US Air Force forces and capabilities (such as intertheater airlift and space assets) must maintain a global focus, thus preventing the transfer of operational control to the JFC and COMAFFOR. Where appropriate, the JFC and COMAFFOR should be given tactical control over these assets to integrate the additional capabilities they provide to the joint force. Where neither operational control nor tactical control of such Air Force forces is appropriate, the JFC (and, in turn, the COMAFFOR) will receive support capabilities specified by the supported/supporting command relationship. Once the NCA establish broad commander in chief (CINC) to CINC supported/supporting command relationships (for example, Commander in Chief, US European Command designated supported CINC and Commander in Chief, US Transportation Command designated supporting CINC) for a particular operation, the corresponding Air Force components (in this example, US Air Forces in Europe and Air Mobility Command) should work directly with each other to further detail the associated support for the COMAFFOR.

Apportionment of air and space assets among the various functions such as strategic attack, counterland, or counterair is a JFC decision, based

Launch of a Minuteman III.

on JFACC recommendations and the conditions in the JFC's area of responsibility. Apportionment will likely change as the campaign progresses or as the operational situation changes. Early in a campaign the effort may center on counterair and strategic attack. An enemy ground offensive may then necessitate a larger percentage of the total effort be dedicated to close air support (CAS) over strategic attack. If a situation develops that would change target priorities (i.e., Iraq's attack on Khafji), air and space forces can respond almost immediately due to their flexibility.

US Strategic Command (USSTRATCOM) makes assignments for those strategic attack assets used to carry out the Single Integrated Operation Plan (SIOP). *These forces remain under the direct control of the NCA, which is the only authority which may approve the use of nuclear weapons.* USSTRATCOM creates the SIOP based on guidance from the NCA and assigns appropriate assets to strike those targets. They maintain a command and control system designed to quickly disseminate posturing and execution orders from the NCA to the forces in the field. If time permits, USSTRATCOM coordinates the strike with the affected JFC, however, the nature of their mission precludes assigning operational or tactical control over these assets to that commander.

In conclusion, when air operations constitute the bulk of the capability needed to directly attack strategic COGs, the JFC will normally task the JFACC, as a supported commander, to conduct such operations and the overall theater air interdiction effort. Acting in this capacity, the JFACC can integrate air resources and designate targets or objectives for other components in support of joint strategic attack and in-

terdiction operations. This centralized command of both air efforts allows the synergies of strategic attack and interdiction to be maximized in attaining national or JFC objectives.

Long-range operations require clear lines of authority and the means to control aerospace forces across multiple theaters and major commands.

CHAPTER FOUR

PLANNING AND EMPLOYMENT

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

CAMPAIGN PLANS

In theater warfare and MOOTW, **strategic air warfare is often an element of the overall air operation or campaign, which is itself a critical part of the JFC's theater campaign.** The theater campaign plans and operations plans outline courses of action required to reach overall national/coalition strategic objectives. Thus, *the JFC's campaign plan serves as the basis for all other operational and tactical plans and may direct joint or single Service operations.* This theater campaign plan provides guidance to subordinate commanders and should:

- convey the commander's vision and intent
- provide an orderly scheme of military operations
- orient the joint force's efforts on the enemy's COGs
- describe a series of related and phased military operations
- provide operational direction and tasks to subordinates, and
- synchronize all operations into a cohesive, synergistic whole to arrive at a clearly defined end state.

Based on this direction, *the JFACC develops a plan for aerospace operations including strategic attack operations that ties specific air objectives to the overall campaign plan and takes into account enemy and friendly COGs; strategy; air, space, and information superiority requirements; and the need to maintain the initiative in aerospace operations.*

PLANNING CONSIDERATIONS

Strategic effects can be achieved within the aerospace environment by a variety of joint force systems. In order to meet the JFC's the-

The Combat Intelligence System is a useful tool for obtaining and integrating data for mission planning and targeting.

ater objectives, the JFACC integrates all available theater air and space resources into a comprehensive air and space operations plan. Typically, the strategic attack function is oriented to the strategic and operational levels of war, while the other counterland and counterair functions are focused primarily on the operational and tactical levels. However, interdiction often overlaps into both the strategic and tactical levels of warfare; its objectives may be focused on multilevel COGs or the support of surface maneuver forces. **Strategic attack and interdiction objectives which concentrate at the strategic and operational levels are best expressed as desired outcomes (such as to halt and counterattack an invading army, destroy opponent's weapons of mass destruction, or compel leaders to negotiate) rather than specific targets.** These desired outcomes are expressed by the JFC as mission- or objective-oriented orders and drive targeting decisions by subordinate commanders.

Early in the campaign, plans for strategic attack are often delayed or circumscribed by the commitment of significant resources to attaining air superiority. *Although strategic operations can be pursued without fully established control of the air, depending on enemy defensive capability, type and urgency of the targets, and weapons used, such operations may yield higher attrition rates with a corresponding drop in operational effectiveness.* In most cases, therefore, local air superiority should be achieved as a minimum. Later in the campaign, achievement of theater-wide air superiority will allow changes in tactics. Unmanned aircraft and missiles provide an effective means to conduct strategic air operations under less than optimal conditions. They are clearly not immune to risk, but their use does not endanger crewmembers' lives.

World War II Target Selection: The German's Point of View

The importance of careful selection of targets for air attack is emphasized by the German experience. The Germans were far more concerned over attacks on one or more of their basic industries and services-their oil, chemical, or steel industries or their power or transportation network-than they were over attacks on their armament industry or the city areas. The most serious attacks were those which destroyed the industry or service which most indispensably served other industries.

The Germans found it clearly more important to devise measures for the protection of factories turning out finished products. The German experience showed that, whatever the target system, no indispensable target was permanently put out of commission by a single attack. Persistent re-attack was necessary.

The United States Strategic Bombing Surveys (European War)

The JFACC's joint air operations center (JAOC) is the focal point for integrating aerospace operations into a seamless air and space operation based on JFC direction and target nominations by the various Service or functional components. *Air operations are planned and conducted through the air tasking order (ATO).* The IW cell in the JAOC provides target nominations for the ATO for attaining air component IW objectives. These actions, along with offensive and defensive operations within the information environment itself, should be coordinated with air operations at the strategic, operational, and tactical levels of war to achieve synergistic results. In the same manner, operations in space are tailored to meet the needs of the overall campaign and are integrated into the JFC's campaign plan and into the air and space operations plan at the JAOC. Space forces are then tasked through the space operations center.

Prioritization of aerospace objectives may be required due to limits on resources or for certain strategic and operational considerations. Attack strategies are generally categorized as either sequential or parallel. Sequential attacks require attacking one set of targets or system prior to proceeding to the next. During World War II, Germany was initially attacked sequentially, yet was able to function since its infrastructure was never overloaded. Parallel attacks require attacking mul-

The F–15E contributes massive firepower to the strategic attack function with laser-guided weapons and standoff missile precision.

tiple sets of targets or systems simultaneously. Iraq's infrastructure was attacked in parallel resulting in operational paralysis for the remainder of the war. Though objectives may be addressed in a series if necessary, *the air component commanders should use care not to compromise the overall mass and shock effect of aerospace power as enhanced by stealth, precision weapons, and enhanced command, control, and intelligence capabilities.* Parallel attacks preserve these characteristics and increase the effectiveness of the air operation as a whole.

A third alternative is a combination of these methods. This option recognizes limitations on the ability to carry out simultaneous attacks, especially if a particular mission such as air superiority is not only a precursor to further operations, but also incorporates many advantages of parallel strategies. **In combined sequential and parallel attacks, high priority objectives are the focus of the initial air effort.** At phase points,

the campaign is expanded to incorporate additional objectives, while continuing to ensure the previous requirements are met. For example, the first objectives of an air operation may be to destroy enemy weapons of mass destruction and their means of delivery, pursue air and information superiority, and destroy enemy command and control capability. The air operation could then expand to incorporate additional objectives such as disruption or destruction of POL production and storage, national transportation and electric power grids and attrition of fielded enemy forces. If resources are available, the air operation may be initially focused on each of these objectives simultaneously with other objectives incorporated later in the campaign. In this manner, *the JFACC can tailor the campaign to a level that maximizes intensity but maintains focus and maximizes control.*

SUMMARY

Strategic attack seizes upon the unique capability of aerospace power to strike at the heart of the enemy, disrupt critical C^2 and war-sustaining capabilities, and avoid a sequential fight through layers of surface forces to reach the objective. *The proper use of air, space, and information superiority, centralized C^2, and accurate intelligence assessment to identify COGs are vital to successful strategic attack.* Realizing that strategic attack can be the most efficient use of limited aerospace forces, *commanders must be willing to resist the temptation to divert resources to other efforts unless such diversions are vital to attaining theater goals or to survival of an element of the joint force.* Whether used in a parallel attack that overwhelms the enemy with multiple crises, or a single strike that severely damages or disrupts the enemy (either physically and/or psychologically), strategic attack can have a decisive impact on producing success in war.

At the very Heart of Warfare lies Doctrine…

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GLOSSARY

Abbreviations and Acronyms

AFDD	Air Force Doctrine Document
ASETF	Air and Space Expeditionary Task Force
ATO	air tasking order
C^2	command and control
C^4	command, control, communications, and computers
C^4I	command, control, communications, computers, and intelligence
C^4ISR	command, control, communications, computers, intelligence, surveillance, and reconnaissance
CINC	commander in chief
COG	center of gravity
COMAFFOR	Commander, Air Force Forces
ISR	intelligence, surveillance, and reconnaissance
IW	information warfare
JAOC	joint air operations center
JFACC	joint force air component commander
JFC	joint force commander
LOC	lines of communications
MOOTW	military operations other than war
NCA	national command authorities
PGM	precision-guided munitions
POL	petroleum, oils, and lubricants
SAM	surface-to-air missile
SIOP	Single Integrated Operation Plan
US	United States
USSTRATCOM	United States Strategic Command
WMD	weapons of mass destruction

Definitions

aerospace power—The synergistic application of air, space, and information systems to project global strategic military power.

campaign—A series of related military operations aimed at accomplishing a strategic or operational objective within a given time and space. (Joint Pub 1–02)

campaign plan—A plan for a series of related military operations aimed at accomplishing a strategic or operational objective within a given time and space. (Joint Pub 1–02)

centers of gravity—Those characteristics, capabilities, or localities from which a military force derives its freedom of action, physical strength, or will to fight. (Joint Pub 1–02)

close air support—Air action by fixed- and rotary-wing aircraft against hostile targets which are in close proximity to friendly forces and which require detailed integration of each air mission with the fire and movement of those forces. Also called **CAS**. (Joint Pub 1–02)

counterinformation—Counterinformation seeks to establish a desired degree of control in information functions that permits friendly forces to operate at a given time or place without prohibitive interference by the opposing force. (AFDD 1)

information operations—Those actions taken to affect adversary information and information systems while defending one's own information and information systems. Also called **IO**. (AFDD 1)

information superiority— That degree of dominance in the information domain which permits the conduct of operations without effective opposition. (Joint Pub 1–02) [*The capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same.*] {Italicized definition in brackets applies only to the Air Force and is offered for clarity.}(AFDD–1).

information warfare— Actions taken to achieve information superiority by affecting adversary information, information-based processes, in-

formation systems, and computer-based networks while leveraging and defending one's own information, information-based processes, information systems, and computer-based networks. Also called IW. (Joint Pub 1–02) [*Information operations conducted during time of crisis or conflict to achieve or promote specific objectives over a specific adversary or adversaries.*] {Italicized definition in brackets applies only to the Air Force and is offered for clarity.} (AFDD1).

interdiction—An action to divert, disrupt, delay or destroy the enemy's surface military potential before it can be used effectively against friendly forces. (Joint Pub 1–02)

joint—Connotes activities, operations, organizations, etc., in which elements of two or more Military Departments participate. (Joint Pub 1–02)

joint doctrine—Fundamental principles that guide the employment of forces of two or more Services in coordinated action toward a common objective. It will be promulgated by the Chairman of the Joint Chiefs of Staff, in coordination with the combatant commands, Services, and Joint Staff. (Joint Pub 1–02)

joint force air component commander—The joint force air component commander derives authority from the joint force commander who has the authority to exercise operational control, assign missions, direct coordination among subordinate commanders, redirect and organize forces to ensure unity of effort in the accomplishment of the overall mission. The joint force commander will normally designate a joint force air component commander. The joint force air component commander's responsibilities will be assigned by the joint force commander (normally these would include, but not be limited to, planning, coordination, allocation, and tasking based on the joint force commander's apportionment decision). Using the joint force commander's guidance and authority, and in coordination with other Service component commanders and other assigned or supporting commanders, the joint force air component commander will recommend to the joint force commander apportionment of air sorties to various missions or geographic areas. Also called **JFACC**. (Joint Pub 1–02)

joint force commander—A general term applied to a combatant commander, subunified commander, or joint task force commander authorized to exercise combatant command (command authority) or operational control over a joint force. Also called **JFC**. (Joint Pub 1–02)

maneuver—1. A movement to place ships or aircraft in a position of advantage over the enemy. 2. A tactical exercise carried out at sea, in the air, on the ground, or on a map in imitation of war. 3. The operation of a ship, aircraft, or vehicle to cause it to perform desired movements. 4. Employment of forces on the battlefield through movement in combination with fire, or fire potential, to achieve a position of advantage in respect to the enemy in order to accomplish the mission. (Joint Pub 1–02)

military operations other than war—Operations that encompass the use of military capabilities across the range of military operations short of war. These military actions can be applied to complement any combination of the other instruments of national power and occur before, during, and after war. Also called **MOOTW**. (Joint Pub 1–02) [*An umbrella term encompassing a variety of military operations conducted by the Department of Defense that normally complement the other instruments of national power. These military operations are as diverse as providing support and assistance (when consistent with US law) in a nonthreatening environment, and conducting combat not associated with war.*] {Italicized definition in brackets applies only the Air Force and is offered for clarity.} (AFDD 1)

operational control—Transferable command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control is inherent in combatant command (command authority). Operational control may be delegated and is the authority to perform those functions of command over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions. Operational control does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training. Also called **OPCON**. (Joint Pub 1–02)

operational level of war—The level of war at which campaigns and major operations are planned, conducted, and sustained to accomplish

strategic objectives within theaters or areas of operations. Activities at this level link tactics and strategy by establishing operational objectives needed to accomplish the strategic objectives, sequencing events to achieve the operational objectives, initiating actions, and applying resources to bring about and sustain these events. These activities imply a broader dimension of time or space than do tactics; they ensure the logistic and administrative support of tactical forces, and provide the means by which tactical successes are exploited to achieve strategic objectives. (Joint Pub 1–02)

psychological operations— Planned operations to convey selected information and indicators to foreign audiences to influence their emotions, motives, objective reasoning, and ultimately the behavior of foreign governments, organizations, groups, and individuals. The purpose of psychological operations is to induce or reinforce foreign attitudes and behavior favorable to the originator's objectives. Also called **PSYOP**. (Joint Pub 1–02)

strategic air warfare— 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 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. (Joint Pub 1–02)

strategic attack. Military action carried out against an enemy's center(s) of gravity or other vital target sets, including command elements, war-production assets, and key supporting infrastructure in order to effect a level of destruction and disintegration of the enemy's military capacity to the point where the enemy no longer retains the ability or will to wage war or carry out aggressive activity (AFDD–1).

strategic level of war— The level of war at which a nation, often as a member of a group of nations, determines national or multinational (alliance or coalition) security objectives and guidance, and develops and uses national resources to accomplish these objectives. Activities at this level establish national and multinational military objectives; sequence initiatives; define limits and assess risks for the use of military and other instruments of national power; develop global plans or theater war plans to

achieve these objectives; and provide military forces and other capabilities in accordance with strategic plans. (Joint Pub 1–02)

synchronization—1. The arrangement of military actions in time, space, and purpose to produce maximum relative combat power at a decisive place and time. 2. In the intelligence context, application of intelligence sources and methods in concert with the operational plan. (Joint Pub 1–02)

tactical control—Command authority over assigned or attached forces or commands, or military capability or forces made available for tasking, that is limited to the detailed and, usually, local direction and control of movements or maneuvers necessary to accomplish missions or tasks assigned. Tactical control is inherent in operational control. Tactical control may be delegated to, and exercised at any level, at or below the level of combatant command. Also called **TACON**. (Joint Pub 2–01)

tactical level of war—The level of war at which battles and engagements are planned and executed to accomplish military objectives assigned to tactical units or task forces. Activities at this level focus on the ordered arrangement and maneuver of combat elements in relation to each other and to the enemy to achieve combat objectives. (Joint Pub 1–02)

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