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FOR DOCTRINE DEVELOPMENT AND EDUCATION



AIR FORCE DOCTRINE PUBLICATION (AFDP) 3-0 OPERATIONS AND PLANNING

APPLYING AIRPOWER

Last Updated: 04 November 2016

[Airpower](#) entails the use of military power and influence to achieve objectives at all levels by controlling and exploiting air, space, and [cyberspace](#). It encompasses military, civil, and commercial capabilities, the industrial infrastructure, and a doctrine of employment. Airpower is an indivisible, unitary construct—one that unifies [Airmen](#), rather than portraying them as a collection of “tribes” broken into technological or organizational “stovepipes.” Other doctrine publications deal with specific aspects of airpower or specific types of Air Force operations, but in all cases readers should remember that airpower accomplishes or contributes to achieving national objectives across all domains¹ via operations in and through air, space, and cyberspace.

Due to speed, range, and its multidimensional perspective, **airpower operates in ways that are fundamentally different from other forms of military power; thus, the various aspects of airpower are more akin to each other than to the other forms of military power. Airpower is the product, not the sum, of air, space, and cyberspace operations. Each depends on the others to such a degree that the loss of freedom of action in one may mean loss of advantage in all other domains.** Airpower has the ability to create effects across an entire theater and the entire globe, while surface forces, by their nature, are constrained to divide the battlespace into discrete operating areas. Airmen view operations, including the application of force, more from a functional than a geographic perspective, and usually classify actions taken against targets (including nondestructive and nonkinetic actions) by the effects created rather than the targets’ physical locations within the battlespace.

AIRPOWER AS MANEUVER IN WARFARE

The multidimensional nature of airpower provides distinct advantages. Traditionally, the physical structure of ground [maneuver](#) forces has consisted of fronts, flanks, and rears. While these concepts do not apply as readily to airpower, it can be useful to make an analogy in surface terms in order to convey the Air Force’s contribution to joint warfare. In such terms, airpower adds flanks in other dimensions that make the vertical and virtual battle as important as the horizontal battle. Using a metaphor from surface warfare, the airspace above the battlespace is like an additional flank in the third dimension, which can be exploited to achieve a relative advantage. Thus, as with surface flanks, commanders should seek to gain positions of advantage by turning an enemy’s vertical flank, while trying not to expose their own vertical flank(s). Through cross-domain effects (effects created in one or more domains through operations in another), airpower can also create virtual “flanks” or “rears” in other dimensions, such

¹ Land, air, maritime, space, and cyberspace.

as time and cyberspace (or assist the joint force in doing so). Air Force forces can help ensure the success of friendly actions, disrupt adversary strategies, and even paralyze adversary action by using time more effectively than the adversary through disruption of his operational rhythm. When authorized, Airmen can create positions of decisive advantage (maneuver) through use of computer code and manipulation of electronic infrastructure in cyberspace.

In a larger sense, by exploiting this third dimension, the electromagnetic spectrum (EMS), and time, **airpower can strike directly at an adversary's centers of gravity (COGs), vital centers, decisive points (DPs), and critical vulnerabilities (CVs)**. This enables airpower to create operational and strategic effects well beyond the tactical realm of specific combat actions, enabling US forces to gain enduring advantage over adversaries. The nature of airpower also makes it an effective instrument to achieve information superiority. Airpower can quickly and directly affect adversary information systems in many different ways that can undermine enemy will and decision-making ability. **Airpower can wrest the initiative from the adversary, set the terms of battle, establish a dominant tempo of operations, better anticipate the enemy through superior observation, take advantage of opportunities, and thus strike directly at the adversary's capabilities and strategy by making effective use of the vertical dimension, the electromagnetic spectrum (EMS), and time.**

Integrated with surface forces, airpower can reduce the need for operations like surface probing actions through such capabilities as wide-ranging intelligence, surveillance, and reconnaissance (ISR), information exploitation, and comprehensive situational awareness and understanding. This enables freedom of action for surface forces, greatly enhancing their effectiveness and that of the entire joint force.

Both joint and Air Force doctrine recognize airpower as a form of maneuver. Rapid, long-range, multidimensional maneuver and fires; kinetic and nonkinetic actions; and lethal and nonlethal effects,² are inherent in airpower, as is the ability to inflict both physical and psychological dislocation on an adversary. Thus, in cases where airpower presents the joint force commander (JFC) with the preponderance of counter-surface effects, it may be appropriate for the joint force air component commander (JFACC) to be the supported commander for affecting enemy surface forces, with friendly surface force commanders acting in a supporting role. This was the case with the ballistic missile suppression effort in Iraq's western desert during OIF, and is often the case when the JFACC's forces perform the theater-wide air interdiction and strategic attack functions.

Airmen bring an understanding of airpower's capabilities to the process of building strategy, which may help them shape the design of strategies that offer a greater range of options and more decision space to JFCs. Numerous options pose a series of potential challenges against which an adversary must defend. Strategists should also identify and leverage favorable asymmetries of all kinds enabled when friendly forces possess air, space, and cyberspace superiority. The flexibility and responsiveness of Air Force forces may allow the United States to have more control over the strategic situation; that is, attempting to impose the terms of the contest on opponents rather than allowing the adversary to set the contest's terms. At the same time, strategists should assume the adversary is capable, aggressive, motivated, and adaptive.

² These categories include nuclear weapons, which use both kinetic and nonkinetic means to create lethal and nonlethal effects.

Joint doctrine allows for Service and [functional components](#) to be involved at various levels in the initial stages of joint strategy development. The [commander, Air Force forces](#)' (COMAFFOR's) or JFACC's planners should normally aid JFC-level planners in the [joint planning process](#) (JPP), and still be able to keep airpower planners in the [air operations center](#) (AOC) apprised of strategy development. In any case, to ensure effective integration of airpower, the COMAFFOR, even before being appointed as JFACC, should make every effort to ensure that as many appropriately-trained Airmen as possible join the JFC's planning staff, including members with air, space, and cyberspace expertise. Each theater or [joint task force](#) (JTF) operation will probably be different and the best way for Air Force commanders to ensure that airpower is properly represented in design and planning efforts is to develop personal relationships with key commanders and personnel at the [combatant commander](#) (CCDR) level (those who will likely form the central cadres of JTF staffs) during peacetime. Theater-level planning exercises can also help ensure proper planning integration when real-world contingencies arise.

The COMAFFOR and staff should be fully integrated into the JFC's planning process (normally as part of the COMAFFOR's role as JFACC, but also in his/her retained role as Service component commander). The [joint planning process for air](#) (JPPA) belongs to the COMAFFOR and JFACC, as does the air tasking cycle.³ The JPPA and the tasking cycle are performed in the AOC in cooperation with the COMAFFOR's staff. If not already provided, the COMAFFOR or JFACC should request or formulate a strategic communication plan to coordinate and influence all aspects of [information operations](#) (IO). This may help the commander frame the problem(s) and determine the desired [end state](#). Issues include: What should the state of peace following the conflict look like? How may the affected population respond to friendly actions? What are the long- and short-term political objectives for this operation and region? How may (or should) third party nations respond to friendly actions?

Airpower strategists should develop and recommend the most advantageous design for airpower employment. In general, all designs hold several competing factors in tension, seeking to optimize contending goals and, ultimately, enduring advantage.

Certainty versus [Economy of Force](#). Overwhelming force may nearly always guarantee an outcome, but may not be in the nation's best interests, since such operations entail using more resources (or, especially, sacrificing more lives) than are necessary to accomplish objectives. Conversely, committing too little force risks failure of the overarching operation. Commanders and strategists should weigh the costs of certainty and derive a strategy that maximizes economy of force, but still accomplishes the underlying mission. Generally, the larger the campaign or operation, the greater the need for economy of force, due to the increased mass required and the larger opportunity cost.

Time versus Cost. More time to accomplish a mission often adds certainty and reduces risk from a military standpoint, but potentially comes with political, economic, cultural, and opportunity costs. Opportunity costs involve what other activities the forces involved might accomplish in a given time—an especially important consideration in larger campaigns where there are competing demands for resources. Cultural costs—

³ Unless no JFACC is appointed and airpower planning functions are not retained at the JFC's level. See Joint Publication (JP) 3-30, [Command and Control for Joint Air Operations](#), or further explanation.

usually related to the loss of lives and damage to cultural institutions—may drive nations out of wars. For example, Russia was driven from World War (WW) I on the eve of its allies' victory due to the cultural costs of the war. The longer a war progresses, the more it costs economically. This is especially important for free-market nations, as economic stress contributes disproportionately to political tensions within them. The longer a struggle continues, the more frugal planners at all levels need to be in balancing the efficient use of resources against the effective use of them. Political costs may be the greatest factor impinging on commanders, especially in democratic nations like the United States. Generally, long wars erode political support due to other types of cost. Since the Vietnam War, the United States has endeavored to quickly and decisively conclude major combat operations to minimize economic and political ramifications. Attainment of the strategic end state(s) may not immediately follow the conclusion of major combat, as events after WW II and during Operation IRAQI FREEDOM (OIF) demonstrate. Operational-level commanders, such as the COMAFFOR/JFACC, should work with higher levels of command and, through them, with national leadership to develop strategies that deliver the end state at an acceptable political cost.

Direct versus Indirect. “Direct” strategies tend to favor attrition or outright destruction of enemy fielded military forces (those capabilities the enemy possesses that face friendly forces *directly*) as a means of achieving military objectives. “Indirect” strategies seek to achieve objectives while avoiding direct confrontation with the enemy’s strength. Indirect approaches may include maneuvering to place the enemy at an untenable disadvantage, critically affecting resources that the enemy depends upon to act, denying the enemy certain strategic or operational choices without forcing the issue by direct engagement with their forces, and so on. Indirect strategies are often more effective (creating more shock, dislocation, and other [asymmetric](#) effects within enemy systems) and are normally more efficient (allowing, for example, a smaller force to have a disproportionately large impact).

Capability versus Will. Finally, in order to take action, an adaptive system such as an army or nation requires both the ability and willingness to act. Either of these may be targeted directly, although it can be argued that all [targeting](#) ultimately seeks to influence will. *Directly* targeting capability and will, however, usually yields different sets of targets. Removing an enemy’s ability to act usually entails engaging his armed forces or similar means of acting in the operational environment (e.g., finances and critical resources), but achieving this at the operational or strategic levels can be extraordinarily costly. Targeting the enemy’s will is more subtle and usually much more difficult. This may entail strikes against a leader (as in the opening actions against Saddam Hussein in OIF), engagement of leadership’s key interests (such as [law of armed conflict](#) [LOAC]-compliant strikes against the industries controlled by followers of Serbian leader Slobodan Milosevic in Operation ALLIED FORCE [OAF]), or directly targeting national political will (like North Vietnam did against the United States in the Vietnam War). Targeting willpower involves IO against and [strategic communication](#) with an adversary population. Successfully targeting willpower also requires an enemy whose “heart is not in the fight”—whose motivation to engage in conflict is relatively low. The more motivated an enemy is to fight, the greater the need to reduce his capability to fight before his will is broken. Most successful efforts to target enemy willpower have involved at least some removal of capability, even against poorly motivated enemies. Thus, the most effective strategies involve targeting both will and capability. It is also true that, when targeting the will to fight, it is often much more difficult to reliably build a cause-effect chain from which to plan. This is because the desired effects reside in

adaptively complex human, rather than just structurally complex physical, responses that are difficult to accurately predict.

PARALLEL OPERATIONS

Air Force capabilities are usually employed to greatest effect in parallel, asymmetric operations. *Parallel operations* are those that apply pressure at many points across an enemy's system in a short period of time to cause maximum shock and dislocation effects across that system. *Sequential*, or serial, *operations*, in contrast, are those that apply pressure in sequence, imposing one effect after another, usually over a significant period of time. Parallel operations limit an enemy's ability to react and adapt and thus place as much stress as possible on the enemy system as a whole. For example, in Operation DESERT STORM, the Iraqi command and control structure was severely degraded through parallel attacks on the electric grid, communications nodes, and command facilities. In the past, target sets were often prioritized and attacked sequentially, and thus it usually took considerable time for effects to be felt across an enemy system. While focusing on one node in a system, the enemy was often able to adapt to losses or compensate with other resources, thus slowing or even negating desired effects. Today, airpower often enables a truly parallel approach.

"Asymmetric," in this context, refers to any capability that confers an advantage for which the adversary cannot directly compensate. Asymmetric operations can confer disproportionate advantage on those conducting them by using some capability the adversary cannot use, will not use, or cannot effectively defend against. Conversely, symmetric operations are those in which a capability is countered by the same or similar capability. For example, tank-on-tank battles, like the battle of Kursk during WW II, are symmetric, as was the Allied battle for air superiority over Germany in that same war. The use of Coalition air power to immobilize and defeat Iraqi armored forces in Operations DESERT STORM and IRAQI FREEDOM was asymmetric, since the Iraqis could not counter this coalition strength. Similarly, al Qaeda's use of airliners as terror weapons against the United States on 11 September 2001 was asymmetric, since a direct counter would not be used by the United States to prevent the attacks and the US had no effective defense in place at the time. Asymmetric warfare pits friendly strengths against the adversary's weaknesses and maximizes our capabilities while minimizing those of the enemy to achieve rapid, decisive effects.

Experience has shown that parallel, asymmetric operations are more effective, achieve results faster, and are less costly than symmetric or serial operations.

Symmetric force-on-force warfare is often required, such as the air-to-air combat associated with achieving air superiority. At the beginning of a conflict, other offensive operations can sometimes be accomplished in parallel with counterair operations. If the enemy strongly challenges air superiority, however, all available assets should be dedicated to winning air superiority before any other offensive operations are conducted, constraining other forces to conduct defensive operations.

Airpower can provide simultaneous and rapid attack on key nodes and forces, producing effects that can overwhelm the enemy's capacity to adapt or recover.

As a result, the effects of parallel operations can be achieved quickly and may have decisive impact, thereby maximizing the simultaneity, depth, timing, and tempo elements of operational design. Further, the shock and surprise of such attacks, coupled with the uncertainty of when or where the next blow may fall, can negatively

affect the enemy's morale. This can decisively influence an enemy's decision cycle and open opportunities for exploitation.

Parallel operations should be conducted in conjunction with other elements of a joint force to maximize synergy of effects against the adversary's critical vulnerabilities. For example, [counterland](#) operations, in conjunction with attack by surface forces, can overwhelm an enemy's reinforcement and resupply capacity or his ability to command his forces, creating synergistic effects that have an adverse impact throughout the enemy system. In this case, the surface and air maneuver elements of the joint force should be integrated in time and tempo with each other in mutual support to achieve decisive results. Cyberspace capabilities can contribute disproportionately to asymmetric force strategy by disabling critical adversary systems, exploiting information, or disrupting adversary decision-making processes.

Parallel operations are not always possible. When limitations in basing, ramp space, forces, weapons, the magnitude of critical target sets, or other factors such as political restraints preclude parallel targeting, planners should consider the optimum sequence for employing forces. Early attention to certain adversary capabilities, such as air defenses or high-value forces in garrison, may have significant benefits. When parallel operations are not feasible, planners need to examine which target sets are most time-critical as well as what measures the adversary will take in response to attacks.

ADDITIONAL CONSIDERATIONS

In some situations, airpower may be the only force immediately available and capable of providing an initial response. Due to the speed at which Air Force capabilities can be employed, this may occur early in a crisis, before significant friendly surface forces can build up in theater. In such cases, airpower can be brought to bear against the enemy system to directly reduce the enemy's ability to achieve immediate war aims, often through [strategic attack](#).

When employed aggressively, air, space, and cyberspace forces can conduct operations aimed at directly accomplishing the JFC's objectives. These types of operations may not rely on concurrent surface operations to be effective, nor are they necessarily affected by the geographical disposition of friendly surface forces. Instead, they are planned to achieve dominant and decisive effects by striking directly at enemy COGs and critical vulnerabilities, which may include fielded forces. Such operations are planned to disrupt the enemy's overall strategy or degrade the enemy's ability and will to fight.
