AIR FORCE DOCTRINE PUBLICATION 3-70

STRATEGIC ATTACK

U.S. AIR FORCE

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Air Force Doctrine Publication 3-70, Strategic Attack

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"The Air Force organizes, trains, and equips forces to be an air component to a joint force commander (JFC). As part of the joint force's air component, our forces must be prepared to accomplish JFC objectives**. The theater air component commander leads Air Force warfighting.** The air component commander's authorities are through Title 10, US Code as the commander, Air Force forces (COMAFFOR). The air component commander's operational authorities are delegated from the JFC and exercised as both the COMAFFOR, over Air Force forces, and as the functional joint force air component commander (JFACC), over joint air forces made available for tasking. Thus, the air component commander leads Air Force forces as the COMAFFOR and the JFC's joint air operations as the JFACC. This duality of authorities is expressed in the axiom: Airmen work for Airmen and the senior Airman works for the JFC."

--Air Force Doctrine Publication (AFDP) 1, *The Air Force*

Since the COMAFFOR and JFACC are nearly always the same individual, this AFDP will use the term "air component commander" when referring to duties or functions that could be carried out by either or both, unless explicit use of the term "COMAFFOR" or "JFACC" is necessary for clarity.

FOREWORD

Doctrine embodies the fundamental principles by which military forces guide their actions in support of national objectives. It is a body of carefully developed, authoritative ideas that have been officially approved and establishes a common frame of reference for solving military problems. However, to be an effective guide, the challenge for doctrine is to be simultaneously focused on the past, applicable in the present, and facing toward the future; all in equal measure.

The US Air Force must anticipate a new reality; one in which decision advantage, freedom of maneuver, and freedom of action are increasingly challenged. To deter, compete, and win across the competition continuum, Airmen must advance solutions that enable operations in highly contested environments. Broadly, the joint force's approach to meet this challenge is encapsulated in joint all-domain operations (JADO). Together with joint all-domain command and control (JADC2), JADO provides joint force commanders (JFC) the means to integrate, synchronize, and deconflict the convergence of effects across all domains to achieve operational advantage.

AFDP-1, *The Air Force,* supports this effort by establishing mission command as the Airman's philosophy for the command and control (C2) of airpower. To that end, decision makers at every echelon must have the ability to develop understanding, make decisions, and converge effects when disconnected from higher echelons. Mission command embraces centralized command, distributed control, and decentralized execution as the foundation for the responsiveness, flexibility, and initiative necessary at the tactical edge that ensures capabilities continue to function, even when information is degraded or denied.

AFDP 3-70, *Strategic Attack* (SA), though firmly rooted in past and present best practice, also looks to the future, adapting where needed to ensure continued utility and efficacy for the challenges to come. SA has proven the ability to cause systemic shock that cripples and overwhelms adversarial systems. What worked in the past, WILL work in the future; but NOT in the same way. Airmen must be trained to plan operations in a distributed or decentralized manner, and execute the mission when isolated from higher echelons in distributed environments. Airmen at all levels must be comfortable making decisions independently, operating based on commander's intent and the principles of mission command.

Though not fully adapted to the challenges identified above, SA doctrine represents what we believe to be true based on extant practices. As we continue to press toward a more capable future force, it is critical that we continue to evolve our doctrine, ensuring a grounded foundation perpetually set to meet our nations' security challenges.

CHAPTER 1: INTRODUCTION TO STRATEGIC ATTACK

War is one of mankind's most complex endeavors. Destroying or incapacitating enemy military forces through attrition or decisive battle is one means, but not the only means, of achieving warfare's objectives. From airpower's inception, Airmen looked to it as a means to bypass surface forces and strike directly at the enemy's heart. Doing so offered the promise of achieving victory more quickly and efficiently, while reducing the cost. Advances in airpower tactics and technology have come a long way toward realizing that vision now encapsulated in this doctrine.

Strategic attack (SA) is JFC-directed offensive action against a target —whether military or other— that is selected to achieve national or military strategic objectives (Joint Publication [JP] 3-0, *Joint Operations*). These attacks seek to weaken the adversary's ability or will to engage in or escalate conflict, and may achieve strategic objectives without necessarily achieving operational objectives as a precondition.

✪ "Strategic" refers to the highest level of an enemy system that, if affected, will contribute most directly to the achievement of our national security objectives. This does not necessarily refer to nuclear weapons, although in some cases that may be the most appropriate weapon for a particular set of circumstances.

✪ "Attack" entails offensive action. It implies proactive and aggressive operations against an enemy. It may be used preemptively and without regard to enemy military force. Attacks can employ kinetic or non-kinetic capabilities and may range from nuclear or conventional destructive weapons to offensive cyberspace operations (CO) to create both lethal and non-lethal effects.

Department of Defense (DOD) Directive 5100.1, *Functions of the Department of Defense and Its Major Components*, states that one of the Air Force's functions is to "organize, train, equip, and provide forces to…conduct global precision attack, to include strategic attack…and prompt global strike." AFDP 3-70, *Strategic Attack*, is doctrine for understanding, planning, executing, and assessing this crucial function.

SA is not defined by the use of a particular weapon or the focus on a specific target. Virtually any system may conduct SA. For SA, the term strategic is reserved for **strategic effects** and **strategic objectives** alone. Though the issue of semantics may seem trivial, failure to understand this distinction belies a crucial understanding of SA's approach to operations.

SA's most distinguishing feature is its focus on high-level effects against enemy systems. Through application of force against enemy centers of gravity (COGs), SA's goal is to achieve strategic, war-winning effects by the most direct, effective, and efficient means possible. SA disrupts critical leadership functions, infrastructure, and strategy, achieving results by affecting the psychological, cognitive, and behavioral aspects of warfare. Its execution can range from combined campaigns to individual

strikes. By whichever means, against any enemy, SA aims to produce strategic, war-winning effects more directly than other applications of military power. In doing so, it provides an effective capability that may drive an early end to conflict.

Historic Examples of Strategic Attack

- ✪ Alexander the Great defeated the Persians at the Issus (331 B.C.) by leading a cavalry assault aimed at Persian King Darius himself, which removed Darius from the battlefield and resulted in full retreat of the Persian army.

- ✪ Allied bomber crews and commando teams destroyed the German heavy-water program—derailing Nazi nuclear reactor plans and Hitler's hope for an atomic bomb with it—during WWII.

- ✪ Allied submarines destroyed Japanese merchant shipping in the Pacific during WWII, consciously avoiding engagement with Japanese naval forces while denying Japan crucial war-sustaining resources.

- ✪ During the later phases of Operation ALLIED FORCE, North Atlantic Treaty Organization (NATO) strategic attack operations helped coerce Yugoslav leader Slobodan Milosevic to submit to NATO demands (1999).

- ✪ Coalition forces conducted precision airstrikes against Saddam Hussein and key government and military installations in the opening days of Operation IRAQI FREEDOM, disrupting Iraqi command and control (2003).

- ✪ Coalition forces, during Operation UNIFIED PROTECTOR, conducted strikes on a Libyan regime convoy, leading directly to Muamar Gaddafi's capture and fulfillment of U.N. Security Council Resolution 1973 (2011); preventing further attacks against civilians by Gaddafi's forces.

- ✪ The United States eliminated Iranian Quds Force leader, Maj Gen Qasem Soleimani, severely disrupting Iran's military operations in the Middle East (2020).

SA is applicable across the competition continuum. Credible, effective SA capabilities buttress national and military strategy from cooperation through competition, and when necessary, are capable of delivering decisive results through offensive action during armed conflict. Joint doctrine identifies four strategic uses of military force: to *assure*, *deter*, *coerce*, or *compel*. SA is clearly applicable for efforts to coerce and compel. However, procuring, sustaining, maintaining, and demonstrating SA capabilities is equally important in efforts to assure and deter. Organizing, training, equipping, and providing robust SA capable Air Force forces strengthens the joint force and provides

vital support to the 2018 *National Military Strategy's* five mission areas: respond to threats; deter strategic attack; deter conventional attack; assure allies and partners; and compete below the level of armed conflict.

Historically, in both practice and thought, SA has been primarily viewed as a tool for traditional warfare. However, SA is equally capable of delivering strategic effects in irregular warfare. Regardless of form, SA can be applied to any adversary, whether it be a state or non-state actor. Each enemy system, regardless of size, function, or construct, contains COGs that may be susceptible to SA.

In the same way, SA is not restricted to force-on-force action typical of traditional warfare. To achieve the greatest effect, SA's methodology aims to apply force asymmetrically, through attacks against critical vulnerabilities, within the enemy system. To increase effectiveness and gain efficiency, SA seeks to match strength against weakness with the goal of achieving maximum gain for less effort.

SA during Operation DESERT STORM demonstrated its efficacy; Operations DELIBERATE FORCE, ALLIED FORCE, ENDURING FREEDOM, and IRAQI FREEDOM refined it further. In each, air assets conducting SA were able to deny the enemy access to critical resources and infrastructure, defeat enemy strategies, and decisively influence the enemy to end hostilities on terms favorable to US interests. These operations showcased advances in information technology, precision weaponry, and tactics that, combined with airpower's inherent advantages (range, speed, precision, flexibility, and lethality), serve as clear evidence that SA can be the Air Force's most decisive warfighting capability. Success in future conflict will require the most efficient use of forces and capabilities available. To meet this necessity, Airmen should be prepared to articulate the rationale for SA as an essential warfighting option for the JFC.

FUNDAMENTALS OF STRATEGIC ATTACK
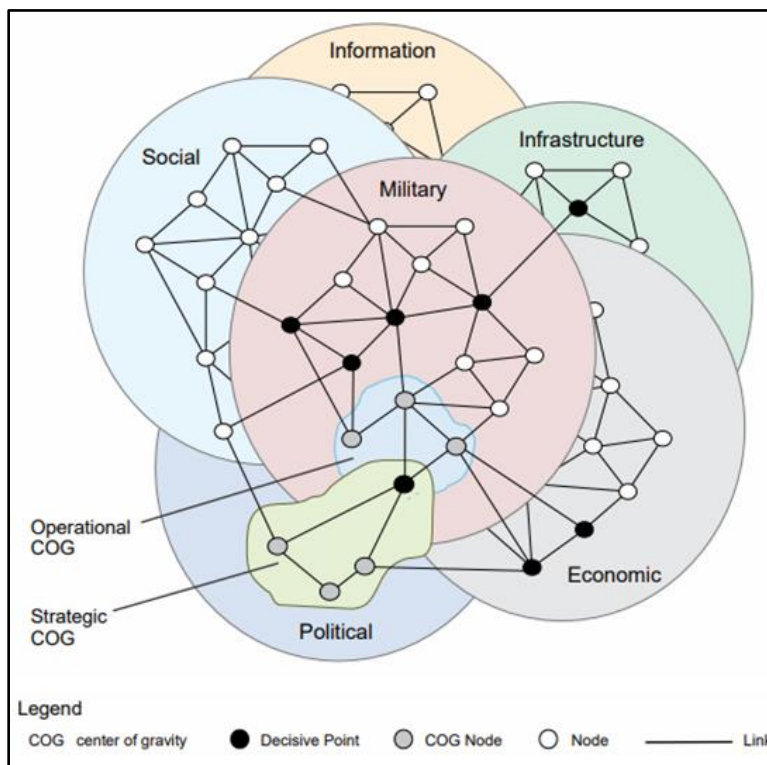
Effects-Based Approach

"Effects-based" describes the operations that are planned, executed, assessed and adapted to influence or change systems or capabilities in order to achieve desired outcomes. Effective operations should be part of a coherent plan that logically ties all actions to the achievement of the desired end state.

-- AFDP 3-0, *Operations and Planning*

SA achieves its objectives through an effects-based approach aimed at enemy COGs. It views the adversary as a system with interdependent parts and focuses on the most effective way to target or influence that system to force desired change. Accordingly, SA operations are planned, executed, and assessed starting with the desired outcome and

then working backwards to determine required effects. Planners should examine the full spectrum of an enemy's system (political, military, economic, social, infrastructure, and information) in the context of stated national security objectives. Through the combination of effects, by systematic application of lethal and non-lethal capabilities, SA seeks to achieve those objectives as effectively and efficiently as possible.

JP 5-0, *Joint Planning* defines a COG as a source of power that provides moral or physical strength, freedom of action, or will to act. COGs can be physical things like leaders, key production processes, infrastructure, and organizations; or less tangible things such as the enemy's morale. In the context of SA, COGs are focal points that hold a system or structure together, draw power from a variety of sources, and provide purpose and direction to that system. Through COG analysis, planners seek to determine a COG's *critical capabilities* and their underlying *critical requirements*, some of which may be vulnerable to attack— *critical vulnerabilities*. These critical vulnerabilities may yield

A Systems Perspective of the Operational Environment

- JP 3-0, Joint Operations

decisive points: geographic places, specific events, critical factors, or functions that, when acted upon, allow commanders to gain a marked advantage over an adversary or contribute materially to creating a desired effect.

STRATEGIC ATTACK AND WARFIGHTING STRATEGY

To help secure our national interests, warfighting strategy focuses foremost on conforming adversary behavior to our will. When employed for this purpose, SA functions in two ways; it affects the enemy's **capability** to fight and it influences their **will** to fight. Most situations will require aspects of both. However, SA is not likely to achieve desired outcomes on its own. Successfully conforming adversary behavior in line with our security interests normally requires a comprehensive strategy; one that combines all instruments of national power (diplomatic, informational, military, and economic) in concert.

Employed in unison with other forms of national and military power, SA is capable of generating an enabling, symbiotic effect. An example of this, though with limited political objectives, can be seen during the closing stages of the Vietnam conflict. In December 1972, US bombing operations, along with the mining of North Vietnamese ports, combined effectively with diplomatic pressure to coerce North Vietnam's leadership to rejoin the Paris peace talks. US-led efforts to defeat the Easter Offensive in 1972 culminated with Operation LINEBACKER I, halting North Vietnamese action in the field. Subsequent diplomatic initiatives cemented that progress. Combined with SA against key targets in Hanoi and Haiphong harbor during Operation LINEBACKER II, the effort effectively coerced the North Vietnamese into signing a peace accord on terms amenable to the U.S.

OBJECTIVES AND EFFECTS

Following an effects-based approach to operations (EBAO), SA planners should start with determining the desired end state and work backwards. National and JFC strategic objectives drive the determination, development, and execution of SA objectives and effects. By analyzing the enemy system and identifying COGs and their critical vulnerabilities, planners can then determine desired effects against those vulnerabilities that will achieve or aid the objectives. From there, the tactical aspects of achieving desired effects can be planned and executed. The graphic below highlights the difference between SA and traditional warfare. The effects of SA, though brought about
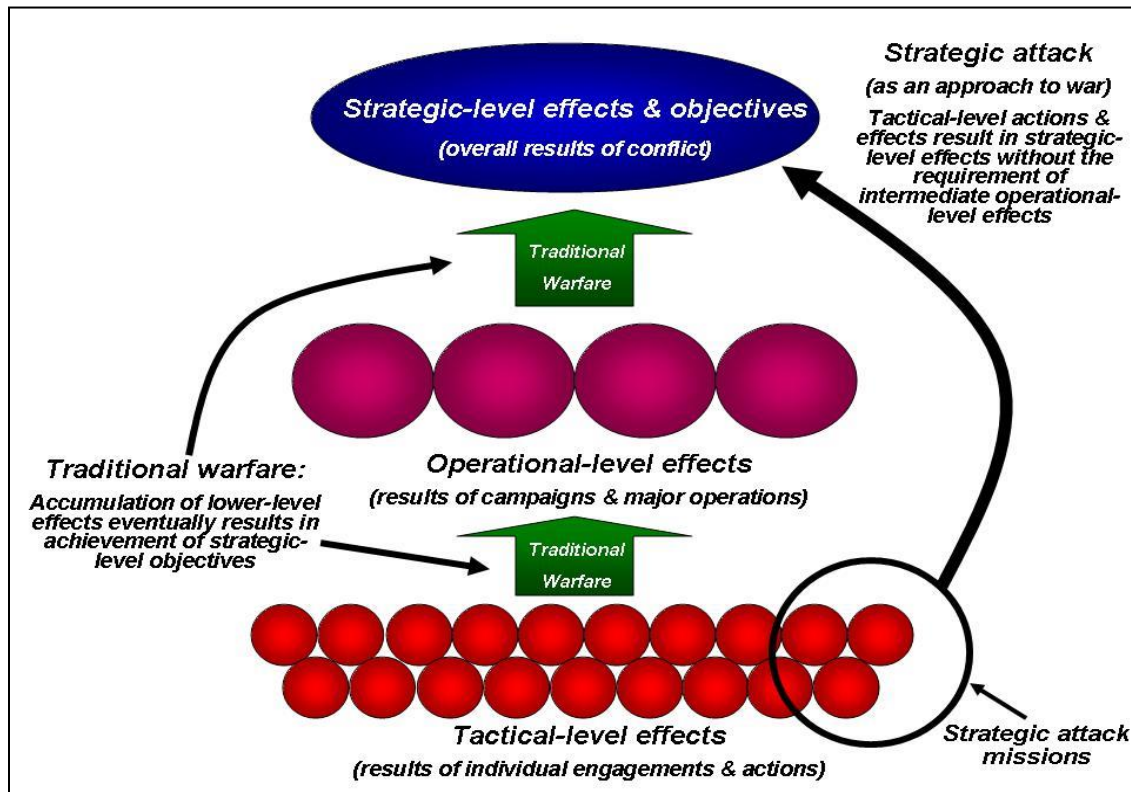
Strategic Attack and the Levels of War

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by tactical action, are felt at the strategic level. Most often, they will translate into effects at the operational and tactical levels as well.

Strategic Objectives. Strategic objectives should be clear, decisive, measurable, and attainable. They should be clearly and logically tied, by cause and effect, to the SA efforts aimed at achieving them. Objectives and desired end states should be clearly defined and understood. It is vital for planners, commanders, and national leaders to clearly discern when, and at what point, strategic objectives have been achieved.

For perspective, consider a C2 node targeted and placed on the air tasking order (ATO). In SA terms, destruction of the C2 node is not the mission's objective. Destruction is the effect. The objective is the military aim achieved by the target's destruction; in this case, an impaired ability to control forces and possible defeat of enemy strategy. The example here is purposefully simple and easily understood at the tactical level. However, it risks obscuring the difficulty of making such distinctions at operational and strategic levels. Though difficult, such distinctions are vital to effective SA planning and execution.

Strategic objectives are not static. SA is planned and executed in a manner that shapes the operational environment (OE) by causing higher order; indirect effects that are, by their nature, often unpredictable. Though planned in advance, such effects can have wide-ranging, unintended consequences. Mindful of this, commanders should monitor SA actions to identify negative effects on the OE and assess, as the operation evolves, to ensure alignment between the OE and the objectives being pursued. If incongruity exists, a realignment of the objectives may be imperative to achieve a favorable end state.

Systemic Effects. To achieve systemic effects, planners should first understand how elements of an adversary's system are connected and function as a whole. Regardless of form, whether a state or non-state actor, any adversary can be analyzed from a systemic perspective. However, like a living organism, adversarial systems are interactively complex and adaptive. They do not always behave according to clear, deterministic rules of cause and effect. As systems interact, new behaviors may emerge that are difficult or impossible to predict. Behaviors, especially those involving human will, are often hidden to deductive reasoning and require observation instead. However, accuracy can be improved by incorporating aspects of interactive complexity into planning practices.

Every system is either led or governed, has a plan or strategy, a means to carry it out, and an infrastructure that enables and supports it. SA seeks to incapacitate one or more of these functions by either attacking them directly, affecting their linkages, or by undermining elements of support. The key to doing so is finding critical vulnerabilities: aspects of system elements or nodes that are open to attack in a manner likely to achieve the desired effect. Since components of complex systems are interrelated, attacking critical vulnerabilities or their linkages in one part of a system can cause cascading changes or failures throughout the entire system. Further, the disturbances

that cause these changes can often be very small. Such efficiency is at the heart of SA: finding key relationships within a system where relatively small or localized inputs can yield desirable system-wide changes.

Strategic Effects. SA generates many types of effects: direct, indirect, physical, behavioral, and psychological. These effects are aimed at stressing an enemy system to a point that compels desired enemy behavior. Precisely predicting the level of stress that will cause a system to fail, or change its behavior, may be quite difficult. However, a system stressed with sufficient intensity and rapidity can suffer effects similar to shock in the human body—impaired, impeded, or halted activity as stressors exceed a system's capacity to adapt. Parallel operations, in which targets are struck simultaneously along a compressed timeline, are likely the best means for inducing such shock to cause cascading, system-wide changes in behavior. Though less efficient, certain conditions may drive a sequential approach; one in which effects are planned and executed in sequence, one after the other. It may be necessary to enable effects against other targets or to open vulnerabilities to attack. However, such attacks are not likely to deliver overwhelming, system-wide shock and will likely leave an adversary more time to adapt or react.

✪ **SA achieves objectives through indirect effects.** Through direct effects against COGs, SA operations are designed to trigger additional outcomes; intermediate second- and third-order effects that produce higher-order results. The goal is often to create a cumulative, cascading effect against the adversary's system. Indirect effects amass as the "weight" of each accumulates with others. Effects cascade as attacks against one COG or node ripple, often with increasing effect, across the enemy's system. This approach is a primary mechanism that drives SA's effectiveness, efficiency, and comparatively lower cost.

✪ Though cumulative and cascading effects offer great promise for achieving objectives, efforts following such an approach should be tempered according to their less predictable nature. Intended, indirect effects may produce other negative, unintended effects if there are gaps in our understanding of the OE. Commanders and their staffs should appreciate that unpredictable third-party actions, unintended consequences of friendly operations, subordinate initiative and creativity, and the fog and friction of war will contribute to an uncertain OE (JP 5-0, *Joint Planning*).

✪ **SA affects conflict-sustaining resources.** While it may be difficult to directly target an adversary's will, we can often target the means an adversary employs to conduct, or continue, a conflict. Warfare is resource intensive. The support necessary to sustain it provides many lucrative targets which, when attacked, may help speed an enemy's collapse.

Strategic Attacks on German Transportation during World War II

During the combined bomber offensive in Europe in WWII, Allied air attacks against the German rail and inland waterway systems fatally disrupted the German economy. Even though the productive capacity of individual factories increased through most of 1944, the disruption of transportation nearly immobilized the economy as a whole, almost stripped Germany of electrical power (due to disruption of coal shipments), and greatly hampered the movement of Germany's armies. These efforts might have ended the war in Europe by themselves had Germany's resistance in the field not been collapsing simultaneously.

"The attack on transportation was the decisive blow that completely disorganized the German economy. It reduced war production in all categories and made it difficult to move what was produced to the front. The attack also limited the tactical mobility of the German army."

-- US Strategic Bombing Survey *Summary Report (European War)*

SA is not limited to targeting tangible resources with direct munitions. Cyber capabilities may offer a means of affecting enemy social, financial, and informational resources. Such operations helped contain efforts of Al Qaeda, the Islamic State, and other Islamist extremist groups. Cyberspace operations (CO) can also target adversary infrastructure. Though the attack remains unattributed, the effectiveness of CO at the strategic level was highlighted by the STUXNET virus. Transmitted through thumb-drives, it was engineered to target Iranian nuclear enrichment programs with devastating effect. As systems become more reliant and interconnected by information systems, CO's ability to target infrastructure and production will continue to grow in importance and effectiveness.

✪ **SA affects the enemy's strategy.** Sun Tzu, in *The Art of War*, said "what is of supreme importance in war is to attack the enemy's strategy;" this requires we hold at risk what the enemy holds dear or deny them the ability to obtain what they seek. In 1943, Allied air attacks against transportation targets in Rome played a crucial role in driving Italian dictator Benito Mussolini from power. Rome had been "off-limits" to Allied bombing until July 1943, when Allied leaders made a conscious decision to bomb railyards near the center of the city. The psychological shock it induced helped drive Italy from the war and broke apart the enemy coalition.

During Operation DESERT STORM, Saddam Hussein sought to achieve a similar effect. He hoped to break the US-led coalition by launching SCUD missile attacks aimed at drawing Israel into the war. Even though few SCUD "hard kills" were achieved, SAs against SCUDs, strategic defensive measures, and effective political initiatives were combined effectively to counter Saddam's strategy by dissuading Israeli retaliation and preserving the coalition.

✪ **SA affects the enemy's ability to fight.** Unless the enemy's military forces are deemed a strategic COG, they are not truly SA targets. In fact, the goal of SA is to bypass fielded forces to the maximum extent possible. Generally, SA should focus on the most efficient means of rendering a force ineffective without having to engage it directly. Attacks on C2 communications, leadership, materiel support, and sustainment operations offer a means of achieving an equal effect without the associated cost.

✪ **SA can deny strategic options or choices**. In WWII, British and Norwegian commandos successfully carried out raids against Nazi heavy-water stores needed to construct a nuclear reactor. This SA denied the Germans a critical capability in their attempt to devise an atomic bomb. Similarly, after Operation DESERT STORM, U.S. and coalition strategy sought to deny the Iraqi regime access to weapons of mass destruction (WMD) through a combination of air strikes and United Nations inspections.

✪ **SA can provide strategic leverage.** Attacks against Saddam Hussein, his inner circle, and his key security infrastructure during Operation IRAQI FREEDOM partially decapitated the Iraqi military, opening the door for a swifter counterforce operation against Hussein's Republican Guard. Likewise, attacks against al-Qaeda leaders, when executed with sufficient intensity and frequency, succeeded at keeping the organization at a strategic disadvantage. By keeping an enemy off balance, unable to adapt and react, commanders are able to operate and execute inside the enemy's decision cycle, thereby increasing the effect with follow-on attacks. When planned in conjunction, such operations can increase the leveraging ability of other instruments of power as well.

CHAPTER 2: COMMAND AND CONTROL OF STRATEGIC ATTACK

Effective C2 arrangements and relationships are crucial to the success of SA. **Unity of effort is key to the success of SA and can only be achieved through C2 arrangements that ensure unity of command.** When air operations constitute the bulk of SA capability, the JFC will normally task the air component commander, as a supported commander, to conduct SA operations. Acting in this capacity, the air component commander can define the objectives to be achieved; determine the effects required; designate targets to be attacked; allocate air assets; integrate air operations; and coordinate cyberspace operations and other resources.

History shows that fragmented air command structures and piecemeal force application dilute an operation's effectiveness and may lengthen its execution at the expense of national or military objectives. **Centralized command** is vital to effective SA, enabling the air component commander to maintain a broad focus on the JFC's objectives. Generally, unless the JFC deems other efforts more essential, or the survival of critical joint force elements are threatened, SA should constitute the JFC's highest priority. Reserving for the air component commander the authority to allocate air assets enables the mass necessary to achieve strategic effects while maintaining economy of force; ensuring airpower is employed in the most effective and efficient manner possible.

SA achieves objectives through detailed, iterative planning of operations designed to generate cumulative, cascading effects across an enemy system. Coordination for such complex theater-level operations should be as efficient as possible, and requires planning be centralized at the operational-level in most situations. However, in contested and degraded environments, the ability for forces to continue SA operations absent direct, higher headquarters influence may be imperative. Though not conducive to long term SA operations, commanders and planners can be empowered to continue the SA fight through **distributed control** with the use of mission type orders and conditions-based authorities as described in AFDP 3-99, *Department of the Air Force Role in Joint All Domain Operations* (JADO).

The air operations center **integrates all air, space, electromagnetic spectrum, and CO into a seamless whole based on the JFC's guidance.**

Achieving optimal balance between centralization and decentralization is a difficult but crucial task. In situations involving rapidly changing intelligence, SA operations may require precise timing and focused action. Though at the expense of tactical efficiency, under these circumstances a commander may deem it appropriate to exercise increased influence over execution, but should limit inputs to the minimum necessary to achieve desired effects. In all cases, execution authority should be pushed to the lowest

level possible. Doing so promotes effectiveness and resilience at the tactical level and provides tactical commanders the ability to fight in the most effective way possible.

COMMAND RELATIONSHIPS

SA is employed in a joint construct in a unified command structure under the authority of a combatant commander (CCDR) tasked by the President and Secretary of Defense (SecDef). In this context, Air Force forces are typically employed as an integral element of a joint or multinational force and are capable of employing in concert with surface components, alongside other joint air elements, or as an air component independently.

Though it is a DOD-designated Department of the Air Force function, SA is not airpower's purview alone. Increasingly, through the development and advancement of precision long-range fires, surface components are capable of creating effects that, historically, only airpower could achieve. With increased and diverse capabilities, the establishment of proper and well-formed command relations are crucial for effective SA operations. The command relations described in JP 1, *Doctrine for the Armed Forces of the United States*, and AFDP 3-30, *Command and Control*, apply. When Air Force forces comprise the preponderance of the JFC's SA capability, the air component commander should be the supported commander for directing and coordinating the overall SA effort. However, in some instances, the CCDR or JFC may retain direct control of SA operations to integrate the efforts of all participating components and agencies.

US Strategic Command (USSTRATCOM) may be tasked to conduct SA as part of its global strike mission. USSTRATCOM creates global attack plans (both nuclear and non-nuclear) based on guidance from the President and SecDef and designates appropriate assets to achieve desired effects. Under these circumstances, the CCDR (theater or USSTRATCOM) may opt to form a single-Service task force. This task force maintains a C2 system designed to quickly disseminate posturing and execution orders from the President and SecDef to the forces in the field. During operations in support of another CCDR, USSTRATCOM will coordinate strikes with the supported CCDR. However, USSTRATCOM may relinquish operational control (OPCON) or tactical control (TACON) of these forces to the supported commander if directed by the President or SecDef.

Some assets critical to effective SA may operate from other CCDRs' areas of responsibility (AORs). OPCON or TACON of SA assets operating from the CONUS, or stationed in another AOR outside the theater of operations, may transfer to the supported JFC. For instance, in Operation IRAQI FREEDOM, B-2s launching from CONUS and B-52s launching from Europe were employed in US Central Command's (USCENTCOM) AOR. These forces were attached with specification of OPCON to Commander, USCENTCOM who, in turn, delegated OPCON to the COMAFFOR: US Air Forces Central Command (AFCENT). Circumstances may require other arrangements. For example, Commander, USSTRATCOM typically retains OPCON of US nuclear forces. In any event, these arrangements should be worked out as far in

advance, and in as much detail, as possible to avoid confusion. See AFDP 3-30 for more specific guidance on command relationships. See AFDP 3-72, *Nuclear Operations*, for more specific guidance on command relationships for nuclear forces.

Special operations forces (SOF) offer a unique set of capabilities that may be leveraged to support and conduct SA unilaterally, or in support of other component forces. SOF airpower assets may require air component support to conduct their missions and, in some instances, SOF surface assets may require air component close air support or air interdiction. SOF may also enable other components to perform SA on high-value targets through special reconnaissance or other special operations core activities. As an example, during Operation DESERT STORM, SOF directed coalition aircraft to targets as part of SCUD-hunting efforts. During Operations ENDURING FREEDOM and IRAQI FREEDOM, similar operations were conducted to target Taliban*,* al-Qaeda, and Iraqi leadership, and other high-value targets.

## CHAPTER 3: STRATEGIC ATTACK PLANNING AND ASSESSMENT

At the tactical level, SA missions look very much like any other force application mission. This may incline strategists, at the operational level, to treat them as such. However, there may be significant differences between SA and counterforce missions; especially in terms of planning and assessment. The joint planning process (JPP), detailed in JP 5-0, *Joint Planning,* and the joint planning process for air (JPPA), detailed in JP 3-30, *Joint Air Operations*, provide detailed discussions on planning and assessment. In line with these documents, this section highlights specific considerations for both.

Many of the considerations that govern planning apply to assessment as well. As part of EBAO, they form a seamless whole with employment in the context of an overall strategy. Once an operation's battle rhythm has begun, planning, assessment, and employment operate together as part of an ongoing cycle.

PLANNING FOR STRATEGIC ATTACK

SA planning requires an understanding of both the strategic and operational levels of warfare. Commander's intent, objectives, and the effects required to achieve them are manifested at the strategic level, but are planned, conducted, controlled, and sustained at the operational and tactical levels where SA occurs. Hence, SA planning takes place within the overall context of joint planning for a contingency or crisis.

The air component commander should provide the JFC with SA options early in the planning process. It is vital that the CCDR or other JFC understand SA and its employment during course of action (COA) development; before component planning starts and before COAs are developed. Once planning for an operation is initiated, the JFC's commander's estimate constitutes the "first look" at military objectives, the strategic environment, the threat, and possible alternative COAs. Though component taskings

Joint Planning Processes

may not yet be formalized, this stage is when the air component commander should introduce a COA featuring SA, whether in a stand-alone role, a complementary one, or both.
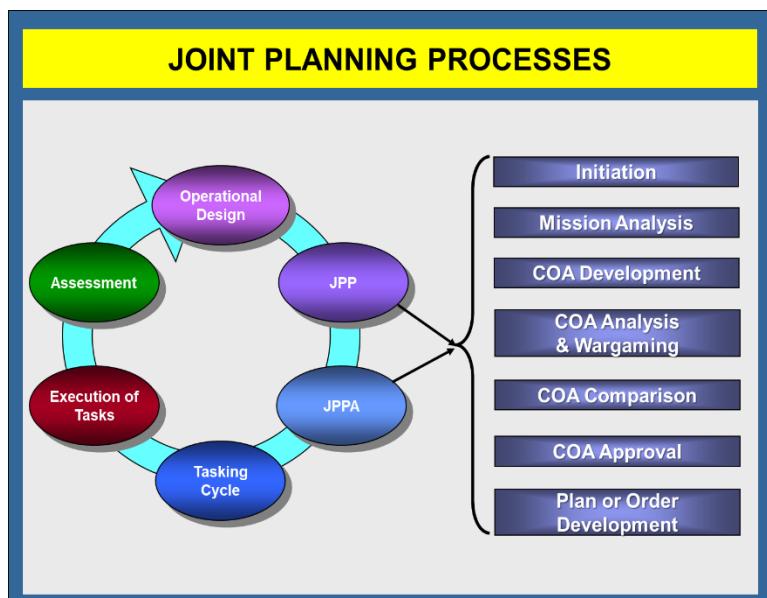
STRATEGIC ATTACK IN JOINT AIR OPERATIONS PLANNING

When executing the JPPA, air planners formulate COAs for the air component commander for recommendation to the JFC. The JPP and the JPPA follow the same primary stages: initiation; mission analysis; the four *COA stages – development, analysis and wargaming*, *comparison*, and *approval*; and *plan or order development*.

Initiation. The JFC commonly initiates planning. However, due to the political sensitivity of targets or their location, SA may be ordered and authorized directly by the SecDef or the President.

Mission Analysis. The mission analysis portion of the JPPA establishes the purpose of the operation and broad guidance for its conduct, usually expressed in terms of a commander's mission statement. The mission statement includes the military end state and the elements of which the air component commander is tasked. Aspects of mission analysis discussed here include objectives and intent, joint intelligence preparation of the operational environment (JIPOE), and COG analysis.

Objectives and Effects in Operation ROLLING THUNDER, 1966-67

"Our objective is to create conditions for a favorable settlement by demonstrating to the [Viet Cong and the Democratic Republic of Vietnam] that the odds are against their winning."
> *-- Memorandum from SecDef McNamara to President Johnson, 1965*

Objectives that were unclear and unattainable within the context of enemy motivations, such as the quote above, contributed to failure of the SA portion of Operation ROLLING THUNDER in Vietnam. Even though closely coordinated with diplomatic efforts, the 1966-67 bombing accomplished no appreciable effects towards the attainment of national objectives, sent confusing signals to allies and enemy alike, and emboldened the North Vietnamese to expand their involvement in the insurgent struggle in South Vietnam.

✪ **Objectives and Intent**. Determining the purpose of the operation and its desired outcome—establishing the objectives and end state—is the most important part of

mission analysis. Effective use of SA requires clear, attainable, relevant, and decisive objectives. It also requires clear definition of the commander's criteria for the operation's overall success—a logical and achievable end state. SA operations require strategic objectives that are clearly defined and understood from the outset. Traditional counterforce action, aimed at tactical or operational objectives, may still achieve desired effects even if strategic objectives are not fully formed. This is not so with SA. Unclear or unattainable strategic objectives will lead to ineffective SA operations.

✪ **JIPOE.** SA operations place unique demands on intelligence processes and methods. "Traditional" intelligence methods are well suited to estimating the strength and disposition of enemy forces. However, SA operations require a clear and in-depth understanding of two vital areas beyond those traditionally focused on during JIPOE.

First, planners should develop an understanding of how the enemy functions as a system: how its various components interact and support one another; which functions are key to sustaining other functions; and what processes are required to keep the system running. Components, or processes that enable other components of the system to function, are often the most valuable targets.

Second, planners should develop an understanding of the causal linkages between actions and effects. As stated before, the effects of SA are almost always indirect; there will be one or more (often several) intervening mechanisms between the direct effects of attack and the ultimate outcome. Therefore, planners should put significant effort into determining these mechanisms and causal linkages by thinking through the likely consequences of attacks beyond the immediate damage caused.

In-theater intelligence and assessment resources may not be sufficient for the kind of in-depth understanding necessary for successful SA. Additional assistance may be necessary from outside organizations: within DOD (e.g., the [Joint Warfare Analysis Center](#)); from other US Government agencies (e.g., the Central Intelligence Agency); and from foreign governments, non-governmental organizations, or other relevant entities. Intelligence requirements levied on any outside sources should be clear and specific. Analysts should build strong working relationships before operations begin in order to ensure success during operations. In many cases appropriate access will require coordination above the JFC level.

✪ **COG Analysis.** Achieving desired effects against COGs, in order to create cascading effects across the enemy's system, can yield decisive effects in conflict and a number of tools and models exist to aid planners in their analysis. Regardless of the analysis method used, opportunities exist to achieve physical and coercive effects against targets well exceeding the effort and resources required to attack them. Identifying these opportunities requires sophisticated analysis of the enemy COGs. Doing so gives a broad view of system components and structures that friendly action should orient upon.

One of the key insights of the systems approach is that it emphasizes the vulnerability of complex adaptive systems to attacks upon the linkages and interrelationships among components. In many cases, analysis may indicate leadership's centrality as a COG in the enemy system. If so, it is likely the starting point for strategic-level COG linkage analysis. The JFC's estimate will normally include an evaluation of enemy leadership: its underlying psychology and motivations; its governing mechanisms; its bureaucratic politics; and its political vulnerabilities. Enemy leadership is usually the "target audience" for SA. As such, it is vital to understand how the leadership thinks, how it gathers and disseminates information, and what underlies their choice of COAs. Even in cases when leadership is not targeted as a COG, its connectivity and relationship to other COGs will significantly shape effects against them.

COA Development. COAs connect the ends of joint air operations with ways and means. They include objectives, forces required, and concepts for projecting, employing, and sustaining those forces. In many cases SA will form part of a larger COA, or set of COAs, complementing efforts against fielded forces and action by nonmilitary elements of national power. In some cases, it may form a distinct phase or [sequel](#) within a larger conflict. In others, it may be employed as an independent COA, as an alternative to force-on-force engagement. In unique circumstances, such as Doolittle's 1942 raid on Tokyo, or Israel's attack on Iraq's Osiraq nuclear reactor in 1981, SA may also be employed separately to accomplish very specific purposes.

When developing COAs, planners should think through the causal links between an affected system or target and the achievement of objectives. This is not easy—it is much more art than science. These links almost always involve subjective judgments about the nature of the enemy and how they will react; especially at the very highest levels of the "causal chain," where changes in leadership behavior occur. Sorting out the linkages may require assistance from sources outside the theater and insight from sources with intimate knowledge of the enemy. Automated tools may offer help, but planners should be mindful that such tools will only be as accurate as the underlying assumptions made concerning enemy motivations, psychology, and structure.

Whether developed as an independent COA, a distinct phase, or as a complementary aspect of a larger COA, a key consideration for SA in COA development will be resource constraints on the joint force. As with other forms of airpower, the need for SA resources will likely outpace their availability. SA, however, may be the best use of limited resources since, when aimed at strategic objectives directly, it stands to achieve the greatest effect with forces available.

As a continuation of COA development, a single COA may be developed with several branches and sequels that react to possible adversary activities. For SA, there may be multiple pathways to achieve cascading systemic effects, each with its own unique cost, risk, and reward calculus. Planners and commanders should assume the enemy is intelligent and adaptive; that they will develop ways to work around the damage caused, or find ways to deny elements of friendly strategy. Planners should anticipate those workarounds and build branches and sequels into COAs accordingly. In terms of SA, a branch might involve shifting the effort's focus from one COG, or COGs, to another, opening or closing certain target systems to attack, or adjusting an effort's intensity or weight of effort in one way or another. When developing sequels, planners should focus on likely outcomes of operations and consider follow on actions best suited to SAs objectives.

Difficulties of Wargaming Causal COG Linkages
Schweinfurt Ball Bearing Factory Raid, 1943

Operational analysis revealed that ball bearings represented a critical vulnerability within the German war production COG. Virtually all German manufactured machinery used them, and over half of all those used were manufactured at a single plant in Schweinfurt. In 1943, US bombers leveled the plant, reducing German ball bearing production by 38% in one strike.

Unfortunately, the Germans anticipated such an attack and had laid up reserve stocks, begun full-scale industry dispersal, and researched use of alternative types of bearings. The Schweinfurt raid, though successful in its direct tactical effects, failed to achieve strategic objectives because of unanticipated, preemptive countermeasures.

COA Analysis and Wargaming. Planners should be aware, during the COA analysis and the comparison phases of the JPPA, that it may be difficult to accurately wargame the effects of SA. Counterforce operations are often easier to model, since the effects of attrition on enemy forces are typically linear and well-defined. The effects of SA are normally nonlinear and, as a result, often ill-defined. Due to the complex interactive and adaptive nature of enemy systems, simple force-on-force models may not be adequate for predicting accurate outcomes. It is essential that COA wargaming be assessed qualitatively, not just quantitatively. Air planners should be prepared to speak to the complex, nonlinear nature of effects on enemy leadership, perceptions, strategies, and systems. A wargaming format emphasizing friendly action, enemy reaction, and friendly counteraction, may be best suited for SA planning.

Plan and Order Development. Air component planning culminates in production and validation of a joint air operations plan (JAOP), which provides general guidance and a framework for succeeding air operations directives, master air attack plans, ATOs, and similar products that direct airpower efforts once execution has begun. There are a couple of considerations unique to SA that operations planners should consider as they assemble the JAOP.

✪ **Targeting Considerations.** In-line with the EBAO model, SA planning follows an effects-based approach to targeting. However, as planning progresses into tactical tasks, planners may have a tendency to resort to an inputs-based approach instead of effects. This temptation often becomes more pronounced during execution phases with the added stress of the daily battle rhythm. Planners should be aware of this temptation and compensate, while commanders should be prepared to redirect or refocus planners if they see this happening. In losing sight of the objective, an input or target-based approach creates a logical disconnect between ends and means. Rather, planners should be able to draw a clear line of logic starting with the objective, followed in order by effect, target, and finally, the means. To successfully *operate* effects-based model, Airmen should *think* and *plan* in an effects-based manner.

✪ **Force Considerations.** A wide variety of platforms can perform SA operations. Planners should think broadly as many options may be available. The desired effects should drive the capabilities used and the targets selected. Resorting to a particular system or weapon because "that's what we usually use" should be avoided.

ASSESSING STRATEGIC ATTACK

Assessment is a crucial component of EBAO and, when performed properly, may be the most difficult component of the planning-employment-assessment cycle; a fact only strengthened by the complexity of SA operations. In this context, assessment exceeds the scope of more familiar terms, such as bomb damage assessment (BDA) and munitions effectiveness assessment (MEA). Such tasks are tactical in nature and narrower in scope; whereas assessment is continuous and holistic, covering the entirety of an operation. Empirical data gathered during Phase II and III of BDA provides key indicators for measuring tactical effectiveness. However, for SA, the development of measures to effectively assess indirect strategic effects is of greater concern.

Indirect effects are hard to measure, often relying on *qualitative and subjective* measures of effectiveness (MOE) rather than *quantitative and empirical* measures of performance (MOP). In conventional operations, tactical MOPs inform higher level MOEs. In turn, MOEs at lower levels may become MOPs as measures progress upwards from operational to strategic in hierarchical fashion. However, for SA, tactical MOPs and strategic MOEs are often opposite sides of the same coin. SA seeks to generate immediate strategic effects through direct tactical actions. Measures developed for SA should directly connect tactical MOPs to strategic MOEs. Those with

the clearest and most immediate connections will typically be the ones best suited for assessment of SA. For detail on assessment measures, see AFDP 3-0, *Operations and Planning*.

> ## MOP vs. MOE
>
> *MOPs tell us if we are doing things right; MOEs help tell us if we are doing the right things.*
>
> -- JP 3-60, *Joint Targeting*

Accurate assessment provides the groundwork for analysts to determine how well the plan is progressing. It also serves to enlighten the accuracy and efficacy of assumptions and decisions made during planning. Assessment feeds the loop from execution back to planning, and helps ensure mistakes or miscalculations made early on are corrected and prevented from progressing further. This aspect of assessment is especially critical for SA operations. Given the complex and unpredictable nature of indirect effects, assessment performed haphazardly or without requisite care and attention to detail is where the proverbial "wheels" are likely to fall off an otherwise well-laid plan.

Planning for Assessment. The subjective and sometimes tenuous linkages between cause and effect could make intermediate steps in the effects chain hard to detect, errantly leading to the impression that operations are ineffective. Psychological, systemic, and cascading effects, because they are achieved indirectly and felt as they spread throughout a system, may not be immediately measureable or discernable. As such, successful SA may depend on anticipatory campaign assessment during initial planning as well as patience during execution. When such considerations are acknowledged as a factor, mechanisms should be put in place to ensure they are carried forward and accounted for once execution has begun.

As with JIPOE, deriving necessary insight is not easy and requires thorough and diligent effort. Assistance from national-level assets may be required. Since these resources are "low density, high demand," gaining access will be easier if coordinated early. Planners and intelligence collection managers should consider ongoing collection requirements during plan execution: what type of information will be needed, what assets will be needed, and how will these assets be controlled and sustained? Planning should be as thorough and detailed when planning for assessment as when planning for any other aspect of SA.

Requirements for Assessment. Historically, the ability to measure effects and gauge effectiveness (i.e., the overall progress toward objectives) has been very limited. Traditional assessment efforts were geared toward analyzing the immediate, physical effects of combat: the attrition of enemy troops and equipment or direct damage to facilities. During WWII, Vietnam, and even Operation DESERT STORM, planners and analysts often lacked tools to sufficiently evaluate progress. As evidence, even the US Strategic Bombing Survey after WWII, an analysis as comprehensive as any ever done,

relied mostly on direct linear measures to gauge the economic effects of Allied bombing and ignored anything beyond direct production figures. As a result, many indirect effects, like resources diverted to air defense or wasted on retaliatory V-1 and V-2 terror weapons, were missed.

To determine progress towards achieving objectives, strategists should identify indicators useful for doing so. *Objective* and *quantitative* indicators, most commonly associated with direct effects, are typically more apparent, easier to collect, and likely the most readily available. However, for SA efforts, *subjective* and *qualitative* indicators typically hold more value. The difficulty though, lies in how to measure them. Direct measurement of second- and third-order effects, especially in areas like economic and psychological impact may not be possible. Indicators of such indirect effects must often be derived instead. Inherently requiring diverse but related information, the process for doing so is rarely straightforward and often involves pitfalls that should be avoided.

When evaluating SA information and data, planners should take care to avoid confirmation bias—the tendency to interpret information such that it confirms preconceptions, or to ignore data that contrasts with existing expectations. Likewise, planners may be tempted to rely on relationships that appear corollary. However, such relationships are rarely simple. While seemingly causal, more significant but unaccounted for variables may remain hidden. A mistaken link in causality has the potential to lead to further, more consequential errors in judgement or decision. When dealing in the subjective, rarely will a single or even set of indicators be sufficient for evaluation. Rather, SA planners should look for trends and alignment in the data to offset undetected errors and bias.

Progress, even toward seemingly straightforward objectives like surrender, can be difficult to measure. In complex systems, effects may accumulate over time without evidence until reaching a critical point at which the system may fail catastrophically. When operations are underway, a lack of evidence or indications may cause frustration and lead to premature decisions: altered COAs; refocused efforts; or diversion of SA resources elsewhere. In these situations, well-formed indicators enable commanders to strike the proper balance between the patience needed for SA operations to mature and the overarching need for economy of force.

CHAPTER 4: ELEMENTS OF EFFECTIVE EMPLOYMENT

As the confrontation over Cuba unfolded, US intelligence informed the Kennedy administration that Soviet nuclear forces were in a poor state of preparedness and that the United States could, if necessary, launch a devastating first strike with a low probability of a robust Soviet response. This dominance allowed Kennedy to stake out a demanding public profile; he knew that the costs of escalation would weigh more heavily on Moscow.

In the Korean War, the North agreed to accept talks leading to the continued partition of the country in part because of the election of President Eisenhower, who threatened the use of nuclear weapons to end the conflict.
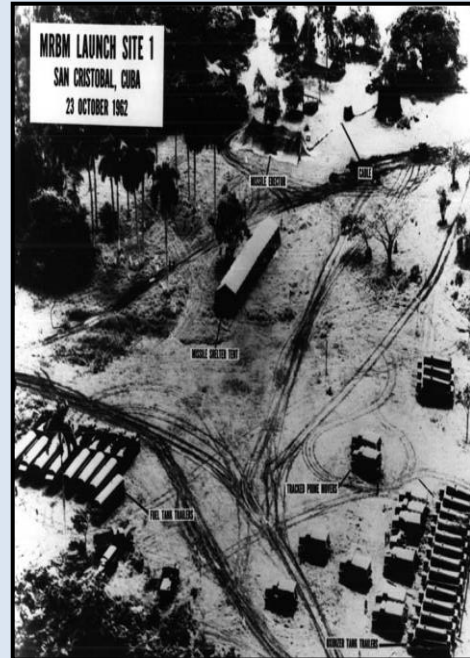
-- Daniel Byman, Matthew Waxman, and Eric Larson,
Air Power as a Coercive Instrument

CONTROL OF THE AIR

One of the highest-priority objectives for air commanders will always be gaining the degree of control of the air needed to make other operations possible. However, advances in anti-access / area denial (A2AD) technology may substantially increase the effort and time required to obtain it. A lack of air superiority presents significant challenges for the conduct of SA and, in many cases, dictates it be achieved before SA operations commence. The US found this was necessary during WWII, having lost thousands of bombers in attacks against the heart of Europe before switching focus to the Luftwaffe in early 1944. The effectiveness of Allied bombing improved remarkably after the Luftwaffe's defeat.

In contrast, the strategic situation or OE may dictate the necessity for concurrent operations instead. Such was the case just hours before commencement of Operation IRAQI FREEDOM. Having received credible intelligence on the location of senior Iraqi leadership, along with near certainty that Saddam Hussein was with the group, two F-117 Nighthawks were launched to conduct SA on the target. Though unsuccessful, striking only moments too late, it was nonetheless impossible to ignore an opportunity to halt the conflict before it began.

In U.S. conflicts since the Vietnam War, control of the air has not been contested much beyond opening phases. Even in Operation DESERT STORM, in which significant opposition was expected, control of the air was gained and maintained with relative ease. However, it would be unwise to expect similar results against potential peer adversaries in the future. Regardless, whether difficult or not, some degree of control will be required to grant ensuing operations' freedom of action. In early stages sufficient control may be limited temporally, geographically, or otherwise. Conducting SA in contested environments will likely involve significant risk to forces. However, the prospect of achieving strategic objectives sooner, more efficiently, and at lower cost may weigh the potential payoff in SA's favor.

PARALLEL VERSUS SEQUENTIAL OPERATIONS

SA is normally most effective when employed using parallel operations. A parallel approach—simultaneously striking a wide array of targets chosen to cause maximum shock across an enemy system—limits an adversary's ability to adapt and react. This may offer the best opportunity to trigger system-wide shock, thus inducing paralysis or collapse. The aim is to effectively control the opponent's strategic activity through rapid decisive operations.

Successful employment of parallel operations can be seen in numerous historic examples. Coalition forces effectively destroyed Iraqi ground resistance using this approach during Operations DESERT STORM and IRAQI FREEDOM. Israeli forces employed similar methods against Arab armies in the 1956 and 1967 wars, as did Egyptians at the tactical level against the Israeli Bar-Lev defensive line in 1973. While these examples did not achieve complete paralysis, in each one, parallel attacks prevented enemy forces from functioning coherently.

SA aims to achieve similar effects against an enemy's entire system. During WWII, Allied SA efforts did so against Germany during the last ten months of the war in Europe with near-parallel and unrelenting attacks on Germany's transportation and oil systems. Though smaller in scale, Russian action against Georgia in 2008 is an example worth noting for the paralyzing effect achieved through the use of CO in parallel with simultaneous traditional force application. CO attacks against military, governmental, and financial information and communications systems achieved a crippling effect and enabled Russian forces to achieve objectives with considerably less effort than would have been required otherwise.

In some circumstances, often characterized by resource or political constraints, parallel operations may not be possible. When situationally required, sequential SAs should be conducted so that objectives are achieved in prioritized order. Doing so represents the approach's best chance for success. However, because it compromises airpower's ability to mass and produce shock, sequential operations should be limited as much as possible.

> *The successful prosecution of parallel war requires more than compressing sequential attacks into one simultaneous attack. Parallel war exploits three dimensions—time, space, and levels of war. In the opening hours of the Gulf War, all three dimensions were exploited:*
>
> ✪ *Time—within the first 90 minutes over 50 separate targets were on the master attack plan. Within the first 24 hours, over 150 separate targets were designated for attack.*
> ✪ *Space—the entire breadth and depth of Iraq was subjected to attack. No system critical to the enemy escaped targeting because of distance.*
> ✪ *Levels of war—national leadership facilities (strategic level), Iraqi air defense and Army operation centers (operational level), and Iraqi deployed fighting units— air, land, and sea (tactical level)—came under attack simultaneously.*
>
> *-- **Lt Gen (Ret) David A. Deptula**,*
> *Effects-based Operations: Change in the Nature of Warfare*

It may be necessary to combine parallel and sequential attack strategies. Such a combination may be required when constraints limit the ability for parallel attacks but incorporating elements of parallel strategy remains possible. When parallel and sequential operations are combined, initial efforts should focus on high priority objectives exclusively. While continuing to secure objectives achieved in earlier phases, the campaign may be expanded to incorporate additional objectives when subsequent phase points are reached. A combined approach may be needed in situations where certain objectives must be achieved before others are open to attack. Similarly, though the potential to attack may exist earlier, in some cases delaying until achieving other objectives could create greater force efficiencies. If done with careful consideration, the air component commander can tailor an operation in this way to maximize intensity while maintaining overall focus and enhancing control.

COERCION

Coercion is a concerted effort to modify an adversary's behavior by manipulating the actual or perceived costs and benefits of continuing or refusing to pursue a certain COA. A coercive strategy may involve one or more potentially overlapping mechanisms: *denial*; *leadership attack*; *power base erosion*; *unrest*; and *weakening*.

✪ **Denial** is the principle coercive mechanism involved in SA operations. Denial seeks to change enemy behavior by hindering or destroying its ability to fight. It threatens the enemy with outright defeat or otherwise prevents it from achieving military objectives. Denial can be implemented in two ways: *counterforce* or *counter-strategy*. Counterforce reduces the enemy's capacity to carry out intended actions by affecting its ability to fight. Counter-strategy seeks to convince the enemy that its actions will not succeed; that defeat is inevitable and capitulation is more prudent.

✪ **Leadership attack** threatens the enemy's military and national leadership through counter-control and counter-regime attacks. Such attacks may hold great potential for achieving strategic effects but must be carefully planned and executed in accordance with the law of war. Attacking the military chain of command via counter-C2 attack supports denial by rendering enemy C2 ineffective. Attacking national leadership via counter-regime attack supports power base erosion by placing the regime's ability to maintain power at risk.

✪ **Power base erosion** is tied to leadership attack and involves threatening a regime's relationship with its key supporters. SA can accomplish this by using air strikes to turn a regime's key domestic allies against it. However, this mechanism can also backfire, as it did during Operation EL DORADO CANYON in Libya. US air strikes on Muammar Gaddafi's command centers and various military targets, designed to provoke the Libyan military to overthrow the regime, appeared to strengthen Gaddafi's position against his rivals instead.

✪ **Unrest and weakening.** SA against valid military targets can have the coercive effect of creating *unrest* among an enemy's population or *weakening* of the enemy's infrastructure. These mechanisms are aimed at impacting the enemy's popular will or perception. However, commanders should exercise caution when employing SA in this manner. First, the law of war prohibits directly targeting civilian populations. Secondly, such objectives are harder to quantify. They spill into enemy political and cultural aspects involving unpredictable societal variables exceeding the military's span of control, thus increasing the risk of operations and creating effects opposite those intended. Despite its risks, unrest or weakening may be an effective strategy when used in a limited capacity to shape an OE in support of other objectives.

Past operations have shown successful coercion with airpower is a product of one or more of the following factors detailed in AFDP 3-0, *Operations and Planning*:

✪ **Escalation dominance.** Nuclear response remains the ultimate form of escalation dominance and its threat can deter an adversary's use of chemical, biological, radiological and nuclear weapons (CBRN). Short of nuclear, conventional SA employment may serve to deter enemy escalation, including nuclear deterrence. The threat to increase the tempo or destructiveness of bombing may be effective, as may a change in intended effects; switching from attacks on purely military targets to attacks on dual-use infrastructure (civilian infrastructure supporting military

functions). Both of these proved effective against the Serbian Milosevic regime during Operation ALLIED FORCE.

✪ **Defeating the enemy's strategy.** SA can deny an enemy's strategic options in a variety of ways. Deterring or denying use of CBRN may require the threat of nuclear response or conventional attacks on production and delivery systems, whether threatened or actual. Conducted in accordance with the law of war, SA against enemy leadership and their connectivity to instruments of national power may also be effective.

✪ **Magnifying threats from third parties.** SA can create coercive effects by reducing an enemy's ability to defend against internal dissidents or hostile nations external to the conflict. It can also weaken internal control mechanisms, thereby highlighting a regime's fragility. Efforts of the latter sort played a part in Saddam Hussein's decision to begin troop withdrawals from Kuwait during Operation DESERT STORM, and in Slobodan Milosevic's decision to come to terms with the North Atlantic Treaty Organization (NATO) during Operation ALLIED FORCE.

✪ **Credible threat or use of force.** To have an effective coercive effect, the use or the threat of SA must be credible. Success hinges on the integration of military operations with appropriate "whole of government" activities to demonstrate the will, as well as the capacity, to endanger that which the enemy values. The restricted and graduated nature of Operation ROLLING THUNDER undermined its SA objectives and convinced North Vietnamese leaders the U.S. lacked sufficient political will to inflict damage significant enough to warrant a halt to their military action in South Vietnam. By contrast, the threat of retaliation delivered by Operation LINEBACKER II was sufficient in scope and intensity to coerce a limited settlement from North Vietnam.

The Credibility of Success or the Lasting Effect of Failure?

Successful threats or use of force can enhance credibility, but unsuccessful use can just as easily destroy it. The "mystique" of certain forms of airpower (such as the B-52 bomber) helped convey the seriousness of US intent during LINEBACKER I & II. However, when considered together with overall failure in Vietnam, the perception of "airpower's failure" led many to discount its capabilities as a coercive tool. Though US failure in Vietnam was a failure of overall political and military policy, the effect of this perception was powerful. As evidence, Saddam Hussein's pre-war statements in 1990, concerning US airpower, indicate its influence on his decision calculus when planning to invade Kuwait and it likely contributed to the failure of US efforts to coerce Iraqi withdrawal without combat.

✪ **Enemy vulnerability and susceptibility to coercion.** The susceptibility of an adversary to any coercive mechanism is usually inversely related to its willpower and

what it perceives to be at stake. Such variables should provide insight on which mechanisms hold the greatest potential for success. However, they may also indicate the enemy's resilience exceeds our own will or ability to coerce. Infamously, the U.S. miscalculated North Vietnam's resilience and the damage it was willing to absorb to achieve its goals. Only in the very closing stages was force elevated dramatically enough to wrest modest concessions, albeit at significant political cost for the US domestically. To achieve successful coercive effects with SA, selected mechanisms must be appropriately matched based on these considerations.

✪ **Detailed understanding of enemy leaders' thinking and motivations.** This is necessary for most aspects of planning and executing SA but is particularly vital for successful coercion. Planners and commanders should be careful to avoid projecting their own internal values and perceptions into estimates of adversarial rationale. During Operation ALLIED FORCE, planners accurately identified the value of dual-use commercial assets controlled by the Serbian ruling elite and successfully coerced Milosevic's regime with SA strikes and information operations (IO) against them.

COMPLEMENTARY OPERATIONS AND SYNERGY

SA offers commanders independent, potentially decisive options. However, it is usually most effective when employed in conjunction with JADO and other instruments of national power; contributing to and benefiting from the synergistic effects of other operations. During Operation DESERT STORM, fiber optic lines across bridges in Baghdad were identified as critical vulnerabilities and destroyed by coalition SA, crippling Iraq's national C2 network. The strikes greatly contributed to accomplishment of theater objectives and further weakened its leadership.

Complementary operations can enhance strategic effects, whether realized or delayed. Parallel counterspace and IO can separate an adversary from indigenous or third-party support and prevent enemy space or information systems from interfering with SA. Both IO and SA target the physical, cognitive, and information dimensions that can give an asymmetric advantage and unprecedented access to an adversary's decision-making cycle. Combining IO with SA capabilities, enables commanders to generate, preserve, and apply informational power against an enemy to influence them in order to drive their behavior, increase or protect a decision advantage, or increase combat power potential.

Surface maneuver benefits from, and supports, SA by creating a dynamic environment that the enemy must confront with degraded capabilities. Likewise, ground offensives increase demands on enemy infrastructure and fielded forces by speeding the consumption of vital war materiel, thereby opening additional critical vulnerabilities for SA to engage. Many times, counterforce operations can work in conjunction with SA to place maximum pressure on an enemy system. Similarly, SA can be used to force crucial elements of enemy fielded forces into a conflict, where they can be destroyed by complementary counterforce action.

CBRN WEAPONS CONSIDERATIONS

The employment of nuclear weapons is a form of SA which can produce political and psychological effects well beyond their actual physical effects. Only the President may authorize the employment of nuclear weapons. See AFDP 3-72, *Nuclear Operations*, for a more complete discussion of nuclear operations.

It is US policy not to employ biological or chemical weapons. Nevertheless, CBRN weapons have great potential for any foe who seeks to induce strategic effects. Air Force forces should be prepared to deter CBRN weapons and respond against any adversary that threatens to use or uses CBRN. Preemptive SA against an adversary's CBRN capability before it can be weaponized, relocated, exported, hidden, or used may be a commander's best option against those threats. However, collateral effects from such attacks must always be considered; they may be severe and may dictate alternate COAs. The growing proliferation of such weapons requires Air Force forces be capable of locating and defeating them with a high degree of accuracy while minimizing collateral damage.

The potential for catastrophic collateral damage is a critical concern when attacking CBRN weapons directly and further heightened in the event weapons are relocated close to civilian population centers. It may be politically, legally, or morally difficult to target CBRN weapons unless their use is certain and imminent. In such cases, an indirect approach may be better. Attacking production or supporting infrastructure, or key means of transportation used to move them, may have the desired effects. It may also be necessary to use nonlethal means to force an adversary to move the weapons to locations where they can be safely attacked. Close coordination of SA with information (e.g., public affairs) and diplomatic efforts are especially important when preemptive strikes against CBRN capabilities are considered. Strategic messaging may be necessary to publicly justify strikes, mitigate collateral damage, and aid efforts to strengthen deterrence and sustain political will for subsequent attacks.

For more discussion on CBRN considerations, see AFDP 3-40, *Counter-Weapons of Mass Destruction Operations*.

CHAPTER 5: PITFALLS AND LIMITATIONS

SA has a record of success but has also failed in a number of cases. Where it has failed, it can generally be attributed to a poor understanding of its pitfalls or a failure to properly account for them. Conceptually, SA is a difficult force application method. To ensure success, commanders should: plan carefully; understand the enemy thoroughly; know their own capabilities, requirements, and vulnerabilities intimately; and anticipate challenges adeptly. Such challenges are likely to arise from *friction*, *analysis failures, assessment failures*, *poor prioritization*, and/or *restraints/constraints*.

FRICTION

The effects of chance and probability, along with the natural inertia that exists within any large organization, play havoc in all forms of warfare. Such effects may be unknowable and impossible to account for in advance. There are, however, elements of Clausewitz's concept of "friction" that uniquely influence complex operations like SA. These include, but are not limited to:

✪ **Imperfect Knowledge and Misunderstanding.** SA will almost certainly fail if the enemy is seriously misjudged, or their motivations are misunderstood. Planners and commanders can guard against the dangers inherent in imperfect knowledge by trying to understand the conflict from the enemy's perspective.

✪ **A "Target Servicing" or Attritional Mindset.** Planning and execution may errantly fall into a simplistic approach focused on attrition of enemy systems or the servicing of target lists. Though flawed, this approach is conceptually simpler and easier to implement. A robust effects-based approach to operations, enforced by commanders, is the best means to avoid a shift to target servicing or attrition.

> ### Al Firdos C2 Bunker Strike, Baghdad, 1991
>
> Though used as an air-raid shelter during the Iran-Iraq war, coalition forces received credible evidence, including imagery, signals, and human intelligence, that the Al Firdos facility had been converted into an active C2 bunker. As such, the facility represented a legitimate military target for SA. Though detection ahead of the strike may have been impossible, the fact remains that intelligence also failed to note the presence of civilians bivouacked in the structure (likely placed there by the regime to act as "human shields"). The resulting civilian casualties harmed US efforts publicly and significantly hampered strikes on targets near the center of Baghdad for the rest of the war.

✪ **Unintended Direct Effects—Collateral Damage**. Though collateral damage is inevitable, it has potential to destroy goodwill and may encourage a population to stand with enemy leadership instead. Failure to avoid it, or worse, causing it by mistake, may subsequently force commanders to exercise increased caution. While

the US must fight to win, collateral damage may complicate subsequent stability operations and diminish popular support for military action, thereby hindering attainment of the desired end state. Though it cannot eliminate risk entirely, careful planning, especially for intelligence collection and communication requirements, along with precisely crafted rules of engagement, may mitigate a significant portion.

✪ **Unintended Indirect Effects.** The cause-and-effect chain in SA operations can be very complex. Some actions will almost certainly entail consequences that cannot be foreseen. While precluding advanced planning, such consequences may still be anticipated through extensive branch and sequel planning during COA development. Even in cases of complete surprise, parallels with other wargamed outcomes may provide at least some level of preparedness.

✪ **"Kill Chain" Considerations.** Time-sensitive or fleeting (dynamic) targets, often characterized by high-level political implications, may require JFC or even presidential approval. Though situationally necessary, adding such layers to approval processes may significantly increase the time required to prosecute a target and may preclude successful strikes when swift action is required. This essential tension has led to the escape of valuable targets in the past. Modern technology has made it possible to quickly find, fix, track, target, engage, and assess dynamic targets, but has done little to compress the time needed to gain necessary approval. However, experience shows that training under realistic conditions and streamlining internal processes can have significant effects. Successful dynamic targeting requires careful planning beforehand, a thorough understanding of the risks involved, and a shared view of commander's intent above the air component commander level.

FAILURE OF ANALYSIS

Assuming a static, unreactive enemy is often the cause of analysis failures. Rather, to accurately anticipate and account for likely enemy action, strategists should view the enemy as a thinking, adaptive agent. Discussed previously, the Schweinfurt raid on ball bearing production during WWII's Combined Bomber Offensive is a prime example of failure to do so. Though industrial production was correctly identified as a COG, designating ball bearings as a critical vulnerability erred by failing to account for enacted countermeasures. German foresight and reactive measures lessened the effects of an otherwise successful attack. Thorough wargaming is the best way to avoid such failures, but no method is foolproof. Planners should expect that the enemy will aggressively attempt to defeat SA efforts by continually adapting its strategies.

Either from an incomplete understanding of a conflict's nature or due to a "target-servicing" mindset, there may be pressure on commanders to employ force incrementally or sequentially ("gradualism"), in ways that prevent the imposition of system-wide shock and dislocation. The first problem may be intractable from the air component commander's perspective (although commanders should make the effort to convince those "up the chain" of the correct course of action), but the second can be

combated with thorough planning and conscious maintenance of an effects-based approach to operations throughout a conflict.

Failure of German Bombing in the Battle of Britain

Largely in response to the German bombing of Coventry Cathedral in London, Winston Churchill ordered a retaliatory strike on Berlin. The Berlin raid itself had very little direct, appreciable effect. However, it had a profound, indirect effect on the minds of Hitler and Goering. Thereafter, attacks that had been distributed across southern Britain, and had sorely taxed Royal Air Force (RAF) Fighter Command, were concentrated on London instead.

This shift in focus represented a critical miscalculation for German bombing strategy. Though a strategic center of gravity, attacks on London and British leadership were premature and executed before adequate control of the air had been achieved. Luftwaffe attacks aimed directly at attriting the RAF (a critical capability for London's defense) and destroying its airfields (a RAF critical requirement) had nearly broken the force. Instead, shifting away from these attacks relieved pressure on the beleaguered RAF and provided sorely needed time to recoup and refit. Ultimately, this turned the tide of battle in Britain's favor and forced Hitler to abandon his plans to invade Britain.

FAILURE OF ASSESSMENT

Assessment failures can degrade effectiveness, cause unnecessary expenditure of resources, or even cause SA operations to fail. Such problems most often result from a lack of assessment planning. In Operation DESERT STORM, almost no assessment planning was done and all echelons in the process lacked trained personnel and other resources. As a result, many important targets, like WMD storage facilities and electrical system components, were struck multiple times, long after initial precision strikes had destroyed them. While this did not cause operations to fail, it did divert scarce resources from other priorities and place airmen at risk over well-defended targets. Robust assessment and intelligence collection planning are the best preventive measures.

POOR PRIORITIZATION

Generally, unless other efforts are deemed more essential or the survival of critical joint force elements is threatened, SA should constitute the JFC's highest priority. However, requirements for airpower will almost always outpace its capacity. Commanders should balance SA's priority with the need for other air missions and be prepared to address

the dilemmas likely to arise in doing so. At times, such dilemmas may be exacerbated further by the difficulty to perceive SA's progress. Commanders should anticipate and avoid the temptation to divert SA resources. The apparent and circumstantial urgency of near-term operational elements is sure to create friction. However, urgency should not be conflated with or supplant priority unless done through informed, deliberate JFC action.

RESTRAINTS AND CONSTRAINTS

Commanders operate within political, legal, and diplomatic restraints and constraints that may force less than optimal uses of military power. Restraints prohibit certain actions; constraints compel them. Chief among restraints are those set forth by the law of war. Commanders are obligated to minimize friendly combatant and enemy civilian casualties and are restrained from striking targets of special cultural, religious, or humanitarian significance. Additionally, commanders should account for political considerations that may limit or meter the pace of a campaign and may even dictate incremental or sequential air operations. During Operation ALLIED FORCE, an early gradual approach to the campaign was a political necessity until consensus developed among NATO allies that stronger military force would be necessary to prevail. Some research suggests that this benefited the NATO effort by affording escalation dominance. However, in other cases restrictions may hamper efforts and prevent effective coercion, as happened during Operation ROLLING THUNDER in Vietnam.

CONCLUSION

Properly employed, SA has the potential to produce indirect effects that exceed well beyond an action's direct effort and may offer the surest and quickest means for achieving our nation's strategic objectives. In circumstances which surpass SA's ability to deliver such results independently, its use alongside other applications of military and national power creates synergies that increase freedom of action and spur operations towards a desired end state ahead of traditional force application methods. Whether employed in parallel attack to overwhelm an enemy system, or in more limited strikes to disrupt or coerce, SA can have a decisive impact in conflict and may be the most effective use of Air Force forces.