AIR FORCE DOCTRINE PUBLICATION 3-02

STRATEGIC ATTACK

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FOREWORD

The advent of airpower offered a path to bypass an enemy's fielded forces to strike deep into their sanctuaries. These air attacks against strategic targets could defeat an adversary and promised an end to costly wars of attrition. Early airpower advocates suggested that strategic bombing alone could win wars. Since then, we have learned that United States Air Force (USAF) strategic attack (SA) operations provide the bedrock for strategic deterrence, give our nation's leaders timely and measured options for the application of force, and expand the battlespace during joint campaigns. Airpower's inherent range, speed, and flexibility make it ideally suited for SA.

Airpower enables the United States (US) to project power anywhere on the globe, at any scale, and with minimal notice. With the USAF's unmatched power projection, SA delivers rapid and potentially decisive blows to punish an adversary and compel them to change course. SA is not defined by a particular weapon or platform, but rather by the intended effect of the operation. Whether employing exquisite, penetrating capabilities like long-range standoff weapons, cyberspace fires, information activities, or low-end unmanned platforms, the USAF provides lethal force to deter, shape, and win in crisis and conflict.

SA is an offensive action against a target that is specifically selected to achieve strategic objectives. It utilizes both the threat and application of force, through kinetic and non-kinetic actions, to achieve lethal or nonlethal and direct or indirect (cumulative/cascading) effects. In this manner, SA directly affects the adversary's strategy by creating dilemmas that impact their will and capacity to fight. This, in turn, forces adversaries to divert resources to defense. Effective SA can also reduce the need for forward-deployed friendly forces. SA is prosecuted jointly and often in parallel with other instruments of power to maximize synergistic effects.

This publication provides authoritative guidance for planning and executing SA, aligning with operations and planning detailed in Joint Publication (JP) 3-30, *Joint Air Operations*, and Air Force Doctrine Publication (AFDP) 3-0, *Operations*. It describes SA within joint operations and outlines the operational art and science essential for its successful employment. AFDP 3-02 incorporates advancements in long-range strike capabilities and the integration of air, cyberspace, and space operations. This doctrine underscores the significance of cross-domain synergy, robust intelligence gathering and analysis, and achieving information dominance for effective SA planning and execution.

This publication equips Airmen with the knowledge and doctrinal foundation to navigate the complexities of future conflicts and ensures the enduring strength of American airpower. It encourages thoughtful discussion, continuous learning, and innovative thinking as we refine and advance our SA capabilities and strengthen their contribution to national security.

CHAPTER 1: INTRODUCTION TO STRATEGIC ATTACK

"Our mission is clear. We will ensure America's skies remain secure and our deterrence remains unshakable… 'Airpower Anytime, Anywhere' is not just an aspiration, it's a promise."

–General David W. Allvin, 23rd Chief of Staff, USAF

Strategic Attack (SA) is an offensive action against a target—whether military, political, economic, or other—that is specifically selected to achieve strategic objectives. It seeks to deny or degrade the enemy's ability to engage in conflict or continue their actions. SA is distinctly unique in that it may achieve strategic objectives without necessarily accomplishing operational objectives as a precondition. As such, SA can be executed as **part of a campaign, major operation, or conducted independently** as directed by the President of the United States.[1]

- "Strategic" refers to the highest level of an adversary 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 nonlethal effects.

Credible, effective SA capabilities support national and military strategy from cooperation through competition, and when necessary, can deliver a decisive advantage through offensive action during armed conflict. Joint doctrine identifies four strategic uses of military force: assurance, deterrence, compellence, and forcible action.[2] SA is useful in 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 United States Air Force (USAF) forces strengthens the joint force and provides vital support to defend the United States (US), deter SA, prevail in conflict, and maintain the ability to respond in crisis.

FUNDAMENTALS OF STRATEGIC ATTACK

SA creates strategic effects, irrespective of the weapon employed or the target attacked. Airmen employ a wide variety of weapon systems to conduct SA against adversary systems. These tactical-level actions target an adversary's centers of gravity

[1] See Joint Publication (JP) 3-0, *Joint Campaigns and Operations*, for additional information.
[2] For additional information on four strategic uses of military force, see JP 1 Vol 1, *Joint Warfighting.*

(COG) and critical vulnerabilities to achieve strategic objectives.

SA expands the battlespace to hold any adversary target at risk. Airpower extends the area of potential conflict far beyond the front lines. The ability to project power deep into enemy territory holds at risk any target, regardless of its location, disrupts enemy operations, and increases pressure on adversary leadership.

SA allows the US to apply pressure or deliver force rapidly, anywhere on the globe. Airpower's range, speed, and flexibility make SA a scalable, on-demand capability for our national leaders. Technological advances in **long-range fires, low observables, and COs** have bolstered USAF SA capabilities, making them a credible, persistent threat to any adversary.

SA avoids adversary strengths, bypassing fielded forces to deliver asymmetric force against COGs. SA is not restricted to force-on-force action typical of conventional 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 to achieve maximum gain with less effort.

Historically, in both practice and thought, SA is primarily viewed as a tool for nuclear and conventional warfare. However, SA can be equally effective delivering strategic effects in irregular warfare. Regardless of form, SA can affect any adversary, whether it be a state or non-state actor. Each enemy system, regardless of size, function, or construct, contains COGs with critical vulnerabilities that SA may affect.

SA affects the enemy's strategy. SA generally disrupts enemy strategy by compelling responses, diverting resources, and eroding morale. It creates uncertainty, disrupts command and control (C2), and limits the enemy's options, shifting the initiative and allowing the attacker to dictate the conflict's direction. SA can deny an enemy's strategic options in a variety of ways. Deterring or denying the use of chemical, biological, radiological, and nuclear (CBRN) may require the threat of nuclear response or conventional attacks on production and delivery systems, whether threatened or actual. Conducting SA against enemy leadership and their connectivity to instruments of national power, while adhering to the law of war, may also be effective.

While other forms of military or national power can also deny the enemy strategic choices, SA can often do so more effectively and efficiently. In 1944, Allied air attacks against transportation nodes and lines of communication in France prevented Nazi Germany from counterattacking the Normandy invasion. The strategic bombing of the Transportation Plan prevented the Nazis from being able to move men and equipment toward Normandy in the days after the invasion.

> "What is of supreme importance in war is to attack the enemy's strategy."
>
> **–Sun Tzu, *The Art of War***
>
> This requires us to hold at risk what the enemy holds dear or deny them the ability to obtain what they seek.

SA aims to shape the decisions of an adversary's leaders, thus impacting their strategy. Coercive means exert influence, aiming to shift strategic direction toward outcome aligned

with US interests. Coercion involves the threat or use of force, economic sanctions, or information activities designed to demonstrate the costs of continued resistance.

- **SA can affect the enemy's will to fight.** SA can disrupt critical leadership functions, destroy infrastructure, and increase the cognitive requirements of adversary C2. Through campaigns and individual strikes, SA should target enemy nodes or capabilities to produce system-wide effects and potentially drive an earlier end to the conflict.[3]

- **SA can affect the enemy's capacity to fight.** SA bypasses an enemy's fielded forces to attack the adversary's war-making system as a whole. Targets may include C2, communications, leadership, industry, infrastructure, and other war-making capabilities. Degrading the adversary's capability to produce and direct may achieve systemic effects with minimal risk and cost.[4]

- **SA can force an adversary to divert resources to defense.** The threat and execution of SA can compel adversaries to allocate resources towards defensive measures, creating strategic dilemmas. SA can force adversaries to divert resources away from the front lines to protect critical infrastructure and rear-area assets. Moving defenses may leave fielded forces more susceptible to attack from other military operations.

SA can reduce the requirement for forward-deployed and committed forces. The USAF's ability to launch continental United States (CONUS)-based forces to conduct SA may reduce the requirement for forward-deployed and committed forces. The credible threat of SA can deter adversaries from initiating hostilities or escalating a conflict in the first place. This deterrence effect can reduce the need for large-scale forward deployments as a precautionary measure. A smaller, more agile force posture may sufficiently address lower-level threats.

[3] For additional information on enemy's will to fight, see Chapter 2.
[4] For additional information on enemy's capacity to fight, see Chapter 2.

Examples of Air Force Strategic Attack

- Long-range Fires: The opening salvo of Operation DESERT STORM, in 1991 featured a prominent role for B-52 Stratofortresses and their Conventional Air-Launched Cruise Missiles. This key element of the 'long-range fires' strategy aimed at crippling Iraqi infrastructure and command and control capabilities early in the conflict.
- Range, Speed, Precision: B-2s fly 36-hour continental United States (CONUS) to CONUS missions striking targets in Baghdad on opening night of Operation IRAQI FREEDOM (OIF) in 2003. It demonstrated that bombers have the potential to conduct rapid, long-range, precision strikes against targets anywhere in the world.
- Stealth/Low Observable: Both F-117s and B-2s were at the forefront of the initial air campaign in OIF. Stealth allowed them to penetrate Iraqi airspace and strike targets ahead of other aircraft, which minimized the risk of detection and interception. The use of stealth aircraft also had a psychological impact on the Iraqi military. The inability to detect and intercept these aircraft created uncertainty and fear, further degrading their morale and fighting effectiveness.

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 USAF's most decisive warfighting capability. To succeed in future conflict, we will require the most efficient use of available forces and capabilities. To meet this necessity, Airmen should be prepared to articulate the rationale for SA as an essential warfighting option for the JFC.

Examples of Platforms, Weapons, and Targets in Strategic Attack

- World War II Fire Bomb Raids: In March 1945, General Curtis LeMay shifted bombing strategy from high-altitude, daylight precision strikes with high explosives to low-altitude night raids using incendiaries impacting Japan's capacity to fight. On March 9-10, 334 B-29s bombed Tokyo from 5,000-9,000 feet with incendiaries, burning nearly 16 square miles. Subsequent night raids by stripped-down B-29s, now carrying increased bomb loads, virtually destroyed other crowded industrial cities, decimating thousands of war production facilities with almost no losses to enemy action.
- Operation DESERT STORM: In 1991, an air campaign using F-16s, F-15Es, A-10s, F-117s, and B-52s employed precision-guided munitions (PGMs) against Iraqi command and control, air defenses, infrastructure, and military industrial targets. This swiftly crippled Iraq's military capabilities and infrastructure, enabling a rapid ground offensive that liberated Kuwait. The use of PGMs minimized civilian casualties and showcased the effectiveness of modern air power.

OBJECTIVES AND EFFECTS

National and military 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 determine desired effects against those vulnerabilities that will achieve or aid in achieving the objectives. From there, the tactical aspects of achieving desired effects can be planned and executed. Though tactical action brings them about, the effects of SA are felt at the strategic level. They can translate into effects at the operational and tactical levels as well.

Strategic Objectives. Strategic objectives should be clear, decisive, measurable, and attainable. Strategic objectives 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.

The President, aided by the National Security Council, establishes policy and strategic objectives through continuous iteration. In parallel, the Secretary of Defense (SecDef) translates the emerging policy into guidance that facilitates joint planning. Combatant commanders (CCDRs) participate in strategic discussions with the President and SecDef, usually with the Chairman of the Joint Chiefs of Staff. CCDRs also participate in strategic discussions with allies and multinational partners. Thus, the CCDR's strategy relates to both US national strategy and joint campaigns and operations within the areas of responsibility (AORs). This analysis informs the development of the strategic-level objectives, identifies obstacles to the achievement of these objectives, the associated narrative, required level of commitment, and the allocation of national resources to achieve those objectives. Planners, commanders, and national leaders need to discern when, and at what point, strategic objectives have been achieved.

In contrast with strategic objectives, operational objectives are more focused and specific, linking tactical actions and military operations to the achievement of those broader strategic goals; they are the intermediate steps necessary to progress toward strategic aims. These objectives may be behavioral or territorial in nature and are deliberately identified and formulated to enable effective campaigning.[5]

For perspective, consider a C2 node targeted and placed on the air tasking order (ATO). In SA terms, the destruction of the C2 node is not the mission's objective. The desired effect of disrupting or denying adversary C2 is achieved by destroying the C2 node. 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 intentionally 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 critical to effective SA planning and execution.

Strategic objectives are not static. Airmen plan and execute SA to shape the operational environment (OE) by causing higher-order, indirect effects that are, by their nature, often unpredictable. Though planned, such effects can have wide-ranging, unintended

[5] For additional information on strategic and operational objectives, see JP 3-0, *Joint Campaigns and Operations.*

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 necessary to achieve a favorable end state.

Strategic Effects. SA aims to achieve strategic level objectives as directly as possible. It does so by creating strategic level effects aimed at stressing an enemy to the point that compels a desired behavior. An effect is the physical or behavioral state of a system that results from an action, a set of actions, or another effect. SA generates many types of effects: direct, indirect, physical, behavioral, and psychological.

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 undermining elements of support. The key to doing so is finding critical vulnerabilities, aspects of system elements or nodes that are vulnerable 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.** [6]

[6] For additional information on systems and systemic effects, see Chapter 4.

CHAPTER 2: EMPLOYMENT CONSIDERATIONS

SA uses both the threat and application of force to achieve strategic objectives. It aims to influence an adversary's will and capacity to fight, ultimately shaping their behavior to conform to U.S. interests. While air superiority increases the probability of successful SA operations, advancements in technology and evolving strategic landscapes enable SA even in contested environments. Understanding the nuances of coercion, the importance of credible threats, and the various ways SA can impact an adversary's will and capability is crucial for effective employment.

CONTROL OF THE AIR

SA operations are most successful with control of the air. One of the highest-priority objectives for air component commanders is gaining the degree of control of the air necessary to make other operations possible. Advances in anti-access/area denial (A2AD) technology may substantially increase the effort and time required to obtain the requisite control. Failure to secure air superiority poses significant challenges to SA and, in many cases, may preclude SA operations until forces achieve control of the air. For example, during World War II, the US suffered heavy bomber losses in attacks against targets in Europe before shifting its focus to neutralizing the Luftwaffe in early 1944. The subsequent achievement of air superiority directly correlated with a remarkable improvement in the effectiveness of Allied bombing campaigns against German oil and transportation systems.

The strategic situation or OE may dictate SA operations without first gaining a degree of control of the air. Such was the case just hours before the commencement of Operation IRAQI FREEDOM (OIF). Based on credible intelligence placing Saddam Hussein among a group of senior Iraqi leaders, the US launched two stealth aircraft that successfully evaded air defenses 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. Advances in long-range fires and low observables may provide the capability to conduct SA without first degrading air defenses.

In US conflicts since the Vietnam War, adversaries have not contested control of the air much beyond the opening phases. Even in Operation DESERT STORM, during which significant opposition was expected, the US gained and maintained control of the air with relative ease. However, it would be unwise to expect similar results against potential peer adversaries in the future. Adversaries attempt to counter the threat of SA with robust A2AD. Regardless of the difficulty, some degree of control is necessary to grant ensuing operations' freedom of action. In the early stages, control of the air may be limited temporally, geographically, or otherwise. Conducting SA in contested environments will involve significant risks to forces. However, the prospect of achieving strategic objectives sooner, more efficiently, and at a lower cost may weigh the potential payoff in SA's favor.[7]

[7] For additional information on control of the air, see AFDP 3-01, *Counterair Operations.*

CREDIBLE THREAT OR USE OF FORCE

SA includes both the threat of force and the application of force across the competition continuum. As an offensive action, SA is inherently associated with compellence and forcible action. However, the ability to conduct SA may also create a deterrent effect.[8]

Coercion and forcible action are strategic uses of military force in the competition continuum. Coercion is a broad concept that encompasses two distinct forms of intimidation: deterrence and compellence. Deterrence seeks to maintain the status quo before an adversary shifts policy or takes undesired actions. Compellence is an attempt to modify an adversary's inaction or ongoing behavior by manipulating the actual or perceived costs and benefits of continuing or refusing to pursue a certain course of action (COA). Forcible action requires the violent application of military force to project the US will on the enemy by eliminating their resistance.[9]

The key to coercion is to deter or compel with sufficient strength and credibility that opponents, due to the perceived cost of non-compliance, choose actions preferred by the US (or decide not to act). The susceptibility of an adversary to any coercive mechanism relates inversely to its willpower and what it perceives to be at stake. Such variables should provide insight into which mechanisms hold the greatest potential for success. However, they may also indicate that the enemy's resilience exceeds our own will or ability to coerce. 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. Airpower's flexibility offers options to effectively coerce opponents while still providing available capability for other operations.

- **Deterrence** is the practice of discouraging an actor from taking unwanted action. The threat of SA provides a powerful deterrent. A credible SA threat deters adversaries from initiating or escalating conflict. Power projection exercises and operations demonstrate the credibility of USAF SA capabilities. Information activities are conducted with these exercises and operations to send deterrent messages to adversaries.

[8] For additional information on the competition continuum, see JP 1 Vol 1, *Joint Warfighting*, and AFDP 3-0, *Operations*.
[9] For additional information on coercion and forcible action, see JP 1 Vol 1, *Joint Warfighting*, and AFDP 3-0, *Operations*.

Bomber Task Force (BTF) Deployments as Deterrence

USAF power projection missions signal SA capabilities to deter potential adversaries. 8th Air Force regularly flies BTF missions to Europe and the Pacific, showing resolve and reinforcing deterrence of Russia and the People's Republic of China. BTFs, composed of various combinations of B-1, B-2, and B-52 aircraft, demonstrate US support for the rules-based international order and assured NATO and Pacific allies. Demonstrations of interoperability and power projection capabilities provided messaging to competitors in both regions and counterbalanced the revisionist powers while influencing their activities.

- **Compellence** differs from deterrence in that the goal is to change an adversary's existing behavior. Compelling behavior typically requires more than just rhetoric. Compellence relies on an understanding of the perspective of the adversary and carries a higher risk of escalation than deterrence. In contrast to forcible action, the point of compellence is that the choice of compliance remains with the adversary. The success of compellence 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. SA creates the opportunity to compel an enemy to change its behavior. For example, the restricted and graduated nature of Operation ROLLING THUNDER undermined its SA objectives and convinced North Vietnamese leaders the US 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, being sufficient in scope and intensity, compelled 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. 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.

Forcible action does not depend on the enemy's decision not to comply—rather, the enemy's choice of noncompliance is what distinguishes forcible action from coercion.[10] Such a strategy differs in one key aspect from coercion. While coercion aims to persuade an adversary, forcible action removes that choice. If an enemy values an objective that threatens US national security, then SA can be used to destroy that which gives the

[10] See JP 3-0, *Joint Campaigns and Operations*, for additional information.

enemy the will or capacity to fight.

Operation MIDNIGHT HAMMER

In June 2025 the US military, under Presidential directive, executed Operation MIDNIGHT HAMMER, a precision strike targeting Iran's key nuclear facilities at Fordow, Natanz, and Esfahan, with the stated objective of dismantling their nuclear enrichment capacity and preventing the proliferation of nuclear weapons by the world's leading state sponsor of terror. Meticulous planning, operational security, and joint force integration characterized this operation, which involved the use of advanced weaponry, including GBU-57 Massive Ordnance Penetrators, and deception tactics to achieve surprise and minimize Iranian response capabilities. This operation showcased the USAF unique advantages of stealth, precision munitions, and flexibility, as the B-2s could have been recalled at any time prior to employing the munitions. Operation MIDNIGHT HAMMER's focus was on physically removing Iran's nuclear enrichment capability through military force. By obliterating the facilities, the US aimed to render Iranian compliance irrelevant, as they would no longer possess the means to enrich uranium, regardless of their willingness to negotiate in the future.

WILL AND CAPACITY TO FIGHT

To help secure US national interests, warfighting strategy focuses foremost on conforming adversary behavior to our will. When commanders employ SA for this purpose, it functions in two ways: it influences the adversary's **will** to fight and affects their **capacity** to fight. Most situations will require aspects of both. However, SA alone is not likely to achieve the desired outcomes. Successfully conforming adversary behavior to our security interests normally requires a comprehensive strategy; one that combines all instruments of national power (diplomatic, informational, military, and economic) in a working concert. When forces employ it in unison with other forms of national and military power, SA can generate an enabling, symbiotic effect.

WILL TO FIGHT

SA aims to change the decision calculus of the adversary by signaling the cost of continued or contemplated actions. SA can contribute to power base erosion, unrest, and weakening of controls.

- **Power base erosion** 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. Successful air strikes highlight the regime's inability to defend its interests and protect its supporters, leading to a loss of confidence and potentially encouraging them to seek alternative alliances.

- **Unrest and weakening.** SA against valid military targets can have the coercive effect of creating *unrest* among an enemy's population or *weakening* 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 commanders use it in a limited capacity to shape an OE in support of other objectives.

- **Escalation dominance.** Nuclear response remains the ultimate form of escalation dominance, and its threat can deter an adversary's use of CBRN weapons. Short of nuclear, conventional SA employment may serve to deter enemy escalation, including nuclear deterrence. The threat of increasing 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).

CAPACITY TO FIGHT

SA targets an adversary's ability to take unwanted action by degrading or destroying their military capabilities and the infrastructure that sustains them.

- **Leadership attack** is a specific form of attrition that removes enemy leadership by direct attack when members of that leadership constitute lawful targets. It can entail a direct attack to sever C2 links between an enemy's leadership and its fielded military forces. Leadership attack is most effective when an enemy is led by a single charismatic and authoritarian figure who cannot be easily replaced. It is also effective against organizations with rigid, hierarchical leadership structures, since US forces can identify, locate, and remove those leaders and their replacements. Planners should consider the second and third-order effects that may jeopardize a country's long-term stability if its leadership is removed. As a matter of practice, US forces have often avoided attacks on the national leadership of an enemy State based on comity, as well as to help ensure that authorities exist with whom US authorities can conclude peace agreements.

- **SA on transportation systems** disrupts, degrades, or destroys the enemy's ability to move personnel, equipment, and supplies. Commanders can conduct SA on transportation systems through kinetic actions, such as the physical destruction of transportation infrastructure. Alternatively, non-kinetic actions can disrupt transportation operations by targeting control centers, communication networks, or fuel depots, hindering the enemy's ability to coordinate and manage transportation flow. Disruption of transportation systems can impact the enemy's mobilization and economy.

- **SA affects conflict-sustaining resources and industry.** While it may be difficult to directly target an adversary's will, commanders 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 forces damage them, may help accelerate an enemy's collapse. Historically, forces have targeted industrial sources using SA, destroying or disrupting material at the source.

  SA is not limited to targeting tangible resources with direct munitions. Cyberspace capabilities may offer a means of affecting enemy social, financial, and informational resources. Such operations helped contain the efforts of al-Qaeda, the Islamic State, and other Islamist extremist groups. CO can also target adversary infrastructure. Though the attack remains unattributed, the STUXNET virus highlighted the effectiveness of CO at the strategic level. After someone transmitted it through flash drives, it targeted Iranian nuclear enrichment programs with devastating effects. As systems become more reliant and interconnected by information systems, Cos' ability to target infrastructure and production typically continues to grow in importance and effectiveness.

SA on strategic weapons. SA on the adversary's strategic weapons degrades or eliminates their ability to conduct a large-scale attack or counterattack. For example, SA on adversary CBRN weapons could enable conventional military operations with a reduced risk of escalation to large-scale conflict or nuclear exchange. SA on strategic weapons may limit the adversary's ability to retaliate or respond to aggression, potentially making them more susceptible to coercion or additional attacks.

CHAPTER 3: COMMAND AND CONTROL

Unity of effort enables various agencies to coordinate their resources and work towards the same goal. This coordination is essential for the success of the situation 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 establish objectives, determine necessary effects, designate targets for attack, allocate air assets, integrate air operations, and coordinate CO along with other resources.

Centralized command is necessary for 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 an adversary threatens the survival of critical joint force elements, SA should constitute the JFC's highest priority. The air component commander's authority to allocate air assets enables the mass necessary to pursue strategic objectives while maintaining economy of force, ensuring effective and efficient airpower employment.

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 will require centralized planning at the operational level in most situations. However, in contested, degraded, and operationally limited (CDO-L) environments, the ability for forces to continue SA operations absent direct, higher headquarters influence may be imperative. Subordinate commanders with the necessary authority, capability, and capacity to conduct the C2 process may be delegated authority to conduct SA. In this situation, subordinate commanders should ensure they operate in accordance with the air component commander's intent and within the bounds of issued constraints and restraints.[11]

The C2 Process in SA

In general, the ramifications of SA require a high degree of centralization, since the JFC (or higher authorities, for nuclear capabilities) retains SA authorities. The four activities of the C2 process—planning, preparing, executing, and assessing—typically occur at a theater air operations center (AOC), since those centralized hubs integrate air, space, cyberspace, and electromagnetic spectrum operations based on JFC guidance. However, the likelihood that future operations will occur in CDO-L environments may require sub-theater operations centers to accomplish the C2 process for SA that the theater AOC previously performed. For additional information, see AFDP 3-0.1, *Command and Control*.

[11] For additional information on delegation of specified authorities from the air component commander to subordinate commanders, see AFDP 3-0.1, *Command and Control*.

Achieving an 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. Under these circumstances, a commander may deem it appropriate to exercise increased influence over execution at the expense of tactical efficiency but should limit inputs to the minimum necessary to achieve desired effects. In all cases, commanders should push execution authority to the lowest level possible. Doing so promotes effectiveness and resilience at the tactical level and provides tactical commanders with the ability to fight in the most effective way possible.

COMMAND RELATIONSHIPS

A CCDR tasked by the President and SecDef employs SA in a joint construct in a unified command structure. In this context, USAF forces are typically employed as an integral element of a joint or multinational force and can be employed in concert with surface components, alongside other joint air elements, or independently as an air component.

Though it is a Department of Defense (DoD)-designated Department of the Air Force function, SA does not belong to airpower alone. Increasingly, through the development and advancement of precision long-range fires, surface components can create effects that airpower has customarily achieved. 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 Volume 2, *The Joint Force*, and Air Force Doctrine Publication (AFDP) 3-0.1, *Command and Control*, apply. **While the air component commander is typically the supported commander for directing and coordinating the overall SA effort, 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 coordinates strikes with the supported CCDR. However, USSTRATCOM may relinquish operational control (OPCON) or tactical control (TACON) of these forces to the supported commander if the President or SecDef orders it.

Some assets critical to effective SA can operate from other CCDRs' AORs. OPCON or TACON of SA assets operating from the CONUS or stationed in another AOR outside the theater of operations can transfer to the supported JFC. For instance, in OIF, US Central Command (USCENTCOM) employed B-2s launching from CONUS and B-52s launching from Europe in its AOR. Higher authority attached these forces with specification of OPCON to Commander, USCENTCOM who, in turn, delegated OPCON to the commander, Air Force forces: Commander US Air Forces Central Command (AFCENT).[12] Circumstances may require other arrangements. For example,

[12] For additional information on command relationships, see AFDP 3-0.1, *Command and Control*.

Commander, USSTRATCOM typically retains OPCON of US nuclear forces. In any event, combatant commands should work out these arrangements as far in advance—and in as much detail—as possible to avoid confusion.[13]

Special operations forces (SOF) offer a unique set of capabilities that CCDRs may leverage 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, Iraqi leadership, and other high-value targets.

[13] For additional information on commanding nuclear forces, see AFDP 3-72, *Nuclear Operations*.

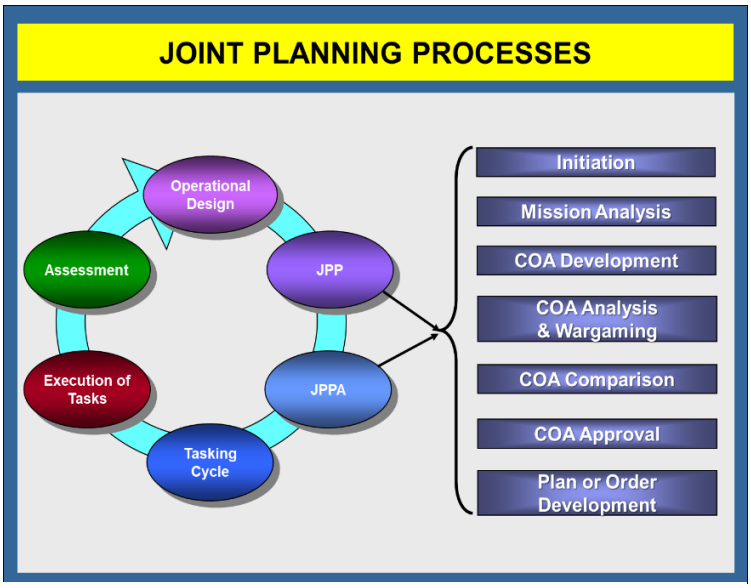
CHAPTER 4: C2 ACTIVITIES

At the tactical level, SA missions look much like any other force application mission. However, there may be significant differences between SA and interdiction missions, especially in the C2 process activities of **planning, preparation, execution,** and **assessment.** The joint planning process (JPP) and the joint planning process for air (JPPA) provide detailed discussions on planning and assessment. Once the commander initiates an operation's battle rhythm, planning, preparation, execution, and assessment operate together as part of an ongoing cycle.[14]

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 manifest at the strategic level, but forces plan, conduct, control, and sustain them at the operational and tactical levels where they execute SA missions. 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 crucial that the CCDR, or other JFC, understands SA and its employment during COA development, before component planning starts and before planners develop actual COAs. Once the JFC commander initiates planning for an operation, the commander's estimate constitutes the "first look" at military objectives, the strategic environment, the threat, and possible alternative COAs. Though the JFC may not yet formalize component taskings, 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.



Joint Planning Processes

SA 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*.[15]

[14] For additional information on JPP, JPPA, and C2 process, see JP 5-0, *Joint Planning*, and JP 3-30, *Joint Air Operations.*

[15] For additional information on JPP, see JP 5-0, *Joint Planning*, and JP 3-30, *Joint Air Operations*.

Air component planning culminates in the 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 the air component begins execution. There are a couple of considerations unique to SA that operations planners should consider as they assemble the JAOP.

- **Targeting Considerations.** SA planning follows the effects-based and objectives-based principles of targeting.[16] Therefore, 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. However, as planning progresses into tactical tasks, planners may tend 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. In losing sight of the objective, an input or target-based approach creates a logical disconnect between ends and means. Planners should be aware of this temptation and compensate for it, while commanders should be prepared to redirect or refocus planners toward achieving the objective by generating desired effects. To successfully *operate* the effects-based targeting principle, Airmen should *think* and *plan* with the desired effects in mind.

Civilian Harm Mitigation and Response

The success of SA depends on acting consistently with the fundamental principles of the law of war. This requires Airmen at all levels to be aware of their obligation to take feasible precautions when planning and conducting attacks to reduce the risk of harm to civilians and other protected persons and objects. Commanders and planners should integrate preventing, mitigating, and responding to civilian harm into mission objectives from the start. An effective civilian harm mitigation and response plan for air operations and SA depends on incorporating appropriate planning considerations.

Airpower offers unique operational capabilities to mitigate and respond to civilian harm. For example, the advantages of SA enable JFCs to generate significant impacts against lawful enemy targets while minimizing collateral damage.

- **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. Planners should avoid resorting to a particular system or weapon because "that's what we usually use."

ADDITIONAL PLANNING CONSIDERATIONS

Planners should have a detailed understanding of enemy leaders' thinking and motivations. This is necessary for most aspects of planning and executing SA, but it 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

[16] For additional information on principles of targeting, see JP 3-60, *Joint Targeting*.

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 activities against them.

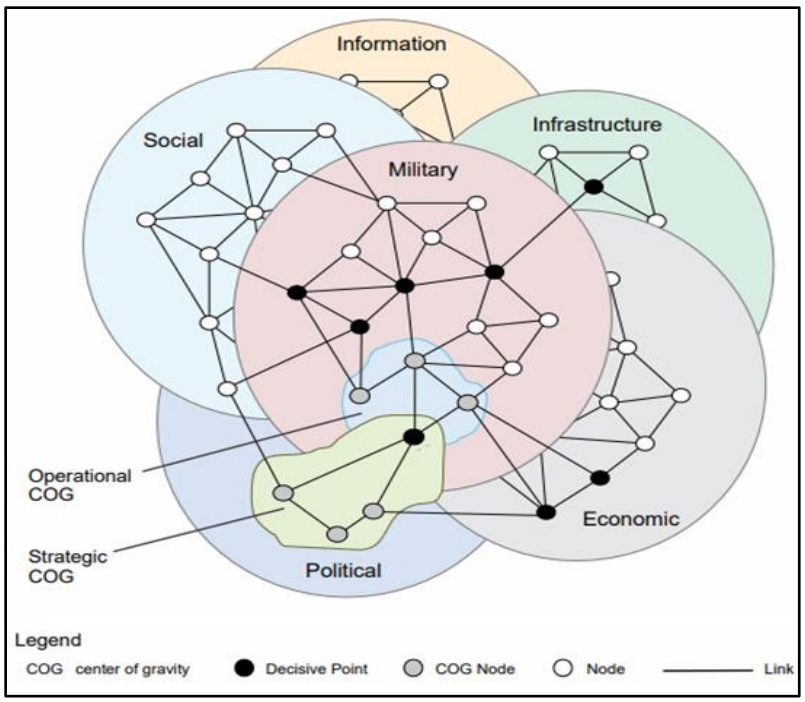
SA can provide strategic leverage. By keeping an enemy off balance, unable to adapt and react, commanders can operate and execute inside the enemy's decision cycle, thereby increasing the effect with follow-on attacks. When planned in conjunction, SA operations can increase the leveraging ability of other instruments of power as well. Attacks against Saddam Hussein, his inner circle, and his key security infrastructure during OIF partially decapitated the Iraqi military, opening the door for a swifter interdiction operation against Hussein's Republican Guard. Likewise, attacks against al-Qaeda leaders, when US and allied forces executed them with sufficient intensity and frequency, succeeded in keeping the organization at a strategic disadvantage. To achieve desired strategic effects using SA, planners should understand adversary COGs and the implications of different actions and effects.

STRATEGIC ATTACK ON HOUTHIS

US air campaigns against the Houthis in Yemen demonstrates the effectiveness of SA in achieving broader geopolitical objectives. Following Houthi attacks on US Navy ships, the US responded with intensified airstrikes and direct threats against Iran, holding them responsible for the actions of their Houthi proxies. This rapid escalation of pressure, including the forward deployment of B-2 bombers, signaled US resolve and directly threatened Iranian assets. Consequently, Iran, prioritizing its own security and fearing a direct US attack, reduced its support for the Houthis.

Centers of gravity. SA achieves strategic objectives by generating effects aimed at enemy COGs. SA views the adversary as an interdependent system and focuses on effectively targeting or influencing that system to achieve desired change. SA operations are planned, executed, and assessed starting with the desired objectives and then working backward from objectives to effects to tasks. This method ensures the associated tasks generate proper effects to achieve the desired objectives. Planners should examine the enemy's system across all domains (political, military, economic, social, infrastructure, and information) in relation to their national objectives. Through a combination of kinetic and non-kinetic capabilities, SA aims to achieve objectives effectively and efficiently.

A COG is a source of power that provides moral or physical strength, freedom of action, or the 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. Within SA, COGs are focal points that unify a system, draw power from various sources, and provide purpose. COG analysis identifies critical capabilities and requirements, revealing vulnerabilities. Exploiting these vulnerabilities at decisive points (locations, events, factors, or functions) allows commanders to gain a marked advantage or create a desired effect.



A Systems Perspective of the Operational Environment
JP 3-0, *Joint Campaigns and Operations*

Systemic effects. To create a systemic effect, planners should view and analyze the adversary as a system and plan for underlying effects within that system. 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 from deductive reasoning and require observation instead. However, incorporating aspects of interactive complexity into planning practices can improve accuracy.

Kinetic and non-kinetic. Actions, capabilities, or weapons are categorized as either kinetic or non-kinetic, based on their underlying mechanisms for producing effects. Kinetic actions involve the employment of forces and energy associated with moving bodies or directed energy to achieve desired outcomes. Non-kinetic actions, on the other hand, achieve their effects without the direct application of force or energy from moving objects or directed energy sources. These actions operate through different means, influencing, disrupting, or degrading an adversary's capabilities in ways that do not rely on physical impact.[17]

[17] For additional information on kinetic and non-kinetic, see AFDP 3-60, *Targeting*.

Hezbollah Communication Device Attacks

The 2024 attacks targeting Hezbollah operatives through their communication devices offer a compelling case study for the evolving nature of SA. While no one claimed responsibility for these attacks, their technical sophistication and precision strongly suggest the involvement of a nation-state actor leveraging advanced cyberspace capabilities. By exploiting vulnerabilities in device firmware, the attackers reportedly triggered malfunctions, failures, and potentially detonations, achieving targeted physical effects through digital means. This innovative approach bypasses traditional security measures, offering plausible deniability while disrupting communications, eliminating key personnel, and degrading operational effectiveness. This incident underscores the increasing integration of cyberspace capabilities into strategic operations, blurring the lines between the digital and physical domains and expanding the range of options available to achieve strategic objectives. It highlights the need to adapt to this evolving landscape and incorporate the potential for cyberspace-enabled physical effects as a key component of SA.

Lethal and nonlethal effects. A lethal effect is one in which there is an intentional risk of loss of life or damage to equipment, infrastructure, or networks, such that near-term reconstitution would be difficult or impossible. In other words, the equipment, infrastructure, or network cannot perform its function or be repaired in time to rejoin the current engagement. The objective is to create a lasting impact on the enemy's ability to project power.

Conversely, a nonlethal effect, such as a targeted information activity, normally does not involve the loss of life or destruction of infrastructure and may be reversible. Nonlethal effects can also be used to achieve strategic objectives. Examples include disrupting communication networks or sowing discord within enemy ranks. Nonlethal effects can offer advantages by mitigating civilian casualties, enhancing friendly maneuverability, and reducing post-conflict reconstruction burdens.[18]

Air Force Terminology

Joint doctrine does not use the terms “kinetic” and “non-kinetic” and instead states that “fires are the use of weapon systems or other actions to create specific lethal or nonlethal effects on a target.” Joint doctrine recognizes that services will retain these terms, due to long standing usage. USAF doctrine continues to use these terms by explaining that the USAF executes kinetic and non-kinetic actions to create lethal and nonlethal effects.

Direct and indirect effects. SA achieves objectives through direct and indirect effects. SA generates direct effects by attacking COGs to achieve strategic objectives. Planners should understand SA operations are designed to trigger additional outcomes—

[18] For additional information on lethal and nonlethal effects, see JP 3-60, *Joint Targeting*, and AFDP 3-60, *Targeting*.

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.[19]

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.

CHEMICAL, BIOLOGICAL, RADIOLOGICAL, AND NUCLEAR WEAPONS CONSIDERATIONS

Nuclear weapons employment is a form of SA that can produce political and psychological effects well beyond their actual physical effects. Only the President may authorize the employment of nuclear weapons.[20] It is US policy not to employ biological or chemical weapons nor possess a stockpile in accordance with the Chemical Weapon Convention and Biological Weapon Convention.

CBRN weapons also have great potential for any foe who seeks to generate high-level impacts. USAF forces should be prepared to deter adversaries that possess CBRN weapons and prevail against any adversary that threatens to use or employ 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 USAF forces to 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 is 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.[21] Strategic messaging may be necessary to publicly

[19] For additional information on direct and indirect effects, see AFDP 5-0, *Planning*.
[20] For additional information on nuclear operations, see AFDP 3-72, *Nuclear Operations.*
[21] For additional information on CBRN weapons capabilities, see AFDP 3-40, *Counter-Weapons of Mass Destruction Operations.*

justify strikes, mitigate collateral damage, and aid efforts to strengthen deterrence and sustain political will for subsequent attacks.

PREPARING FOR STRATEGIC ATTACK

Preparing for SA encompasses the coordinating, refining, and transitioning actions necessary to ensure positive communication and successful execution among superior, subordinate, and parallel forces. Effective preparation is critical to a seamless transition from planning to execution, enabling forces to achieve their objectives. This includes rehearsals or exercises to ensure personnel understand transition activities, inspections and checks to verify readiness, and timely back-briefs to address lessons learned before execution. Consistent and ongoing preparation activities, such as exercises and inspections, help to present credible and capable forces that are ready to execute, ultimately contributing to the overall effectiveness of SA operations.

EXECUTING STRATEGIC ATTACK

SA maximizes its impact through parallel operations, delivering simultaneous blows against a wide range of enemy vulnerabilities to shock the system. This limits adversary adaptation and increases the chance of paralysis or collapse. When constraints limit parallel attacks, a prioritized sequential approach remains viable. Commanders can also blend parallel and sequential elements, initially focusing on priority targets. SA achieves its full potential when integrated with joint all-domain operations and national power, creating synergistic effects for decisive outcomes.[22]

Parallel versus sequential operations. SA is normally most effective when employed using parallel operations. Parallel operations—simultaneously striking a wide array of targets chosen to cause maximum shock across an enemy system—limit 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.

Numerous historical examples demonstrate the successful employment of parallel operations. 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, the Russian action against Georgia in 2008 is an example worth noting for the paralyzing effect achieved using CO in parallel with simultaneous traditional force application. CO against military, governmental, and financial information and communications systems achieved a crippling effect and enabled Russian forces to

[22] For additional information on employment considerations, see Chapter 2.

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 a situation demands it, conduct sequential SAs to achieve objectives in a 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.

It may be necessary to combine parallel and sequential attack operations. 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 expand to incorporate additional objectives when subsequent phase points are reached. A combined approach may be needed in situations where certain objectives require achievement 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 efficiency. 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.

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
"Firing for Effects." Air & Space Forces Magazine, April 2001

Complementary operations and synergy. SA offers commanders independent, potentially decisive options. However, SA is usually most effective when employed in conjunction with joint all-domain operations 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 the accomplishment of theater objectives and further weakened its leadership.

Complementary operations can enhance the effectiveness of SA, whether realized or delayed. Parallel space operations and information activities can separate an adversary from indigenous or third-party support and prevent enemy space or information systems from interfering with SA. Both information activities 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 information activities with SA capabilities enables commanders to generate, preserve, and apply informational power against an enemy to influence them to drive their behavior, increase or protect a decision advantage, or increase combat power potential.

SA and interdiction operations create a synergistic effect with simultaneous attacks against the enemy in depth, which places maximum stress on the enemy, allowing them no respite. There are distinct differences between these types of operations. For example, SA may focus on halting the production and storage of critical war materiel, while interdiction concentrates on cutting off the flow of this materiel.

Surface maneuver benefits from, and supports, SA by creating a dynamic environment 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, attacks on fielded forces 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 action.

ASSESSING STRATEGIC ATTACK

Assessment is a crucial component of SA and, when analysts perform it properly, may be the most difficult component of the C2 process; a fact only strengthened by the complexity of SA operations. In this context, assessment exceeds the scope of more familiar terms, such as battle 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 Phases II and III of BDA provide key indicators for measuring tactical effectiveness. However, for SA, the development of measures to effectively assess indirect 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). MOPs tell us if we are doing things right; MOEs help tell us if we are doing the right things. In conventional operations, tactical MOPs inform higher-level MOEs. In turn, MOEs at lower levels may become MOPs as measures progress upward from operational to strategic in a hierarchical fashion. However, for SA, tactical MOPs and strategic MOEs are often opposite sides of the same coin. SA seeks to generate strategic impacts 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.[23]

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 planners correct mistakes or miscalculations made early on and prevent them from progressing further. This aspect of assessment is especially critical for SA operations. Given the complex and unpredictable nature of indirect effects, assessments analysts perform haphazardly or without requisite care and attention to detail can cause an otherwise well-laid plan to fail.

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 forces achieve them indirectly and adversaries feel them as they spread throughout a system, may not be immediately measurable or discernible. As such, successful SA may depend on anticipatory campaign assessment during initial planning as well as patience during execution. When planners acknowledge such considerations as relevant factors, commanders should put mechanisms in place to ensure their planners carry them forward and account for them once execution has begun.

As with Joint Intelligence Preparation of the Operational Environment (JIPOE), deriving necessary insight is not easy and requires thorough and diligent effort. Assistance from national-level assets may be required.[24] Since these resources are “low density, high-demand,” gaining access will be easier if planners coordinate early. Planners and intelligence collection managers should consider ongoing collection requirements during plan execution: what type of information will they need, what assets will they need, and how will they control and sustain these assets? Planning should be as thorough and detailed when planning for assessment as when planning for any other aspect of SA.

REQUIREMENTS FOR ASSESSMENT

Historically, analysts had very limited ability to measure effects and gauge effectiveness (i.e., the overall progress toward objectives). Traditional assessment efforts aimed at analyzing the immediate, physical effects of combat, the attrition of enemy troops, and direct damage to facilities or equipment. 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, analysts missed many indirect effects, like resources diverted to air

[23] For additional information on assessment measures, see JP 5-0, *Joint Planning*, and JP 3-30, *Joint Air Operations*.
[24] For additional information on JIPOE, see *Joint Guide for Intelligence Preparation of the Operational Environment*.

defense or wasted on retaliatory V-1 and V-2 terror weapons.

To determine progress toward achieving objectives, strategists should identify indicators useful for doing so. *Objective* and *quantitative* indicators, which planners commonly associate 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 challenge for SA planners is determining how to measure these indicators. Direct measurement of second- and third-order effects, especially in areas like economic and psychological impact may not be possible. Instead, planners and analysts must often derive indicators of such indirect effects.

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 wish 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 judgment or decision. When dealing in the subjective, rarely will a single or even a set of indicators suffice 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, “hidden” 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 5: PITFALLS AND LIMITATIONS

Conceptually, SA is a difficult force application method. Its failures generally result from an improper understanding of its pitfalls. To increase the likelihood of 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 commanders, planners, and analysts seriously misjudge the enemy or the enemy's motivations. Personnel 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 the 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 principle of targeting, enforced by commanders, is the best means to avoid a shift to target servicing or attrition.

- **Unintended direct effects—collateral damage.** Though collateral damage is inevitable, it has the 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 the 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 unforeseen consequences. 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.

Al Firdos C2 Bunker Strike, Baghdad, 1991

Though Iraqi forces used it 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 sheltering 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.

- **"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 circumstances require swift action. This essential tension has led to the escape of valuable targets in the past. Modern technology enables analysts and operators 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 the 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. As 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 analysts correctly identified industrial production 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 COA), but the commander can combat the second with thorough planning and an effects-based targeting principle throughout a conflict.

Failure of German Bombing in the Battle of Britain

Largely in response to the German bombing of the Coventry Cathedral, 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 occurred and all echelons in the process lacked trained personnel and other resources. As a result, coalition forces struck many important targets, like WMD storage facilities and electrical system components, 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 the JFC deems other efforts more essential or the survival of critical joint force elements is threatened, SA should constitute his or her 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, the difficulty of perceiving SA's progress may exacerbate such dilemmas further. 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, unless the JFC requires it via informed deliberate action, personnel should not conflate urgency with priority, nor supplant the latter with the former.

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 the law of war sets forth. During armed conflict, the law requires commanders (and others involved in planning or conducting attacks) to avoid or minimize incidental harm to civilians and civilian objects where feasible. Policy, for example, DoD Instruction 3000.17, *Civilian Harm Mitigation and Response,* and rules of engagement may further constrain the actions of commanders. 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 NATO allies developed consensus 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 occurred during Operation ROLLING THUNDER in Vietnam.

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