

OPERATIONS AND PLANNING



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FOREWORD

This publication describes how the Air Force employs airpower—air, space, and cyberspace capabilities—at the operational level, across the conflict continuum and ROMO, to accomplish joint force commander objectives in all domains. It complements Air Force Doctrine Document (AFDD) 1, *Air Force Basic Doctrine, Organization, and Command*, presents the fundamentals of airpower and provides authoritative guidance used to command, control, and present Air Force forces. The concepts discussed in AFDD 3-0—how we think about strategy, how we design and plan operations, and how we execute and assess them—are foundations for all our efforts, regardless of the type of operation we are conducting. We must understand what it means to be an Airman and be able to articulate what airpower brings to the joint fight. I encourage you to read our doctrine, discuss it, and practice it.

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PREFACE



- *He will win who knows when to fight and when not to fight.*
- *He will win who knows how to handle both superior and inferior forces.*
- *He will win whose army is animated by the same spirit throughout all the ranks.*
- *He will win who, prepared himself, waits to take the enemy unprepared.*

-- Sun Tzu

AFDD 3-0 is the Air Force's foundational doctrine publication on strategy and design, planning, employment, and assessment of airpower¹. It presents the Air Force's most extensive explanation of the effects-based approach to operations (EBAO) and contains the Air Force's doctrinal discussion of operational design and cross-domain integration—emerging, but validated concepts that are integral to and fully complement EBAO. It establishes the framework for Air Force components to function and fight as part of a larger joint and multinational team. More specific guidance on particular types of Air Force operations can be found in subordinate operational-level doctrine as well as Air Force tactics, techniques, and procedures (AFTTP) documents. This publication conveys basic understanding of key design and planning processes and how they are interrelated. It also educates Airmen in ways of thinking through these processes.

A note on terminology used in this volume: The Air Force plans and trains to employ through the commander, Air Force forces (COMAFFOR), the Air Force's Service component commander and its principal warfighting commander, who presents warfighting capabilities to the joint force commander (JFC). The COMAFFOR is normally also appointed as the joint force air component commander (JFACC).² To simplify nomenclature in this document, the term JFACC is used most frequently, since the text deals more extensively with the COMAFFOR's operational responsibilities in relation to the joint force once appointed as JFACC rather than to the COMAFFOR's responsibilities as Air Force Service component commander.³

This document applies to all Airmen.

¹ Airpower is defined as "the ability to project military power or influence through the control and exploitation of air, space, and cyberspace to achieve strategic, operational, or tactical objectives" (AFDD 1).

² When involved in operations with allied nations, the JFACC may also become a combined force air component commander.

³ For more details concerning specific duties of the COMAFFOR and JFACC, as well specifics on the role of the air operations center (AOC), division of responsibility when the COMAFFOR is not the JFACC or there is no JFACC, and other issues related to presentation of Air Force forces, see AFDD 1.

CHAPTER ONE

FUNDAMENTALS OF AIR FORCE OPERATIONS

Airpower has become predominant, both as a deterrent to war, and—in the eventuality of war—as the devastating force to destroy an enemy’s potential and fatally undermine his will to wage war.

— General Omar Bradley



Airmen use a disciplined approach to strategy development that is key to maintaining continuing advantage. This chapter presents an introduction to strategy and some enduring insights that guide its implementation. This volume discusses how airpower is used across the ROMO and describes the processes used to design, plan, execute, and assess Air Force operations.

Airpower commanders and strategists should not only design and plan strategy, they should *think strategically*—several “moves” ahead, beyond the current plan, focusing on the designated end state.

Today, the United States faces many security challenges including an ongoing conflict against implacably hostile terrorists, engagement with regimes that support terrorists, and the need to support international partners. Against this backdrop, US military forces may be called upon to conduct a full range of operations in a variety of conflicts and security situations, including major operations and campaigns, irregular warfare (IW), homeland defense, humanitarian assistance and disaster relief efforts, and building partnerships with other nations.

The operational environments in which airpower operates will be characterized by simultaneous action by Air Force air, space, and cyberspace forces, against many adversaries—including near-peer and peer competitors—who will attempt to achieve objectives against US interests by using asymmetrical advantages across all instruments of power (IOPs): diplomatic, informational, military, and economic. These conflicts may occur with little or no warning and will require the Air Force to provide support to the joint force, simultaneously integrating airpower against threats.

OPERATIONS AND WAR

While not all US military operations involve war, conflict underpins the existence of all military Services. Therefore, an understanding of doctrine should also include an understanding of war and its consequences. The most fundamental and crucial

purpose of military forces is their employment as an instrument of national power to deter or win wars. War -- a violent struggle between rival parties to attain competing objectives -- has been a deeply rooted part of human experience from the earliest times,⁴ and remains an instrument of policy used by nation states to achieve political objectives. War is one means nation states, sub-national entities, or supra-national groups may use to achieve disputed aims—part of a continuum of conflict that extends from stable peace to major war.

Typically, US military doctrine frames warfare as traditional or irregular. Traditional warfare is “violent confrontation between nation states or coalitions and alliances of nation states”, typically involving conventional, regulated military forces vying with each other force-on-force (Joint Publication [JP] 1, *Doctrine for the Armed Forces of the United States*). Examples include most of the major campaigns in World War (WW) II and Operation DESERT STORM. Irregular warfare involves both state and non-state actors vying with each other for legitimacy and influence over a particular population. Thus, the focus of IW is not primarily on the military or destructive capability of an adversary (state or non-state).

Military forces should be prepared to conduct operations across the ROMO, but they are ultimately tested by their ability to prevail in war. To prevail in war, military commanders have, over time, evolved the art of strategy development. Although this art was first developed to enable success in traditional war, its principles and key considerations are also applicable to other forms of conflict, including IW.

The advent of air forces, while revolutionizing many aspects of armed conflict, did not fundamentally change the nature of war or the enduring insights that guide strategy. The opening of the space and cyberspace domains to military action has not fundamentally changed these insights either, even while it increased the complexity of—and opportunities available through—military operations.

GENERAL CONSIDERATIONS FOR STRATEGY

Strategy is a major focus of this document. The very broad joint definition of strategy⁵ suffices for the most expansive military meanings (such as described in national-level strategy documents), but in its more commonly understood sense, strategy is a means of arranging and managing ways, means, and risk to achieve an end or set of ends. It produces a set of options an actor can choose from to achieve objectives. Strategy, in its military sense, is the art of creating military courses of action that encompasses the processes, of operational design, planning, execution, and assessment.

⁴ See Harry H. Turney-High, *Primitive War: Its Practice and Concepts*, for numerous examples.

⁵ “A prudent idea or set of ideas for employing the instruments of national power in a synchronized and integrated fashion to achieve theater, national, and/or multinational objectives” (JP 3-0, *Joint Operations*).

Strategy is More Art than Science

Strategy depends upon operational art, the creative means through which commanders and staffs develop strategies to organize and employ military forces.⁶ As such, there is more art than science to the military commander's craft. There are many aspects of operations that yield to scientific scrutiny. For instance, direct, immediate weapon effects can be accurately anticipated. The further one gets from immediate effects, however, the harder it becomes to predict indirect outcomes. Science can greatly aid strategy formulation, but the utility of science often does not extend beyond immediate effects—assessment and adaptation require judgment and intuition on the part of commanders and strategists.

Strategy should never be deterministic and prescriptive,⁷ no matter how advanced intelligence analysis technology becomes. Even “perfect” knowledge of the operational environment does not impart perfect or predictive knowledge of adversaries and their intentions, because the results of contact between living systems are interactively complex and non-linear. They lead to emergent behaviors that often cannot be anticipated before interaction begins. **Strategy should be *estimative and anticipatory*, rather than predictive or deterministic.**

Commanders and strategists should avoid the “numbers trap.” They should not trust quantified or seemingly empirical solutions to problems only because they appear more “objective,” more “scientific,” or better able to produce quantifiable (but nonetheless often deceptive) measures of success. Many times numbers are used to give the illusion of objectivity, but they obscure the fact that many quantifiable evaluation criteria are as subjective as qualitative (non-numerical) criteria.

Effective Strategy Seeks to Gain *Continuing Advantage*

Any plan encompasses a finite period of time. From a strategic perspective, the methods used to achieve objectives and reach the end state(s) may carry implications well beyond the conclusion of an operation. The purpose of military strategy is not just to “win” or conquer, it is to *resolve the conflict* by creating conditions that are at least better for friendly interests, and are often better for all parties involved, and do so in a way that endures for as long as possible. Thus, a strategic perspective recognizes that **strategy's ultimate purpose is the attainment and maintenance of an end state that leads to *continuing advantage* for friendly interests.** As operations unfold, strategy should remain attuned to an end state that imparts continuing advantage to friendly interests as long as possible (and often also to neutral and formerly hostile

⁶ “Operational art is the use of creative thinking by commanders and staff to design strategies, campaigns, and major operations and organize and employ military forces” (JP 3-0).

⁷ Deterministic and prescriptive systems obey fixed laws and have no randomness involved in development of future system states, thus always yielding the same outcomes given the same inputs. This is not true of strategy or warfare in general. See page 12 and the section on complexity on pages 17-18 for further explanations of these concepts.

interests), even if the end state changes from original conditions. This should include envisioning the after-effects of military operations on the operational environment. What should conditions be like several years down the road? Strategists should seek to answer this question and the answer should guide military operations in order to produce a better peace.

Strategy Encompasses Ends, Ways, Means, and Risk

Strategy is an aspect of operational art that should integrate the reasons an operation is being conducted—the objectives and end state(s) (*ends*); the methods by which the ends are achieved—military concepts of operations (CONOPS) and courses of action (COAs) (*ways*); the tools and resources needed to execute the strategy, such as military forces and supplies (*means*); and the amount of cost, uncertainty, and vulnerability the commander and national leadership are willing to accept in executing the strategy, as well as the potential consequences of taking the entailed risks.

Strategy is Adaptive, Not Static

Strategy evolves over time in a continuous, iterative process; there is no static, single, or “final” strategy or plan. Commanders and strategists should never assume the plans they create will remain static or be executed as conceived, but should create strategy with the assumption that strategy will need to evolve.

Strategy should adjust as the adversary reacts to friendly moves and as circumstances change. Therefore, strategy creation should be cyclic and iterative. Chance and the enemy always “have a vote,” and the operational environment changes as the antagonists and other parties react and adapt to actions taken. Objectives, desired effects, and tasks often change as the operational environment changes. Strategists should adjust to such changes and adapt to enemy choices and actions. Mental preparation and anticipation is the best defense against surprise.

Strategy and Planning Involve Different Types of Thinking

Operational design is “the conception and construction of a framework that underpins a campaign or major operation plan and its subsequent execution” (JP 5-0, *Joint Operation Planning*). In operational design, commanders’ and strategists’ thought and discourse resembles the interplay between architects and their clients at the start of a building project. They should determine a broad framework for the problem⁸ (are they building a hospital or a highway?) Planners should try to break the larger problem down into less complex elements that can be engineered, while the commander and strategists should continue to regard the problem in “holistic” terms. Maintaining a

⁸ “Operational design is a process of iterative understanding and problem framing that supports commanders and staffs in their application of operational art.... The essence of problem framing is to examine the “problem” from multiple perspectives and set conditions for “learning” about the “problem” throughout...planning and execution...” (JP 5-0; emphasis in original). “Problem framing” is widely regarded as the central, most crucial element of design, in both military and civilian applications.

“holistic” perspective is necessary, since solving a problem’s simpler constituent elements does not guarantee solving a larger complex problem as a whole. In other words, winning a battle (complex element) does not guarantee winning the war (holistic view). Strategists should determine how broadly and deeply differing aspects of the operational environment must be researched during mission analysis in order to create a proper framework. Design also requires fairly open discussion up and down the chain of command—in which “clients” (national leadership), the “architect” (JFC), and the “engineers” (strategy and planning staff) should converse frankly and feel free to openly disagree about concepts that underpin planning for campaigns and major operations. Design involves a great deal more operational art than science, especially for the commander.

Ultimately, design results in mission and intent statements that reflect the commander’s vision for the overall operation (including end states that lead to continuing advantage). With this guidance clearly given, strategists and planners can concentrate on discrete problems that can be solved through the military’s more formalized planning processes. This is akin to engineers taking the architect’s sketches or models and turning them into blueprints and schematics that can then be used by foremen and craftsmen (the equivalent of tactical-level planners) to flesh out detail and implement the plan. The type of thinking involved in planning is thus more formalized and structured, is more concerned with matching resources to requirements, and involves more “operational science” than does design (although operational art is also required during planning).

Strategy Should Integrate Military Power at All Levels with Other Instruments of National and Multinational Power

It is usually beyond the scope of authority for COMAFFORs to direct the integration of elements of national power beyond the military forces for which they are directly responsible. In fact, this is often beyond the authority of the JFC or even the combatant commander (CCDR) in whose area of responsibility (AOR) an operation is taking place. Nonetheless, all commanders are usually constrained to operate with other agencies of the United States government, within international coalitions, and with international non-governmental organizations (NGOs). Sometimes these relationships can restrain commanders’ freedom of action, but just as often they open opportunities for integrating diplomatic, informational, and economic IOPs with military efforts and thus give commanders a wider range of options with which to create intended effects. COMAFFORs, especially as JFACCs, should be prepared to operate as part of a multi-agency and multinational team and, in some cases, to direct personnel from non-Department of Defense (DOD) agencies and multinational partners in support of JFC objectives. **Effective military operations require careful integration of the efforts of all appropriate “actors” within the operational environment.**

All the IOPs that actors (state or non-state) may wield are inextricably interrelated. Political considerations are critical, but so are economic, cultural,

informational, and other considerations. Strategy should seek to integrate all relevant IOPs in order to deliver an end state that is, itself, a combination of conditions reflecting all aspects of power.

Military strategy at the theater level is normally derived from strategy guidance given by US leadership and multinational partners. At the same time, theater strategy (and all efforts down to tactical tasks) seeks to attain an end state that will enhance national strategic interests, and often those of an alliance, coalition, community of interested states or multinational organizations, embodying the doctrinal concept of unity of effort.⁹ JFCs, component commanders, and their staffs should incorporate members of other governmental agencies, representatives of other governments (especially their militaries), NGOs, and intergovernmental organizations (like the United Nations [UN]), as appropriate, in their strategy deliberations. It is often very important for JFACCs and their staffs to have such connectivity, since their forces can be called upon to create strategic effects directly aimed at achieving the strategic-level objectives of these organizations. The JFC and component commanders may also have a significant influence on the COA chosen by higher authorities and so component commanders' strategists should normally assist with operational design. Operational-level planning may also be conducted in parallel at the JFC and component levels (as depicted in Figure 1.1).

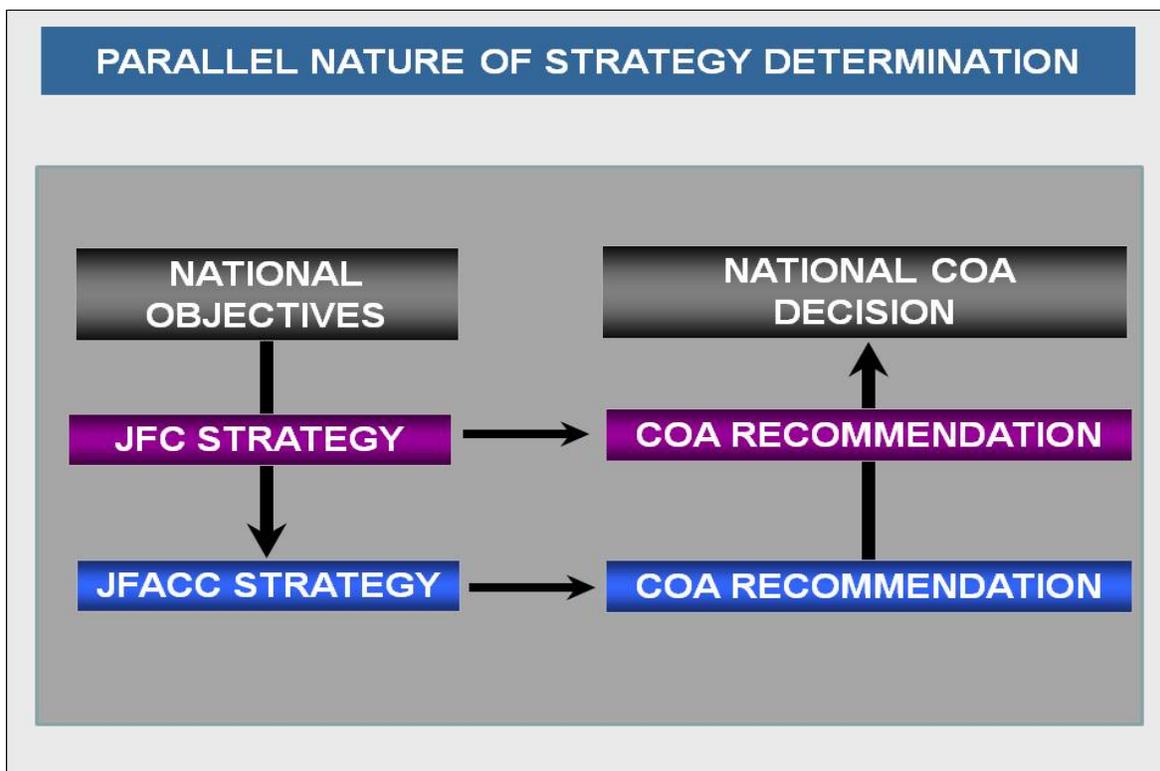


Figure 1.1. The Parallel Nature of Strategy Determination

⁹ "Coordination and cooperation toward common objectives, even if the participants are not necessarily part of the same command or organization – the product of successful unified action." (JP-1)

Moreover, operational-level air planners should recognize that during both deliberate and crisis action planning¹⁰ COAs will be developed by CCDR or subordinate JFC staffs and will likely lack the detailed airpower planning expertise or perspective of their subordinate air component staffs. Therefore, operational air planners on air component staffs should develop relationships with the CCDR's Operational Planning Team (OPT) leads and develop processes to integrate planning efforts. This will generally require the air component planners to have "flyaway" teams with cross-functional expertise (strategy, logistics, mobility, etc.) in key areas, dictated by the nature of the operation, that can rapidly deploy and integrate with CCDR OPT staffs and may have to remain in place at the CCDR or JTF staff location for the duration of the crisis or operation. Of course, parallel planning efforts will have to occur at the air component level, so sufficient expertise to conduct both forms of planning must be present on operational staffs.

Strategy Seeks to Influence Adversaries and Other Actors

Operations are conducted to affect the perceptions and behaviors of adversaries, allies, non-combatants, and neutral parties—in this sense, then, all military operations are "influence operations." All capabilities employed by Air Force forces can contribute to effects and objectives that influence and should be integrated, coordinated, and synchronized to achieve a unified effort. Even strategies based on pure attrition of military forces seek to modify the enemy's behavior. Combat operations should always attempt to confuse, dislocate, and misdirect the enemy whenever practical. Specialized types of information operations (IO), such as military deception and military information support operations (MISO), can help commanders prepare and shape the operational environment by conveying selected information and indicators to specific target audiences. Influencing all adversaries and informing the decisions of neutral and friendly actors should be foremost in the minds of commanders and strategists.

Historically, commanders have built kinetically-focused operation plans (OPLANs) and then relegated "influence" considerations to an IO annex. Influence, however, spans the ROMO and all phases of conflict. Non-lethal means such as IO present the COMAFFOR with capabilities to achieve objectives when lethal actions may not be the best option. When integrated with other means, IO may allow a commander's objective to resonate more deeply with target audiences, profoundly affecting adversary behavior rather than just denying the adversary military capability. Plans and orders should be built around the influence commanders are attempting to create and then incorporate lethal and non-lethal missions, as well as kinetic and non-kinetic actions into the appropriate parts of the plan or order to attain the desired effects.

¹⁰ See JP 5-0 for a detailed discussion of these processes.

For example, during a humanitarian assistance operation, the JFC and component commanders may strategically influence host nation and even regional cooperation through IO integration of public affairs (PA) broadcasts and MISO messaging designed to facilitate safe and orderly humanitarian assistance among the local populace. During a major combat operation, a commander may strive to influence the adversary commander's ability to communicate using direct air strikes and cyberspace attacks.

Strategy Should be Integrated, Synchronized, and Coordinated

In addition to integrating all relevant IOPs, strategy should encompass all aspects of military power—put them together in space and time, in accordance with the doctrinal precept of unified action.¹¹ Failure to do so may lead to less effective operations (at best), or failure of operations outright (at worst). Historically, there has sometimes been a tendency to plan overall strategy from the ground perspective only and add the other components to strategy as something of an afterthought. In order to achieve unified action, the modern, interdependent joint force should be fully integrated at all levels to be most effective.

Strategy Extends Beyond “*The Plan*”

Strategists should pay close attention to the planning, execution, and assessment processes once execution begins. One reason is to ensure that strategic and operational-level guidance continues to be translated into effects and tasks at lower levels. In a larger sense, though, the commander and strategists should remain keenly aware that the purpose of strategy is to anticipate, adapt, and affect future planning in order to gain continuing friendly advantage. Operational designs and plans codify strategy only for particular contexts and for specific periods of time. The commander and strategists should take the current operational environment as it evolves and try to establish a context in which continuing advantage is possible, which may sometimes entail completely reframing the problem(s) they face.

Assessment is Crucial—Strategists Should Analyze the Opportunities and Risks that Changing Conditions Create

Strategists should weigh for the commander the costs of adjusting (or not adjusting) the selected COA. Determining how this course may unfold requires strategists to ascertain the operation's past and current state through assessment that relies on accurate and continually refined joint intelligence preparation of the operational environment (JIPOE). Assessing the effects of yesterday's and today's operations is an inherent part of envisioning how future operations may unfold. Planning for assessment should begin as early in the operational design process as possible.

¹¹ “The synchronization, coordination, and/or integration of the activities of governmental and nongovernmental entities with military operations to achieve unity of effort” (JP 1).

Since the outcome of war often does not consist of Clausewitz’s “single short blow,” there is often considerable value in *persistence*—in staying with a particular COA until its effects have time to work their way through an adversary’s system. In many cases, there may be little external indication that a state change in the adversary’s system is about to take place, even if it is. Commanders and strategists should have “operational patience,” i.e., allow *time* for certain changes to take place and COAs to have desired effects. How *much* time, however, is often a matter of operational art rather than science and underscores the importance of JIPOE—understanding the operational environment and its impact, and evaluating the adversary to determine their intent, systems, culture, and probable COAs in a holistic sense.

Strategy has Limitations

Strategy options are almost always limited by policy, resources, the requirements of the joint force and multinational partners, constraints and restraints placed on commanders, and other factors. Additionally, strategists operate in the realms of uncertainty, friction, and the fog of war. Even the most advanced intelligence, surveillance, and reconnaissance (ISR) capabilities cannot convey situational awareness that eliminates uncertainty, friction, and the fog of war. Even if it was possible to determine and gather all relevant information on a given situation, it would still be nearly impossible to turn all the data into useful information – into situational understanding. Once a strategy is set in motion, Clausewitz’ saying that “everything in war is simple, but the simplest thing is difficult” comes into play. Every element in a strategy has potential for generating friction that makes execution and assessment difficult.

BASIC IMPLICATIONS OF STRATEGY ON WAR AND OTHER OPERATIONS

Strategy, coupled with an effects-based approach to operations, shape how the Air Force conducts operations. The following sections explain a number of the practical implications that the forgoing tenets of strategy have on the conduct of operations, on the uses of airpower in war, and on the general manner in which the Air Force approaches operations.

The Desired End State and Commander’s Intent Should Drive Subordinate Considerations

The principle of the objective is to “direct military operations toward a defined and attainable objective that contributes to strategic, operational, and tactical aims” (AFDD 1). This expresses only part of the reality of war, however. **The attainment of military aims, even at the strategic level, should be subordinate to attainment of a set of conditions that needs to be achieved to resolve the situation or conflict**

on satisfactory terms and gain continuing advantage, as defined by appropriate authority (such as the President or Secretary of Defense [SecDef] at the national strategic level and the JFC at the component level). **This set of conditions is the national strategic end state,**¹² and it involves political, cultural, economic, informational, and other considerations in addition to desired military conditions. The set of conditions that the military is directed to deliver, not all of which may involve military forces, is the military end state.

Military objectives should flow naturally and logically from the commander's intent, which includes the military end state. The military end state, in turn, should flow logically from the national strategic end state. Again, always looking to the end state, there should be a COA identifying what should be accomplished in addition to attainment of military objectives. The latter will normally be the focus of military commanders, but commanders should also be intimately familiar with the larger context in which their military actions take place.

Victory in Battle does not Equal Victory in War

War is much more than just battle, and a collection of tactical battles (however successful) is no substitute for a strategy that creates continuing strategic advantage. It is easy for military commanders to lose sight of the fact that victory in battle does not guarantee achievement of the desired end state.

The lower the level of the military commanders involved, the more likely they will remain focused on tactical aspects of a conflict. It is even tempting for leadership at the operational and strategic levels to focus too much on tactical events. However, there are indirect effects and strategic end state considerations that all leaders, from the lowest-level through the JFC, should keep in mind. National civilian leadership can also make this same mistake and focus on the military instrument, at the cost of losing sight of the larger cultural and political context, as happened during the Vietnam War when the President and his immediate advisors exercised excessive, direct control of military (especially air) operations.

¹² Joint doctrine defines "end state" as, "The set of required conditions that defines achievement of the commander's objectives." (JP 1-02, *Department of Defense Dictionary of Military and Associated Terms*) Note that the text above is *not* intended as an alternate definition of the term; it is intended only to explain the concept in a wider context. Used in the context of doctrine, the "military end state" typically refers to the point in time and circumstances when objectives have been achieved and the military instrument of national power can "disengage" from the operation.

Victory In Battle Does Not Equal Strategic Victory



Napoleon's armies won a string of spectacular military victories against their Spanish and British opponents in 1808; yet Napoleon lost the Peninsular War. Napoleon invaded Russia with an army of 600,000 men and won all of the major battles en route to capturing Moscow; yet he was compelled to retreat and his 1812 campaign ended in utter defeat. Hitler's armies crushed France in 1940 and inflicted millions of casualties on the Russian army in the summer and fall of 1941; yet Nazi-Germany was totally defeated in World War II. Japanese forces initiated World War II in the Pacific with a series of impressive feats of arms from Pearl Harbor to Singapore; yet Japan shared the fate of Nazi-Germany. During the Chinese Civil War, which continued after the end of World War II, Chiang Kai-shek's Nationalist armies at first greatly outnumbered and were better equipped than their Communist foes; yet in three years Chiang and his armies were utterly defeated. The United States never lost a major battle during the Vietnam War; yet in 1972 a dispirited America withdrew from the frustrating Asian war, and three years later did nothing when North Vietnam drove all the way to Saigon

— Dr. Joseph Strange, *Capital "W" War*

Knowledge of the Operational Environment is Critical, but Ultimately Limited

The operational environment is the composite of conditions, circumstances, and influences that affects the employment of capabilities and bears on the decisions of the commander.¹³ **Understanding of the operational environment should account for interested parties not directly involved in the conflict; the physical environment; threats to the joint force; and the overall cultural, historical, political, and**

¹³ Based on JP 3-0.

economic context of the conflict, not just the characteristics of the adversaries or their systems. On the other hand, the very volume of data available to be turned into “actionable” information often creates a form of friction, and even “perfect” knowledge (assuming such is possible) may *not* impart predictive awareness of events, contrary to some opposing claims.

Outcomes are not Deterministic

War takes place in complex, non-linear, and often chaotic environments, which are characterized by very complex interactions between actors, to chance, and to friction. Like chess, war involves the contention of human wills, it involves many more aspects of the human psyche as well, such as fear and courage. War is thus orders of magnitude more complex than chess, or any other game or simulation. Its outcome is never predictable or guaranteed, plans should never be considered static or prescriptive, chance is always “in play,” and the enemy always “has a vote,” and the ability to adapt often equals the ability to survive or succeed. Commanders and strategists should be wary of any plan, technique, methodology, or wargame that claims to offer deterministic or predictive insight into warfare’s outcome. **War is not deterministic; military victory ultimately relies on the judgment of commanders as well as the will, insight, and moral courage of all participants in the conflict.**

THE EFFECTS-BASED APPROACH TO OPERATIONS (EBAO)

The Air Force designs, plans, and conducts operations according to an effects-based approach in order to take full account of the end state and commanders’ intent. Commanders should realize that victory in battle does not equal victory in war, understand the operational environment in its totality, integrate all IOPs with military efforts, and avoid taking a mechanistic, reductionist approach to war.

Effects

An act...produces not only one effect, but a series of effects. Of these effects, the first alone is immediate; it appears simultaneously with the cause; it is seen. The other effects emerge only subsequently; they are not seen; we are fortunate if we foresee them [emphasis in original].

— Frederic Bastiat,
What Is Seen and What Is Not Seen

EBAO is defined as “an approach in which operations are planned, executed, assessed, and adapted to influence or change systems or capabilities in order to achieve desired outcomes” (AFDD 1). There are significant commonalities between the guiding tenets of EBAO and the basic aspects of strategy discussed above and elements of operational design discussed later. This is intentional: **EBAO is not a planning methodology; it is a way of thinking about operations that provides guidance for design, planning, execution, and assessment as an integral whole.** More specifically, EBAO is an approach in which:

- ★ Operations are driven by desired ends (objectives and end states), and should be expressed in terms of desired effects, not defined by what available forces or capabilities can do.
- ★ Commanders realize they are dealing with interactively complex problems not solvable by deterministic “engineering” or “checklist” approaches.
- ★ The “human element,” “friction,” and the “fog of war” can never be eliminated.
- ★ Problems have no “stopping rule”—there is never one “right” solution. Commanders seek solutions that are “better” or “worse” and solving one set of problems often causes others to emerge.
- ★ Commanders try to maximize options available and thus consider integrated use of all available military means and other instruments of power to gain continuing advantage within a given strategic context.
- ★ Commanders employ lethal and nonlethal means, through kinetic and non-kinetic actions to create desired effects.

Principles of EBAO

The concepts described in this section are not wedded to the term “effects-based”—they could have as easily been described as an “objectives-,” “outcomes-,” “results-,” “impact-,” or “consequence-based” system of thought. Nonetheless, “effects-based” is the term that is most widely recognized in Air Force circles. Further, this approach fully complements and helps reinforce the general considerations for military operations and strategy described in the previous sections. The section below presents a more complete explanation of the body of sanctioned ideas that define EBAO, but also presents general considerations that are often ignored in military literature on strategy, and which should help shape the thinking of commanders and strategists. (The order in which the explanatory paragraphs are presented does not necessarily represent their relative importance or priority—these may change from operation to operation.)

EBAO is comprehensive—it cuts across all domains and dimensions, disciplines, levels, and IOPs. EBAO provides an overarching way of thinking about action that encompasses operational design, planning, execution, and assessment of operations involving all IOPs across the ROMO. It is not directly tied to any specific strategy or type of operation. It should not mandate a particular strategy, such as “parallel attack” or the “indirect approach,” but should consider all options in the context of the objectives and end state(s). “All” in this context encompasses:

- ★ **“All domains and dimensions”**—Air Force forces possess significant advantages by operating in the air, space, and cyberspace domains, and in time, in ways that other forces do not or cannot. Commanders should consider options from all

domains in which the Air Force customarily operates, as well as the domains that it often creates its chief effects within (land and maritime). Commanders should also realize that operations in one or more domains usually have effects in one or more others, and this helps create synergy. It may be easier to defeat adversaries in a domain where they are strong through operations in another domain where they are weak. By exploiting airpower's speed, range, and flexibility, as well as time, commanders can also gain significant temporal advantages over an adversary, as when pacing operations faster than the adversary can adapt to in order to cause psychological shock and paralysis.

- ★ **“All disciplines”**—Commanders should consider that their own set of capabilities or “tools” may not offer all, or even the best, options for solving a problem in a given situation. Other functional specialties, components, Services, agencies, or international partners may offer the best prospect for creating particular desired effects.
- ★ **“All levels”**—This means breaking down the boundaries between the strategic, operational, and tactical arenas, realizing, for instance, that events with even a limited tactical impact can have immense strategic consequences.
- ★ **“All instruments of power”**—the integration of military power with other IOPs—diplomatic/political, informational, and economic—is a natural extension of thinking across all domains, dimensions, disciplines, and levels. This entails conscious integration of all the IOPs the nation controls, such as using the capabilities of the US Departments of State, Commerce, and Homeland Security to complement military operations. However, it also entails using complementary power of partner nations, NGOs such as the International Red Cross and Doctors Without Borders, and even multinational corporations. An effects-based approach can often be more important to non-combat operations, such as stabilization and civil support, because outcomes in these types of operations require integration of many non-military components with military action and are thus more interactively complex than some types of combat operations, requiring more careful anticipation of effects.

EBAO integrates strategy—all design, planning, execution, and assessment efforts—into a unitary whole. These should be inextricably bound together, because effective and efficient execution almost always involves doing the others in some form as well, even if not as part of a formal or “approved” process. Effective operations should be part of a coherent plan that logically supports and ties all objectives and the end state together; the plan to achieve the objectives should guide execution; and that means of measuring success, gaining feedback, and adapting to changes should be planned for and evaluated throughout execution. Strategy encompasses all the means through which COAs are developed and evaluated, such as the Adaptive Planning and Execution (APEX) system at the national level, the joint operation planning process (JOPP) at the JFC level, and the JOPP for air (JOPPA, formerly known as the “joint air estimate process”) at the component level. These are the collaborative, iterative, and adaptive processes that help integrate strategy from

national through joint force component levels. The JOPP and JOPPA are integral and complementary to the APEX process. The latter describes force and logistical requirements and the former describe how these capabilities should be employed.

Since they set the stage for all subsequent actions, operational design and planning are where sound effects-based principles may have the greatest impact. Execution encompasses the tasking cycle and the ongoing operational battle rhythm, as well as all the individual unit actions that comprise implementation of airpower operations. Execution that is not effects-based often devolves into a “checklist mentality,” that becomes excessively process-driven and loses sight of the larger context (such as the objectives and end state). This can negate sound planning, as when focusing too narrowly on one or another aspect of the battle rhythm—for example, air tasking order (ATO) production. Execution that is not effects-based has often devolved into blindly servicing a list of targets, with little or no strategy and little or no anticipation of or adaptation to enemy actions. Assessment encompasses all efforts to evaluate effects and gauge progress toward objective accomplishment. Assessment feeds future planning and is used to adapt operations as events unfold. One should always attempt to measure performance of actions and the effectiveness of those actions in terms of creating desired effects and achieving objectives.

EBAO emphasizes that war is a uniquely human endeavor – a dynamic and often unpredictable process involving the collision of interactively complex, adaptive systems. War is a contest of human wills, a clash of living forces that creatively adapt to stimuli in ways scientists today describe in terms of non-linear mathematics, systems, chaos, emergence, and complexity theories. This has certain implications that have not always been fully understood or exploited in the US approach to warfighting.

Warfare is non-linear and “interactively complex.” Classical Western culture and scientific method are based on analyzing and designing “structurally complex” systems, which contain many moving parts,¹⁴ but which behave according to linear and predictable cause and effect relationships (“push throttle forward, jet goes faster”). Interactions of living systems are always “interactively complex,” even if “structurally simple” (few moving parts) This means that the interaction of components is “non-linear” and the results are not predictable according to deterministic rules of cause and effect, unlike most machines. In such systems, system components interact with each other dynamically and adaptively, determining overall system behavior and affecting how constituent parts and sub-systems behave and adapt. New and unanticipated behaviors emerge as system elements interact. Adding the element of “will”—the ability of system components to freely make choices—can add orders of magnitude to the complexity of problem solving. Interactive complexity also means that certain relationships Western culture has relied upon to govern scientific inquiry and the design of machines since the Renaissance often do not apply in the “real world,” especially to war:

¹⁴ The more “moving parts” a system has, the more “structurally complex” it is.

- ★ **Proportionality**¹⁵ means that system outputs are directly proportional to inputs – small inputs lead to small outputs and large inputs to large outputs. However, in practice, small inputs often lead to unexpectedly large outputs. This insight has been the key to good military practice for millennia: great commanders have always sought ways to have the greatest effect on the enemy for the least expenditure of lives and resources. Conversely, poorly informed choices can lead huge inputs to yield operationally insignificant outputs, as was the case with World War I’s trench warfare, a classic example of a needlessly wasteful attritional approach.
- ★ **Additivity** means that the whole equals the sum of its parts, but this is not true of living systems, which are always more complex and greater in output than the sum of their components, just as the joint force working as an integrated whole is usually more effective than its components working independently (“synergy”). The behavior of interactively complex systems often depends more upon the linkages between components than upon the components themselves. In fact, system-wide behavior often cannot be deduced from analysis of the component parts (see “*reductionism*,” below).
- ★ **Replicability** holds that the same inputs always yield the same outputs, as usually seen with machines and controlled experiments conducted by mathematically linear rules, but this is untrue of more complex phenomena. However, seemingly imperceptible changes in initial conditions always make exact replication of results impossible in practice. What worked in the last “similar” operation may provide guidelines for current operations, but no two operations are ever exactly the same. That is why doctrine is authoritative, but not directive.
- ★ **Reductionism** is the common scientific method of analyzing systems, by “pulling them apart” conceptually and examining how each component operates separately to determine overall system behavior. It has been the main technique behind machine design for centuries, as well as “nodal” methods of “systems analysis” advocated in some current military doctrine. However, reductionist methods most often yield less insight than “holistic” ways of examining systems—analyzing how the system behaves in relation to other systems in its environment, as well as how components of the system interact, then trying to anticipate how the interaction of these systems may cause new behaviors to emerge. Breaking a complex problem into constituent, structurally complex parts and “solving” each part will not necessarily solve the overarching problem, just as winning every battle does not guarantee winning a war.
- ★ **Cause and effect** can be traced, often via a linear progression, from a particular cause through a chain of logically connected, predictable effects. However, causes

¹⁵ Use of “proportionality” here refers to its scientific meaning. However, the term also has a very specific meaning as part of the law of armed conflict: “Under the law of war, the balancing of military necessity in relation to collateral damage is known as the principle of proportionality. Limiting collateral damage will not only reduce the requirement to address civilian claims but may help better support friendly and HN actions to influence the population and reduce the magnitude of stability operations required.” (JP 3-0)

and effects are usually hard to trace and harder to demonstrate, since common “linear” rules often do not apply—especially those involving human will. Emphasizing this might seem ironic in an approach claiming to be based on anticipating “effects,” but **it is a central insight that warfighters should understand: most cause-effect relationships important to them involve indirect and often intangible, unquantifiable linkages that are normally discerned inductively (through real-world observation), not deductively (by being able to prove a theorized outcome through logic alone).** In many cases, effects will accumulate to achieve objectives, but progress may not be evident until the objectives are nearly achieved. In other cases, the mechanisms through which they are accomplished may not be readily apparent. Warfighters should be aware of this, seeking ways to increase anticipatory situational awareness and understanding, counseling patience to commanders and national leadership with respect to results. Progress may often have to be assessed qualitatively, not quantitatively, since it is far more difficult to evaluate unfamiliar, ill-structured, dynamic, and interactively complex problems.

EBAO should account for how all actors , especially the adversary, may respond to planned actions. Good design and planning should anticipate change. All living systems adapt to changes in their environments and any systematic approach to warfare should account for this. An effects-based approach includes processes to account for likely adversary responses and adaptations. Commanders and strategists should also consider that the beliefs, customs, and habits of adversaries not trained in a Western worldview may not respond in ways anticipated by Americans (mirror imaging), potentially creating unanticipated and unfavorable higher-order effects.

EBAO is about creating effects, not about platforms, weapons, or particular methods. An effects-based approach starts with desired outcomes—the end state(s), objectives, and desired effects—then determines the resources needed to achieve them, while identifying critical resource limitations. It does not start with particular capabilities or resources and then decide what can be accomplished with them. It also assigns missions or tasks according to mission-type orders, leaving decisions concerning the most appropriate mix of weapons, units, and platforms to the lowest appropriate levels within a given organization. Air Force commanders should encourage those from other Services, when tasking the air component, to request particular effects from the air component instead of assets (or platforms, or particular units). Further, while EBAO is not about technology, there are new platforms, weapons, and methods that can enable new types of effects. These do not become truly useful to the warfighter until they are joined with appropriate employment doctrine and strategy. Tanks, radios, and airplanes by themselves did not yield *Blitzkrieg*.

EBAO focuses on behavior, not just physical changes. The force-on-force approach to warfare made destruction of the enemy’s military forces the leading aim in war, usually accomplished through attrition—wearing the enemy down through fire and maneuver until their losses exhausted them—or annihilation—destroying their main strength directly, resulting in their complete overthrow. These methods accomplish objectives and are still valuable parts of strategy, but EBAO emphasizes that there are

alternatives; that the ultimate aim in war is not just to overthrow the enemy's military power, but to compel them to do one's will. Careful examination of all types of effects often suggests more effective and perhaps less costly options than attrition or annihilation. Another aspect of this principle is one can often achieve objectives more effectively (and efficiently) by maximizing the psychological impact of friendly operations upon an adversary—not just on the fielded forces, but on leadership and other critical systems of control as well. One can carefully tailor messages to adversary populations, encouraging cooperation or other desired behavior from them. Finally, affecting the behavior of friendly and neutral actors within the operational environment can often be as important as affecting adversary behavior. When establishing rules of engagement (ROE) that prohibit striking cultural or religious landmarks during operations, for instance, the intended “target” in doing so is likely to be a friendly and neutral audience more than the adversary. As a consequence, the integration of strategic communications themes and IO are vitally important to overall strategy.

EBAO seeks to achieve objectives most effectively, then to the degree possible, most efficiently. Operations should always accomplish the mission, but should seek to provide alternatives to attrition and annihilation, which are often among the *least* efficient means of achieving ends in war. Thorough evaluation of the range of possible effects should lead to COAs that achieve objectives in ways that best support the desired objectives and end state, but do so with the least expenditure of lives, resources, time, or opportunities. The ultimate aim is to be *effective*. The paradoxical nature of effective strategy sometimes requires that *inefficient means* be employed (see vignette). Airpower may often be the most effective means of achieving objectives because it cannot easily be countered, not because it is most

Effective versus Efficient

Consider an ordinary tactical choice... To move toward its objective, an advancing force can choose between two roads, one good and one bad, the first broad, direct, and well paved, the second narrow, circuitous, and unpaved. Only in the paradoxical realm of strategy would the choice arise at all, because it is only in war that a bad road can be good precisely because it is bad and may therefore be less strongly defended or even left unguarded by the enemy. Equally, the good road can be bad precisely because it is the much better road...more likely to be anticipated and opposed....

A paradoxical preference for inefficient methods of action, for preparations left visibly incomplete, for approaches seemingly too dangerous, for combat at night or in bad weather, is a common expression of tactical ingenuity – and for a reason that derives from the essential nature of war...when there is a live enemy opposite, who is reacting to undo everything being attempted, with his own mind and his own strength.

*—Edward Luttwak
Strategy, the Logic of War and Peace*

efficient, although it may be so, particularly in terms of lives. Sometimes this requires a strategy based on attrition or annihilation, but these should be selected only after careful deliberation has determined that they are the most effective (or only) choices.

EBAO should consider all possible types of effects. Warfare has traditionally focused on direct effects and more immediate indirect effects like attrition. An effects-based approach should consider the full array of outcomes in order to give decision-makers a wider range of options and provide a realistic estimation of unintended consequences. Each type of effect can play a valuable role in the right circumstances and thinking through the full range encourages a flexible and versatile approach to war fighting. Airmen today can offer a wider array of options to commanders than they could at any time during the past. To explore the full range of possible effects in particular contexts, commanders and strategists should also make use of people with in-depth cultural, historical, and regional knowledge, such as foreign area officers, air advisors, mobile training team members, and naturalized personnel. The intelligence community should offer effective federation of intelligence sources from across the United States Government (USG) and multinational partners. Leveraging this knowledge, together with dynamic interaction with the ISR community, offers the best option for acquiring the requisite information. In assimilating information, another consideration is the abundance of data available to decision-makers, and the inherent difficulty of deciphering useful information. The volume of information itself becomes a form of friction, precipitating confusion, lengthening decision times, and diminishing anticipatory awareness.

EBAO is not new. Sun Tzu wrote, “to subdue the enemy without fighting is the acme of skill...thus what is of supreme importance in war is to attack the enemy’s strategy.” This intuitive application of effects-based tenets was echoed by Napoleon when he said, “If I always appear prepared, it is because before entering on an undertaking, I have meditated long and have foreseen what may occur.” History’s great commanders approached warfare from an effects-based perspective, though not so named, when they looked beyond mere destruction of enemy forces to the more general problem of bending the enemy to their will, in the process considering the full range of means through which this was accomplished. “Effects-based” is simply a catch-all for some of history’s best practices, coupled with doctrine and some recent refinement of concepts, such as complexity, that enables proper employment of many recent capabilities. In many ways, EBAO is an elaboration of the “strategy-to-task” methodology that has guided Air Force planning for decades and is directly analogous to “maneuver warfare” theory advocated by the United States Army and Marine Corps.

CHAPTER TWO

AIRPOWER AND THE RANGE OF MILITARY OPERATIONS

[Through dominance across domains] the Air Force grants joint freedom of maneuver in all warfighting domains: land, [maritime], air, space, and cyberspace. This, in turn, allows the Joint Force Commander to achieve desired outcomes across the full range of military operations: from humanitarian relief saving those in need, through preventing war via dissuasion and deterrence, to inflicting strategic paralysis on implacable opponents. Without the Air Force's ability to present this spectrum of capabilities to the joint team in peace, crisis, and war, national security would be at risk.



"The Nation's Guardians: America's 21st Century Air Force," Chief of Staff White Paper, 29 December 2007

Military operations are conducted along a varying scale of violence and military involvement. They range from continuous and routine operations such as military engagement, cooperation, and deterrence; through smaller-scale contingencies and crisis response operations; to major operations and campaigns found in a major war. Some conflicts may escalate or de-escalate from one form to another. Warfighters may find that military activities like security cooperation (SC) and engagement will take place simultaneously with major combat operations and IW. No two conflicts are alike; scope, duration, tempo, and cultural/political context vary widely. Military leaders should carefully assess the nature of their assigned missions to determine the appropriate mix of forces and discern implied missions and requirements.

CROSS-DOMAIN INTEGRATION

Common to successful military operations in all ages—combat or otherwise—is the synergy created by controlling or influencing more than one domain. Control of a single domain, particularly land, can secure success, but control of, or influence through, more than one domain usually helps achieve continuing advantage more effectively and efficiently. For example, in the Civil War, the gradual capture of southern coastal ports and the Mississippi River aided the Union effort as did defeat of Confederate armies in the field.

The advent of military aircraft made a third domain accessible, which all belligerents exploited to gain military advantages in WW I and to create decisive effects in and after WW II. Allied Combined Bomber Offensive targeting of the German transportation system in WW II was cited as one of the major reasons for the rapid German collapse during the last months of 1944 through surrender in May 1945. This is an example of the decisive use of the air domain to affect the land domain. In a similar manner, recent revolutions in spaceflight and computer technology have opened two new domains of space and cyberspace to military exploitation. Technical advances, operational best practices, and other military innovation will likely allow use of these domains in ways that permit decisive effects in the near future. Many argue that cyberspace has already reached this point. Because of the relatively low “entry cost” for adversaries, and because so much of Western economy and society depend on technology in cyberspace, cyberspace weapons may become “weapons of choice” for use *against* the United States, its partner nations, and its interests.

Military operations take place in and through the air, land, maritime, space, and cyberspace domains and the information environment. **The Air Force exploits advantages in the air, space, and cyberspace domains to achieve JFC and national objectives in all domains and the information environment.** In either a supporting or supported role, these functions can be conducted independently from, or in concert with, land and maritime operations. Air Force operations are crucial to the success of operations in all domains. For example, Air Force forces provide rapid, focused global mobility; conduct IO that shape and influence the operational environment; isolate operations from hostile air or ground interference; and provide the eyes and ears of a sophisticated command and control system. The specific tasks involved in any given Air Force operation may vary greatly, depending on the context of the larger contingency, national policies and objectives, forces available, and a host of other considerations. Air Force forces can be the supported force (e.g., for strategic attack; global airlift; acting as the primary maneuver and fires force supported by special operations forces [SOF] and indigenous friendly forces, as in the early phases of Operation ENDURING FREEDOM [OEF]; and counterair to enforce aerial exclusion zones). They may also act as a supporting force (e.g., close air support, IO helping determine treaty compliance, and airlift as part of a larger foreign humanitarian assistance effort). In large, complex contingencies, Air Force forces may often perform supported and supporting roles simultaneously. In addition, Air Force forces accomplish a wide variety of traditional and information-related functions, classically described as ISR.

From an Airman’s perspective, several concerns remain preeminent: firstly, **air superiority is normally a desired state before all other combat operations. Attaining air superiority¹⁶—and air supremacy,¹⁷ when required—helps provide**

¹⁶ “That degree of dominance in the air battle by one force that permits the conduct of its operations at a given time and place without prohibitive interference from air and missile threats” (JP 3-01, *Countering Air and Missile Threats*).

¹⁷ “That degree of air superiority wherein the opposing force is incapable of effective interference within the operational area using air and missile threats” (JP 3-01).

both the freedom to attack and freedom from attack, as well as enhancing freedom of action and maneuver. Operating without air superiority or supremacy radically increases risk to surface and air operations. Gaining air superiority and supremacy involves both offensive and defensive missions. The JFACC, who is normally designated the area air defense commander (AADC), is charged with integrating joint offensive and defensive counterair operations to achieve air superiority for the JFC. See AFDD 3-01, *Counterair Operations*, for more information concerning air superiority. Secondly, **space superiority is important in maintaining unique advantages in precision applications, global command and control (C2), situational awareness and understanding, and operational reach.** Space superiority ensures the freedom to operate in the space domain while denying the same to an adversary. Like air superiority, space superiority involves offensive and defensive aspects. The JFACC should normally be designated the supported component commander for space control operations within a joint force. See AFDD 3-14, *Space Operations*, for more information. Finally, **cyberspace operations are also vital for maintaining advantages in all domains.** All components of the joint force contribute to operations in cyberspace. In many cases, JFCs may retain control of cyberspace operations at their level. Cyberspace superiority ensures freedom to operate in cyberspace, which is “a global domain within the information environment consisting of the interdependent network of information technology infrastructures, including the internet, telecommunications networks, computer systems, and embedded processors and controllers”¹⁸

THE RANGE OF MILITARY OPERATIONS

Airpower remains a vital component of successful military operations and decisive, rapid, and more efficient attainment of continuing advantage, even if smaller-scale contingency operations or deterrence measures fail and a crisis escalates into major combat operations. It has been an asymmetric advantage for the United States in many cases. Defeating enemy forces has traditionally been the most important of the tasks assigned to the military. However, as more vital national interests come to be at stake in “non-traditional” contingencies, the US military may become more deeply involved in the various types of contingencies, such as IW, SC, stability, and civil support operations. Figure 2.1 illustrates the ROMO, its relationship to the conflict continuum, and the relative frequency and intensity of operations.

¹⁸ Chairman of the Joint Chiefs of Staff (CJCS) Memorandum 0363-08, “The Definition of Cyberspace.”

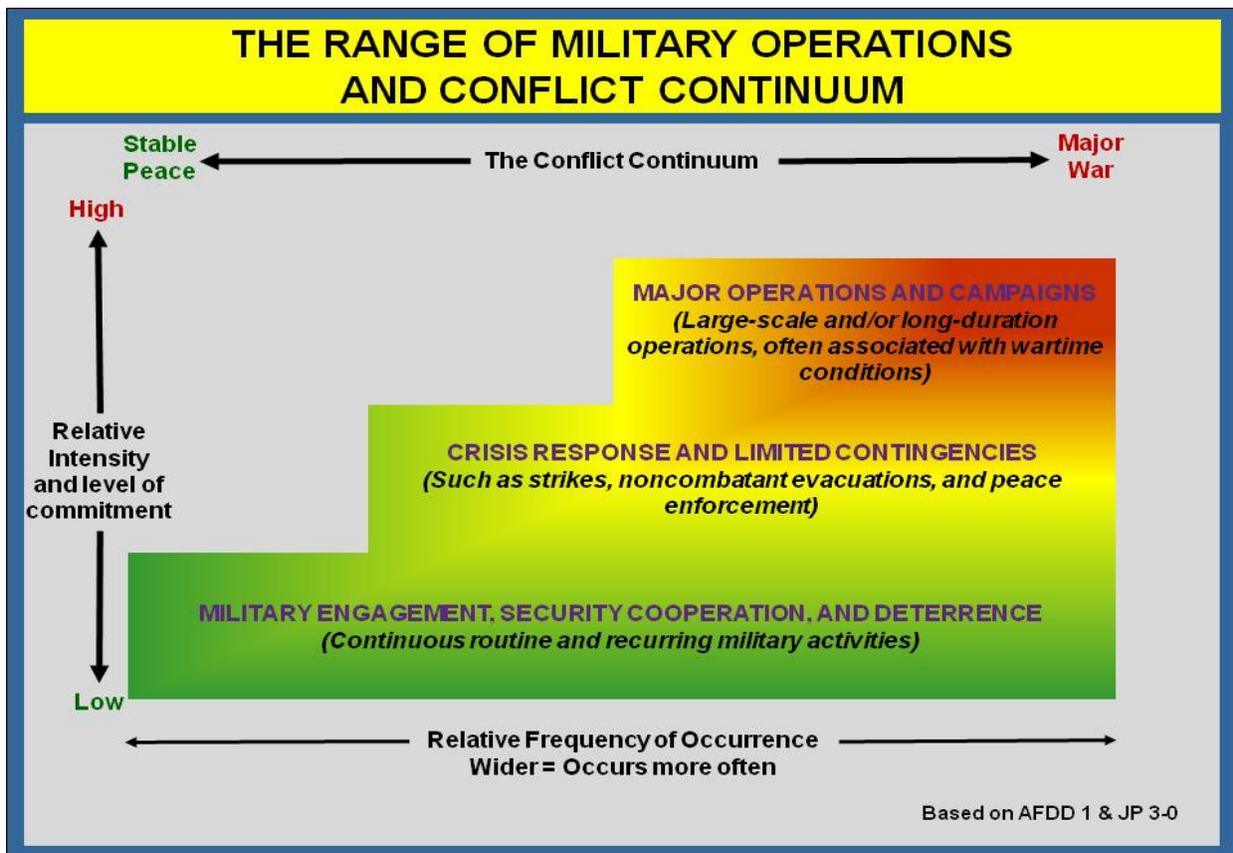


Figure 2.1. The Range of Military Operations

Engagement, Security Cooperation, and Deterrence Operations

Engagement, SC, and deterrence operations establish, shape, maintain, and refine relations with other nations and domestic civil authorities. The general objective is to protect US interests at home and abroad. They occur throughout the entire ROMO in varying degrees, may be the primary efforts during periods of normal US readiness, and usually do not involve the immediate use or threat of force. Prudent use of military forces in peacetime helps keep the day-to-day tensions between nations or groups below the threshold of armed conflict and maintains US influence in foreign lands. Examples of such operations include:¹⁹

- ★ Arms control operations.
- ★ Counterdrug operations.
- ★ Foreign humanitarian assistance.
- ★ Military-to-military contacts.

¹⁹ Refer to JP 3-0 and other appropriate joint publications for more detailed discussion of various types of operations, as well as the general joint phasing model for major operations.

- ✧ Recovery operations.
- ✧ Unilateral and multilateral exercises.

Contingencies and Crisis Response Operations

Contingencies and crisis response operations may be single small-scale, limited-duration operations or a significant part of a major operation of extended duration involving combat. The general objectives are to protect US interests and prevent surprise attack or further conflict. These operations may occur during periods of slightly increased US military readiness, and the use or threat of force may be more probable. Many of these operations involve a combination of military forces and capabilities in close cooperation with other organizations. Examples of such operations include:

- ✧ Combating terrorism.
- ✧ Some types of counterproliferation operations, in the event that arms control operations are not successful.
- ✧ Consequence management (especially of weapons of mass destruction [WMD]-related events).
- ✧ Enforcement of sanctions and maritime intercept operations.
- ✧ Enforcing exclusion zones.
- ✧ Ensuring freedom of navigation and passage, in both maritime and aerial operations, including protection of shipping and overflight.
- ✧ Ensuring freedom of action in air, space, and relevant portions of cyberspace.
- ✧ Noncombatant evacuation operations.
- ✧ Peacekeeping operations.
- ✧ Peace enforcement operations.
- ✧ Show of force operations.
- ✧ Strikes and raids.
- ✧ Support to counterinsurgency.
- ✧ Support to insurgency operations that support US and Allied security objectives.

Major Combat Operations

Major operations and campaigns are large-scale, sustained combat operations to achieve national objectives and/or protect national interests. Such operations may place the United States in a wartime state and are normally conducted against a nation state that possesses significant military capability with the will to employ that capability in opposition to or in a manner threatening to US national security. Such operations typically involve a joint campaign comprised of multiple phases. Operations DESERT STORM, ALLIED FORCE (OAF), OEF, and IRAQI FREEDOM (OIF) are examples of campaigns. The goal is to achieve national objectives and conclude hostilities on conditions favorable to the United States and its multinational partners, generally as quickly, with as few casualties as possible, and in a manner that conveys continuing strategic advantage for the United States and its partners.

Major combat operations (MCOs) may be combined with IW, stability, and SC activities, sometimes even within the same operational area. Establishing conditions that convey continuing friendly advantage often requires follow-on stability operations to restore security, provide services and humanitarian relief, enable civil authority, and perform reconstruction. A fully integrated approach to international security requires the capability to conduct operations simultaneously across a broad spectrum of activities, even as part of the same operation.

Traditional Warfare

Traditional warfare entails primarily force-on-force confrontation of conventional military forces (although it also extends to encompass the use of nuclear weapons). The focus of traditional war is typically on defeating an enemy government (or other ruling entity) and its strategy, by defeating its fielded military forces and/or engaging the enemy government's control mechanisms directly with military force. Traditional warfare typically takes place within the context of major operations and campaigns and can be viewed as a subset or type of MCO. Operation DESERT STORM and the opening phases of OIF are examples of traditional warfare.

Irregular Warfare

The overwhelming US dominance in recent MCOs and other campaigns has made it highly unlikely that most adversaries would choose to fight the United States in the traditional, force-on-force manner. Thus, for relatively weaker powers (including non-state entities), IW has become an attractive, if not the only, option. Adaptive adversaries such as terrorists, insurgents, and criminal networks as well as nation states, may increasingly resort to irregular forms of warfare as effective ways to challenge US military strength. In IW, the focus of effort for both friendly and adversary actors is on influencing a target population and its government or other controlling entity whether in support or opposition. IW may constitute a major operation or campaign, as coalition efforts in OEF and the later phases of OIF demonstrated.

IW favors the indirect approach to effectively counter asymmetric advantages and erode the adversary's power, influence, and will over a population. Adversaries

may employ violent asymmetric attacks such as suicide bombers, improvised explosive devices, and chemical, biological, radiological and nuclear (CBRN) attacks, to counter our air power advantage. The indirect approach may still employ the full range of military power to counter asymmetric attacks by developing responses that fully leverage our asymmetric advantage especially in areas such as global ISR, cyber, and space.

IW traditionally consists of five principal activities. Airmen should be prepared to conduct all of them sequentially, in parallel, or in blended form as part of a coherent campaign strategy to prevail in IW. These include: unconventional warfare, counterinsurgency, counterterrorism, stability operations, and foreign internal defense. There are many related activities that airpower may also contribute to, such as ISR, MISO, civil-military operations, counterintelligence, and support to law enforcement, all of which may aid in countering irregular threats. Many of the operations are conducted during peacetime engagement, outside the context of IW or any other type of open conflict, in order to build or perpetuate international partnerships to prevent conflict.

The unique perspective that Airmen bring to a conflict is as relevant in IW as in traditional conflicts. Without the capabilities of airpower, other forces would be limited in their ability to locate opposing forces and take necessary action against them. Many of the skills and capabilities developed for use in traditional combat operations are also invaluable in conducting IW. However, Airmen should understand that IW is not a lesser included case of traditional warfare, but a different type of activity, conducted for different aims. Furthermore, IW may be conducted as a prelude to, in conjunction with, or after major combat operations. IW may also be conducted independently of major combat operations within the same theater. Many traditional Air Force skills and capabilities are transferrable to IW, but Airmen should understand that the conditions, environment, center(s) of gravity, and objectives may significantly differ from those of major combat, and that seemingly tactical actions and decisions can have strategic consequences even more readily than in traditional war.

The Air Force integrates with the joint force to prevent, deter, disrupt, and defeat irregular threats. In turn, the joint force works in concert with other governmental agencies, multinational partners, and host nations to understand the situation in depth, integrate plans and actions, and continually assess and adapt their approach in response to the dynamic and complex nature of the problem. This is achieved through a sustained and balanced approach aimed at both the threats themselves, as well as the population and the causes and conditions that give rise to the threats. The goal is to enhance the local partner's legitimacy and to influence the population by addressing the root causes of conflict and building the partner's capacity to provide security, good governance, and economic development. For more information on USAF IW operations refer to AFDD 3-24, *Irregular Warfare*, and AFDD 3-22, *Foreign Internal Defense*.

Homeland Operations

The Air Force plays a significant role in homeland operations. It employs airpower to assist federal, state, and local governments, as well as other branches of the DOD and NGOs in detecting, helping preempt, respond to, mitigate, and recover from a full spectrum of threats and incidents, man-made and natural, within the United States and its territories and possessions. Homeland operations consist of three major mission areas: homeland defense, defense support of civil authorities (DSCA), and emergency preparedness.

While homeland security operations may arguably be considered a subset within the range of military operations previously described, Air Force doctrine considers these activities important enough to warrant separate discussion.

Homeland Defense

DOD defines homeland defense as “the protection of US territory, sovereignty, domestic population, and critical infrastructure against external threats and aggression” (JP 3-27, *Homeland Defense*). Homeland defense missions include force protection actions; counterintelligence; air, space, and cyberspace warning and control; counter-terrorism; critical infrastructure protection; air, space, cyberspace, and missile defense; and information security operations. Homeland defense also includes protection of military installations and facilities within the United States. In all of these missions, DOD either acts as the designated lead federal agency, or with a high level of autonomy within the national security structure.

The most familiar Air Force role here is fulfilling North American Aerospace Defense Command’s air sovereignty mission through defensive counterair. Future missions may involve the employment of “traditional” capabilities in nontraditional ways against such asymmetric threats as terrorism. In extreme cases, military forces may be directed by the President to use deadly force to prevent a terrorist attack.

Defense Support of Civil Authorities

The term DSCA denotes DOD support provided during and in the aftermath of domestic emergencies—such as terrorist attacks or major disasters. DSCA missions include, but are not limited to, preventing or defeating terrorist attacks; response to



Disaster relief efforts, such as the response to Hurricane Katrina, are a very visible example of defense support of civil authorities in homeland operations.

natural disasters; support to civilian law enforcement agencies; counter-drug operations; border security; and response to civil disturbances or insurrection. It also covers consequence management due to CBRN incidents, including toxic industrial chemicals and materials. In all of these missions, various federal, state, or local civilian agencies are primarily responsible for the management of the particular incident. DOD's involvement is supportive and is normally dependent on a request from the lead agency. DSCA missions may involve operating in legally complex environments, and may be further complicated by the differences in duty status and authority between regular, Guard, and Reserve forces (contained in US Code Titles 10 and 32).²⁰

The military's role in domestic emergencies is well defined and, by law, is limited in scope and duration. **Military agencies temporarily support and augment, but do not replace local, state (including National Guard forces in state active duty status), and federal civilian agencies that have primary authority and responsibility for domestic disaster assistance.** Air Force contributions in DSCA operations will likely be in support of a Federal agency designated by the President or as indicated in the National Response Framework.

US Air Force organization for homeland operations should be consistent with the organizational model for any other expeditionary operation. See AFDD 3-27, *Homeland Operations*, for more detail.

Emergency Preparedness

Emergency preparedness activities are those planning activities undertaken to ensure DOD processes, procedures, and resources are in place to support the President and SecDef in a national security emergency. This includes continuity of operations, continuity of government functions, and the performance of threat assessments.

CAMPAIGNS IN PEACETIME

Lessons from recent operations and changes in the global security environment have highlighted the importance of strengthening alliances and partnerships through consistent peacetime strategies. This has inspired a new perspective on the concept of a "campaign" within the DOD. Although the definition has not changed, the term is increasingly used to refer to the portion of the ROMO that is conducted on a steady-state basis in peacetime and/or precedes conflict. Campaigns referred to in this sense are designed to shape the theater and/or global environment, deter aggression, build partner nations' relationships and capabilities, ensure friendly access, mitigate risk, prevent conflict, and, when it cannot be prevented, shape how conflict evolves in ways favorable to friendly interests.

²⁰ See AFDD 3-27 for more detail.

As the concept of ongoing peacetime campaigns matures, Airmen can expect to see changes in many areas in order to emphasize the development of coherent strategies from CCDRs linked to the overall US national security strategy. This includes integrating steady-state campaign support requirements into Air Force resource allocation processes.

THREATS TO OPERATIONS

Threats to Air Force interests exist across the ROMO. Since tactical actions can have strategic consequences, threats that are perceived as small can have a large-scale impact on operations. Commanders should consider the effects intended to be produced by the threat, not just the nature of the threat itself.

Small-scale operations conducted by agents, insiders, saboteurs, sympathizers, partisans, extremists, and agent-supervised or independently initiated terrorist activities may present a grave danger to Air Force interests. These operations may derive their personnel from nation states or non-state actors. Often asymmetric in nature, these threats may be unorganized or well orchestrated. They may take the form of insider threats, riots, random sniper incidents, physical assaults, cyberspace incidents, kidnappings, aircraft hijackings, or bombings. In addition, commanders should consider threats, both natural and man-made, to force health protection.

Major attacks by large tactical forces that may use operations in the air, space, land, cyberspace, or maritime domains are at the large-scale end of state-to-state conflicts. Attacks may also come from aircraft and theater missiles/artillery armed with conventional weapons or WMD. Engagement of such forces is generally considered part of major combat operations rather than force protection.

TERMINATION AND TRANSITION OF OPERATIONS

Planning for termination, transition, and redeployment from operations is just as critical as planning to engage in the operation in the first place. Air Force commanders should focus on creating the proper airpower effects to help meet the operational commander's military objectives and achieve the desired end state. Once the JFC's objectives are met and the proper conditions for terminating the operation exist, commanders should be prepared to execute their disengagement strategy. The commander's strategy should be coordinated with other agencies and organizations involved in the operation, and will likely include the State Department, other coalition forces, the host nation, NGOs, and/or international organizations. In some cases, Air Force forces may disengage when appropriate effects have been created and the commander's objectives are met. In some cases, Air Force forces may disengage from smaller contingencies and redeploy to larger conflicts.

Conflict Termination

Conflict termination is a vital aspect of tying military actions to strategic objectives, establishing an end state that provides a “better state of peace,” and ensuring that the United States and its strategic partners achieve continuing advantage in the strategic environment. Cessation of major hostilities usually follows one of three patterns. The first is one (or more) imposing its (or their) will on another combatant by force of arms. The unconditional surrender of the Axis powers ending WW II is an example. Another method may be through a mutual, negotiated settlement between the parties involved, such as the Paris Peace Accords that ended United States involvement in the Vietnam War. Finally, a settlement may be imposed or brought about by a third power. For example, the North Atlantic Treaty Organization’s (NATO’s) intervention in the Bosnian civil war resulted in the Dayton Accords, which effectively ended that conflict. The end of conflict is rarely predictable and even a seemingly final end state often leads to new, emergent conditions within the operational environment that the United States and its partners may need to respond to.

Termination planning should establish the conditions and detail the actions needed to achieve the military portion of the desired end state and create enduring advantage. Also, the way a conflict is conducted may have a great effect on the actual end state(s) achieved. For example, unnecessarily destructive operations may foster ill feelings among a host-nation’s populace, may aggravate refugee problems, and may increase collateral civilian damage or destroy so much infrastructure that enabling civil authority is more difficult, expensive, and time consuming.

Planning for termination should begin as early as possible, preferably prior to the beginning of major operations. Termination planning is extremely difficult, as conflicts can evolve in many directions, forcing revision of the original termination plans. The greatest difficulty at the operational level is translating national goals into measurable military objectives that create the conditions needed to achieve an end state conveying continued strategic advantage.

Regardless of how the end state is brought about, operational concerns should be addressed early in the termination effort to avoid resumption of combat. Provision for the security of remaining forces, responsibilities toward the civilian population, prisoner of war accounting, and repatriation are all issues that should be addressed. Providing for the security of former adversaries and other basic human needs may significantly enhance peaceful resolution of a conflict, as may restoring elements of vital public infrastructure that may have been damaged or destroyed by combat or other violence. Establishing ROE and targeting criteria, ISR and IO, relations with the media, funding, force structure, medical care, and coordination with nonmilitary organizations are key considerations for friendly forces to better understand their role. These considerations may lead to expanded or increasingly constrained postures to preclude the resurgence of hostilities, enhance public support, and ensure the security of military operations and enable or legitimize civil authority. The influence of nonmilitary instruments of national power may increase as termination approaches and

the end state is achieved. Consideration of the requirements for the other instruments of national power will significantly support achieving the desired end state.

Whether conflict termination is imposed by decisive military action or through a negotiated settlement, airpower may play a critical role in any post-hostility transition. Airpower offers national leaders a potent force to support political and economic IOPs during post-hostilities. Component commanders should therefore clearly and explicitly define the capabilities of their respective forces to meet the objectives of conflict termination.

Transition to Follow-On Operations

Transition occurs when control of the ongoing mission is transferred to another organization or when a change of mission is brought about by changing circumstances or objectives. As with planning for conflict termination, planning for transition should extend throughout the planning process and into operations and redeployment. Joint task force (JTF) operations may be transferred to another military force, a regional organization, an international agency such as the UN, or civilian organizations. The process of transferring control of an operation to another military force or organization is situation-dependent; often, high-level interagency approval is required with long lead times. After a conflict, regeneration of force capabilities may be a primary consideration in the transition plan. Key transition decisions may involve the following considerations:

- ★ Requirements for a residual force or response capability.
- ★ Follow-on civil support, nation-building, or humanitarian missions.
- ★ Protection of the force.
- ★ Alliance and coalition force considerations.
- ★ Availability of intertheater and intratheater air mobility assets.
- ★ Applicable host nation environmental standards.

Redeployment

Redeployment activities concern the transfer of individuals, units, and materiel and can begin at any point during operations. Planners should begin redeployment planning early so operations reflect exit or transition strategy developed during mission analysis. Redeployment is not just reversing the deployment process; it is a mission-based operation within the overall context of the joint mission. Redeployment may include movement of individuals, units, and materiel deployed in one area to another location within the same area, to locations for the purpose of further employment, or to their home bases.

CHAPTER THREE

DESIGNING OPERATIONS



Design does not replace planning, but planning is incomplete without design. The balance between the two varies from operation to operation as well as within each operation. Design helps the commander provide enough structure to an ill-structured problem so that planning can lead to effective action toward strategic objectives [emphasis in original].

-- General James Mattis

Former Commander, US Joint Forces Command

Vision for a Joint Approach to Operational Design, 6 October 2009

FUNDAMENTALS OF OPERATIONAL DESIGN

Strategy creation is the art and science of determining and validating COAs, from national down through theater operational levels. As an element of strategy, operational design is defined as “the conception and construction of the framework that underpins a campaign or major operation plan, and its subsequent execution” (JP 5-0). Operational design helps establish a logically consistent structure from which to determine an operation’s overall aims. In other terms, design provides a necessary “front end” to the formal planning processes described in JP 5-0 and elsewhere in this volume. The “process” of determining the overall focus of an operation—of deciding on the end state, objectives, desired effects, and so on, has been largely a matter of art throughout most of military history. Understanding certain aspects of problem solving can make portions of the commander’s art more systematic, although it will never make them “scientific”—in the sense of making them prescriptive and predictable. Approaching operational design deliberately, however, can provide a foundation that facilitates decision-making by creating a structure that links decision analysis to emergent opportunities. Creating this link can substantially reduce the risk associated with an operation and increase the probability of a plan surviving first contact with an adversary.

Design can help formulate the commander’s initial statements of mission and intent, which feed the process of COA analysis and selection, which, in turn, feeds the creation of detailed plans and assessment criteria. Plans are then executed through tasks at the tactical level. The results of task accomplishment are assessed and operations are adapted based on that assessment, providing input to strategy revision. Design is thus cyclic and iterative, like many other aspects of strategy creation, such as planning and assessment.

Operational design is the job of commanders with the support of their strategists. Planning and design are closely interrelated, since planners take the commander's overarching design concept and intent to create detailed COAs, plans, and orders for operations. Both are products of operational art. They make it possible to convert broad guidance from national leadership and senior commanders and turn it into discrete tasks at the tactical level. Figure 3.1 illustrates these relationships.

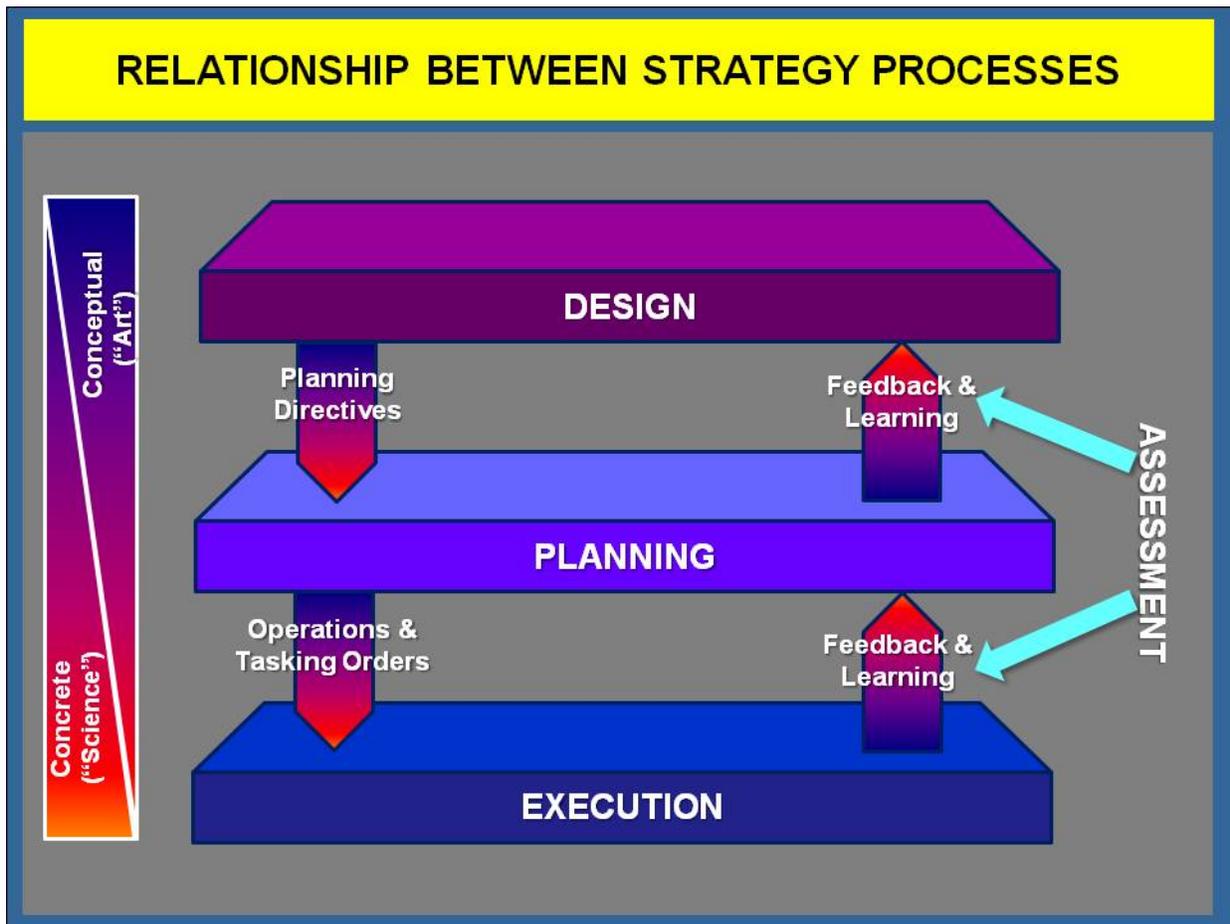


Figure 3.1. Relationship Between Strategy Processes

Design can aid creation of formal planning products as part of deliberate and crisis action planning (CAP). The JOPP activities and products are generally the basis for concurrent JOPPA activities, which result in the joint air operations plan (JAOP). The JAOP provides operational guidance until the battle rhythm is initiated, at which point strategy guidance is provided through the air operations directive (AOD). The cycle proceeds through execution to feed the reiteration of strategy formulation based on the results of the continuous process of assessment. The first steps of the JOPP and JOPPA reiterate and re-examine the products of operational design, such as the commander's mission and intent statement. The intermediate planning steps, involving the JOPP, JOPPA, JAOP, and AOD, are discussed in greater detail in subsequent chapters.

Design work done by commanders and strategists can be likened to that of an architect in a building project, working directly with the project's "sponsors" (the clients in this illustration; national leadership in a military operation) and the engineers who help realize specific aspects of the architect's design. The engineers are the higher-level planners who accomplish the JOPPA and produce the JAOP and AODs. Tactical planners and controllers (those who produce and execute the ATO) are like the artisans who create specific details of the plan. **Tactical plans tend to solve well-structured problems**, where tactics and techniques yield one (or a very few) indisputably correct solutions to objective, empirical problems (like the best ordnance to use on a particular target). **Operational plans tend to solve medium-structured problems**, where doctrine suggests courses of action that have clear objectives and end state, but may have a number of possible correct solutions (like the best way to win a specific battle). **Commanders and strategists, however, usually deal with ill-structured (also called "wicked") problems**, which are far more complex and which possess the following characteristics:

- ★ **They cannot be definitively formulated**—The information needed to understand the problem depends very much on how the problem is defined (framed). Such problems rarely have a single cause and stakeholders usually see relationships between causes and their importance differently, just as the North Vietnamese leadership saw the war they were fighting in very different terms than did US national leadership.
- ★ **Each problem is unique and novel, as is every solution**—Doctrine and historical understanding may suggest COAs for similar circumstances, but each problem is subtly and significantly different, as are the potential solutions: Spain from 1808-12 was not Iraq in the twenties, which was not Malaysia in the fifties, which was not Iraq in the twenty-first century, despite similarities between these conflicts.
- ★ **They have no "stopping rule"**—It is impossible to say when the problem has been "solved" conclusively and one "solution set" often leads to another set of problems to be solved. In Europe at the end of World War II, collapse of the Nazi regime set in motion a communist conquest of Eastern Europe and required the Marshall Plan and Truman Doctrine to rebuild and protect countries remaining in the Western sphere.
- ★ **There is no fixed set of solutions; there is no "right or wrong," only "better or worse"**—Each ill-structured problem requires a one-of-a-kind solution, and that solution often has no objective measure of success that stakeholders agree upon. "Success" often devolves into the best better-worse compromise possible between stakeholders. No "ideal" Iraqi nation has emerged from operations there over the past decade, but those operations achieved conditions stable enough to allow withdrawal of US and allied combat forces.
- ★ **One cannot understand such a problem without proposing a solution**—Understanding entails conceiving a solution. For example, if a regional insurgency

is conceived as a result of poor governance, this yields both a different problem and a different potential solution set than if the problem is conceived of as a failure of local governance and security. Proposed solutions do not have to be fully “fleshed out,” encompassing all the elements of operational design, but the framework used to conceive the problem points in the direction of a solution or set of solutions.

- ★ **They are always interactively complex**—All actors in a given environment have tremendous freedom of action and their interaction is non-linear, so very minor actions can create disproportionately great effects, but the same action performed at a later time may produce a very different result. In 1942, Lieutenant Colonel Jimmy Doolittle and his raiders executed a small attack against Japan that had psychological effects well out of proportion to the damage done, but massive conventional aerial attacks later in the war, including the devastation of Tokyo, after the Japanese had adapted to the reality of bombing, did not have a comparable effect on the Japanese war effort.
- ★ **The problem solver has no right to be wrong**—An operational commander and staff seek to gain continuing advantage in the operational environment, but are also responsible for the consequences of the actions they generate.

The interaction of complex adaptive systems almost always yields ill-structured problems. Warfighters are problem-solvers by nature, but most have been trained to solve either well- or medium-structured problems. With ill-structured problems, however, there is often disagreement even concerning the desired end state or the basic parameters that define the problem to be solved.

Design requires close interaction between an organization’s commander, staff, the commanders and staffs of the next higher and lower echelons, as well as supporting commanders and their staffs. Joint functional and Service components need to be involved at various levels in the initial planning stages of joint strategy development. In some cases, however, the JFACC and key air operations center (AOC) planners may need to volunteer to be included early in the JFC’s design process. In such cases, **joint integration requires that a sufficient number of trained Airmen be included on the JFC planning staff**. The air component liaisons, if established, can help make the JFACC aware of pending or ongoing design and planning efforts, but it is also the JFC’s responsibility to actively seek airpower expertise. Each theater or JTF operation will likely be different, and prior coordination is required on how overall joint strategy development may occur and how airpower should be included in that effort. Theater-level design and planning exercises are vital to ensure proper integration when operations commence.

THE ELEMENTS OF OPERATIONAL DESIGN

Operational design is the first level of strategy implementation and rests upon operational art, which is defined as the “cognitive approach by commanders and staff—supported by their skill, experience, creativity, and judgment—to develop strategies,

campaigns, and operations to organize and employ military forces by integrating ends, ways, and means” (JP 3-0). Operational design is an element of operational art, as shown in Figure 3.2. Operational art uses the commander’s vision and intent to determine broadly what should be accomplished in the operational environment; it is guided by the “why” from the strategic level and implemented by the “how” at the tactical level. In applying operational art, the commander draws on judgment, perception, creativity, experience, education, intelligence, boldness, and character to visualize the conditions necessary for success before committing forces.

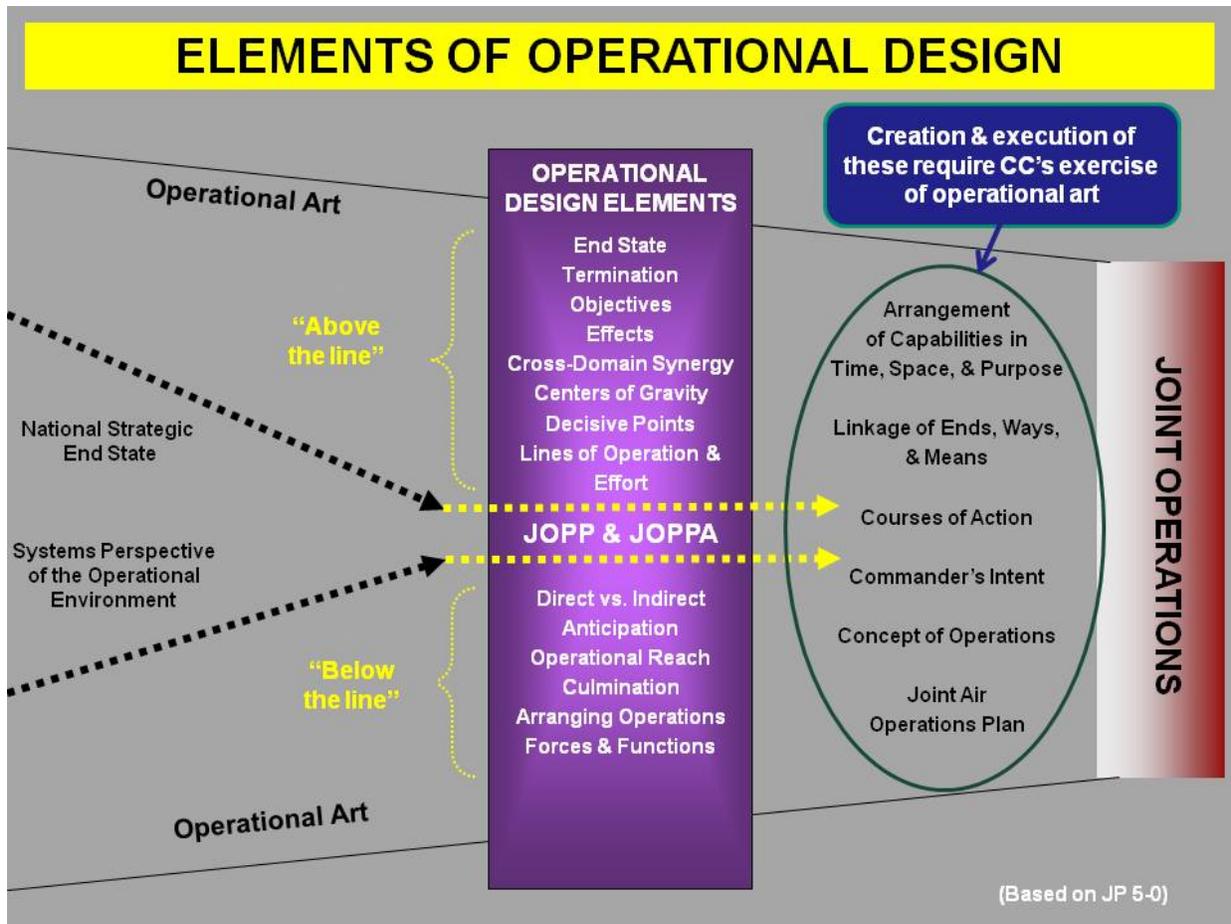


Figure 3.2. The Elements of Operational Design

Operational art requires broad vision, the ability to anticipate, and the skill to prepare, plan, execute, assess, and adapt. Commanders use operational art to consider not only the employment of forces, but also their sustainment and the arrangement of their efforts in time, space, and purpose.

Figure 3.2 illustrates the elements of operational design and how they fit into the larger context of operational art. The elements of design shown in the central box are fully described in JP 5-0 and so are not covered in detail here, with several important exceptions. Those elements depicted “above the line” in Figure 3.2 are of overarching importance to an understanding of strategy and design (like the end state), or are

sufficiently different from the Airman’s point of view (like centers of gravity [COGs]) to warrant discussion from an airpower-specific perspective and are thus discussed in this volume (see Appendix E for COG analysis methods, for example).

Elements “above the line” will most likely be determined by commanders and strategists early in the design process, often as part of “problem framing.” “Below the line” elements (like timing and tempo) *may* help inform design and broad COA decisions, but they are also often determined during more detailed, lower level planning, since planners may require more detail concerning “ways, means, and risk” to “flesh out” a strategy and fully exploit these design elements. Refer to JP 5-0 for discussion of elements “below the line.”²¹

Problem Framing

NOTIONAL PROBLEM FRAMING QUESTIONS

- “How does element or system X relate to Y?”
- “When you say X, are you implying Y?”
- “Can you give a logical example?”
- “All your reasoning depends on the idea that X exists; why have you based your reasoning on X instead of Y?”
- “Why do you think the relationship you propose is true? What is your evidence?”

Figure 3.3. Notional Problem Framing Questions

Operational design begins with “problem framing”—establishing the context of a situation within which the commander should act in order to realize the operation’s aims, by examining the problem from many different perspectives. This is not the same as problem solving, which planners do at lower levels to create solutions to medium- and well-structured problems within the conceptual framework created by the commander and strategists. Problem framing entails

determining the overall boundaries and aims of the operation, much as an architect does for a building project. This entails continuous dialog with both the operation’s “sponsors” (national leadership) and the problem solvers (operational-level planners) to help develop sponsor-approved aims that are realistic (validated by planners at lower levels).

²¹ Note: There is no “above” or “below the line” distinction made in joint doctrine, nor are “cross-domain synergy” or “lines of effort” listed as elements of joint operational design. Joint doctrine simply presents a list of elements, providing no guidance concerning which are of most concern to strategists. The distinctions made in this publication are offered only to clarify and enhance understanding of the relevant concepts for purposes of creating strategy.

Open, collegial dialog among the commander, “sponsors,” other government agencies, and NGOs, staff strategists, and planners is very important during this process. As operational design progresses into planning, the process becomes more formalized and the models strategists and planners work with become more empirical as they engage in COA development, analysis, and wargaming. Operational design, however, focuses upon providing basic, overarching structure to the problems that planners may have to solve “further down the road.” The “collegial dialog” should help establish the basic context of the problem to be solved and the logical relations between its elements. Commanders and their staffs should be able to answer the kinds of disciplined questions depicted in Figure 3.3, which probe basic reasons and evidence for an emerging framework, “setting the stage” for breaking the problem down into medium- and well-structured components that planners can “solve.”

As commanders and their staffs work through framing problems, they face several tasks that help provide structure to their efforts and make it easier to break ill-structured problems into smaller “chunks” of medium- to well-structured problems. These tasks are depicted in Figure 3.4 and consist of the following:

- ★ **Determine the strategic context and systemic nature of the problem(s)**—Examine the reasons the problem came to exist, its history, and try to extrapolate how it will likely develop. Examination should include analysis of all actors—friendly, adversary, and neutral—and encompass all IOPs, as well as unique aspects of the operational

environment that may play a role (like distinctive terrain, climate, and cultural aspects).

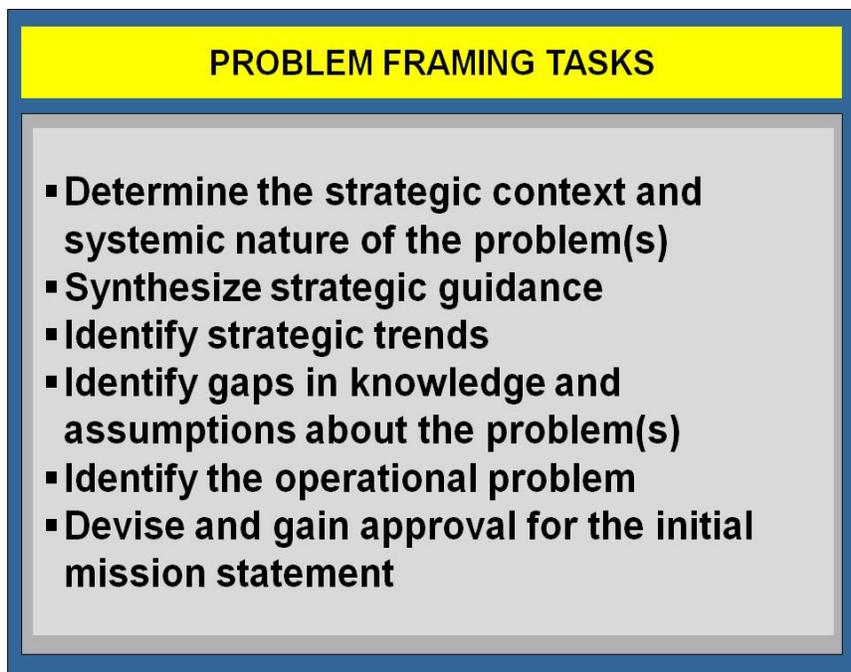


Figure 3.4. Problem Framing Tasks

- ★ **Synthesize strategic guidance**—Determine what guidance from national leadership, the CCDR, etc., already exists concerning the desired strategic end state. In some cases, guidance from national leaders will not be logically coherent and military commanders, including the JFACC, may need to help clarify such guidance, as was the case during the “design phase” leading up to Operation

DESERT STORM). Answer questions like, “are vital national or multinational interests at stake?,” “Are the strategic aims consistent with previously established policy and strategy?,” and so on. Attempt to create clear *boundaries* to the problem and a coherent, logical end state that represents continuing strategic advantage.

- ★ **Identify strategic trends**—Describe how the strategic situation is expected to evolve over time—what trends yield outcomes favorable and unfavorable to friendly interests? What can be done to arrest or encourage trending? This effort should begin to suggest broad COAs. If systems are transformed, what behaviors might emerge?
- ★ **Identify gaps in knowledge and assumptions about the problem(s)**—Speculation on COAs and system-wide effects should suggest gaps in knowledge and provide the basis for later determination of commander’s critical information requirements (CCIRs). CCIRs include priority intelligence requirements,²² friendly force information requirements,²³ and, in many cases, host nation information. Gaps in knowledge also suggest key assumptions that need to be made about the problem(s) to provide a coherent framework for design and for the JFACC’s decision-making. Assumptions can encompass political factors, adversary behavior, forces required, time limits, etc. This is a critical step in the design process. Assumptions endow a design with focus, as well as the ability to identify the greatest risks to an operation. For example, Allied operations analysts and air planners during WW II assumed (correctly) that ball bearings were an essential industrial bottleneck for the Axis war economy. However, they incorrectly assumed the Germans neither recognized this weakness nor prepared to counter the effects of Allied attacks. Ultimately, Allied bombers did succeed in heavily damaging German ball bearing factories, but their efforts—attained at a huge cost in Allied lives and aircraft—did not significantly impede the Axis war effort.

²² Intelligence requirements, stated as priorities for intelligence support, that the commander and staff need to understand the adversary or other aspects of the operational environment. (JP 2-01, *Joint and National Support to Military Operations*)

²³ Information the commander and staff need to understand the status of friendly force and supporting capabilities. (JP 3-0)

- ★ **Identify the operational problem(s)**—Thinking through the steps above should give commanders and staffs enough information to identify the problem’s critical factors, along with the problem’s logical boundaries and a framework for viewing the critical factors. This should entail assessing the desired strategic end state from higher leadership’s guidance (or, in some cases, synthesizing and recommending it, where none has been explicitly established). Commanders and strategists then use that assessment to determine the military end state and termination criteria. Correct identification of the operational problem, its boundaries, and key assumptions also helps guide selection of broad indicators and measures of success. These help focus ISR operations and help further determine CCIRs.
- ★ **Devise and gain approval for the initial mission and intent statement**—Frame the mission with a clear, concise statement of the purpose to be achieved and the essential tasks to be accomplished—who, what, when, where, and why. The statement of commander’s intent should explicitly state the military end state and how it fits into the larger context of the national/international strategic end state. Finally, these statements should be explained to and approved by national leadership or other relevant higher commander.

Another Framing Approach*

An alternative design methodology has gained acceptance in some quarters, having the advantage of greater simplicity and clarity (at the possible expense of comprehensiveness):

- ★ **Framing the operational environment:** Defining, analyzing, and synthesizing the characteristics of variables within the operational environment, such as the political, economic, social, and military context.
- ★ **Framing the problem:** Determining the difference between the situation operational environment analysis described and the desired state.
- ★ **Developing an operational approach:** Consider broad general actions—the operational approach—that will “solve” the problem, or at least minimize adverse consequences and maximize friendly advantage.

The problem framing questions shown in Fig. 3.3 may be pertinent to this process as well. As with the process described in the main text, this process creates a design concept that includes the initial commander’s intent and planning guidance.

* This process can be found, in considerably refined and elaborated form, in Army Doctrine Reference Publication 5-0, *The Operations Process*, final draft, 26 Sep 11.

Figure 3.5 depicts a summary “cognitive map” of the alignment of operational design’s key elements. It depicts how actions at the tactical level lead to effects, which can be usefully depicted using lines of effort (LOEs).²⁴ LOEs lay out critical desired effects, decisive points (DPs), and other events along a timeline that relates these to COGs, commander’s objectives, and the operation’s end state in a manner that shows relationships between all the elements, but is easy to comprehend. Creating desired effects should lead to correct decisions at DPs, which are specific places, key events, critical factors, or functions that, when acted upon, allow commanders to gain a marked advantage over an adversary or contribute materially to achieving success.²⁵ Achievement of these along an entire LOE allows friendly operations to decisively affect COGs, which are sources of power that provide all actors within the operational environment (adversary, friendly, and neutral) with physical strength, freedom of action, or the will to act.²⁶

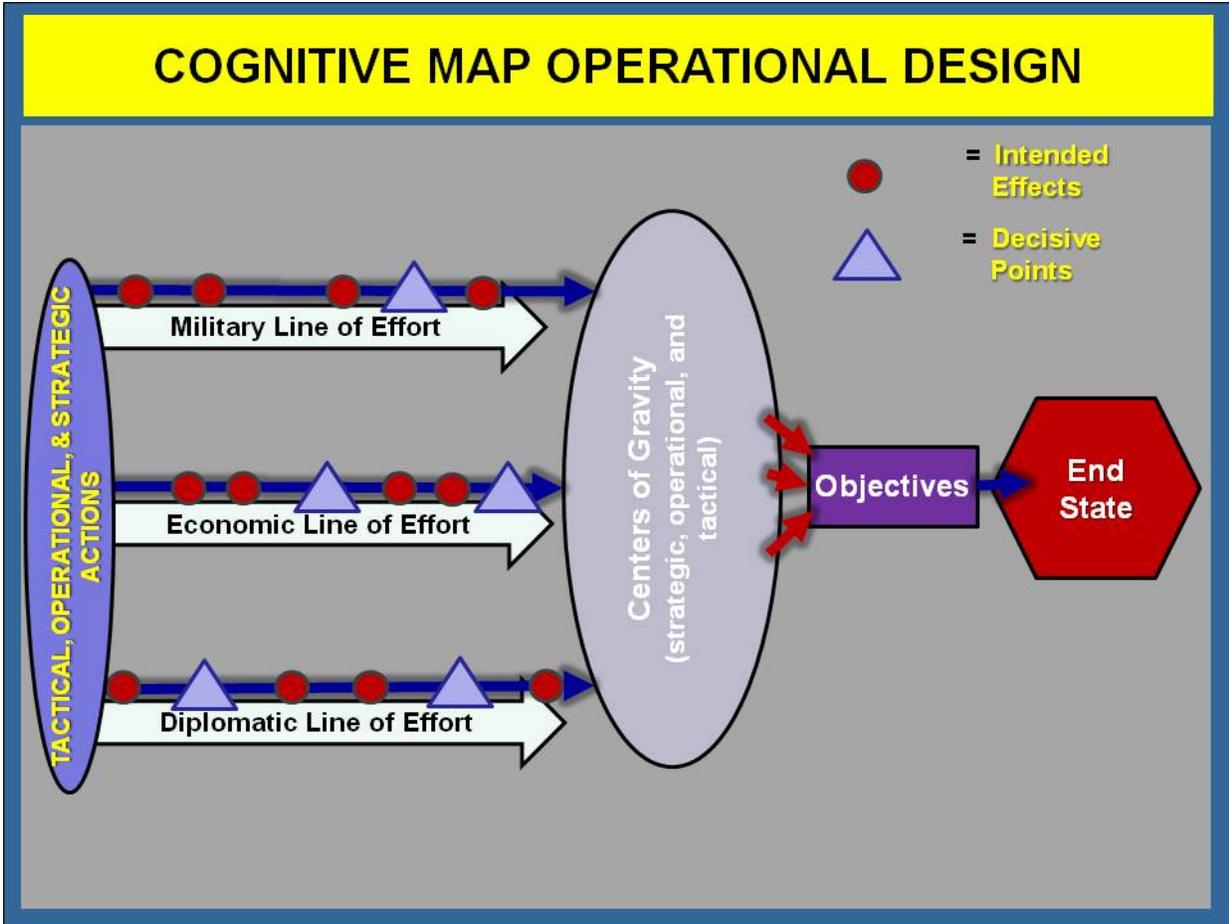


Figure 3.5. Cognitive Map of Operational Design

²⁴ In some planning literature and Marine Service doctrine, LOEs are still referred to as “lines of operation” or “logical lines of operation.” Joint doctrine, however, now recognizes the distinction between lines of operation and LOEs and uses the latter in JP 3-0 and 5-0.

²⁵ JP 5-0.

²⁶ Ibid.

²⁷ Adapted from Jeffrey M. Reilly, *Operational Design: Distilling Clarity for Decisive Action*.

Decisively affecting COGs leads to achievement of friendly objectives. When all objectives are achieved, by definition,²⁸ the end state should also have been achieved. Note that operations take place in the order described above. They are designed and planned, however, in the opposite “direction”—starting with the strategic and military end states as a product of operational design and “concluding” with detailed planning for tactical actions (along with assessment of those actions and all intermediate steps, performed by analysts, planners, strategists, and commanders at all levels).

PRACTICAL DESIGN: THE COERCION CONTINUUM

All military strategy seeks to coerce or persuade an adversary or other actor to do one’s will. *Coercion* is convincing an adversary to behave differently than it otherwise would through the threat or use of force. All coercive military action works along a continuum from pure threat (only implied use of force, or using peaceful means to defeat adversary strategies) to pure force (engaging military forces and government control mechanisms, as illustrated in Figure 3.6).

Most combat operations, regardless of size or intensity, usually reside near the middle of the continuum, however many conflicts may span the entire spectrum. Each conflict has its own character. Many campaigns in WW II, for example, were close to the “pure force” extreme of the continuum. OAF, relatively limited in scope and violence,

was much closer to the left end of the spectrum. The degree of violence and “brute force” required depends very much upon the national interests at stake, the “target audience,” and that audience’s determination to resist one’s will.

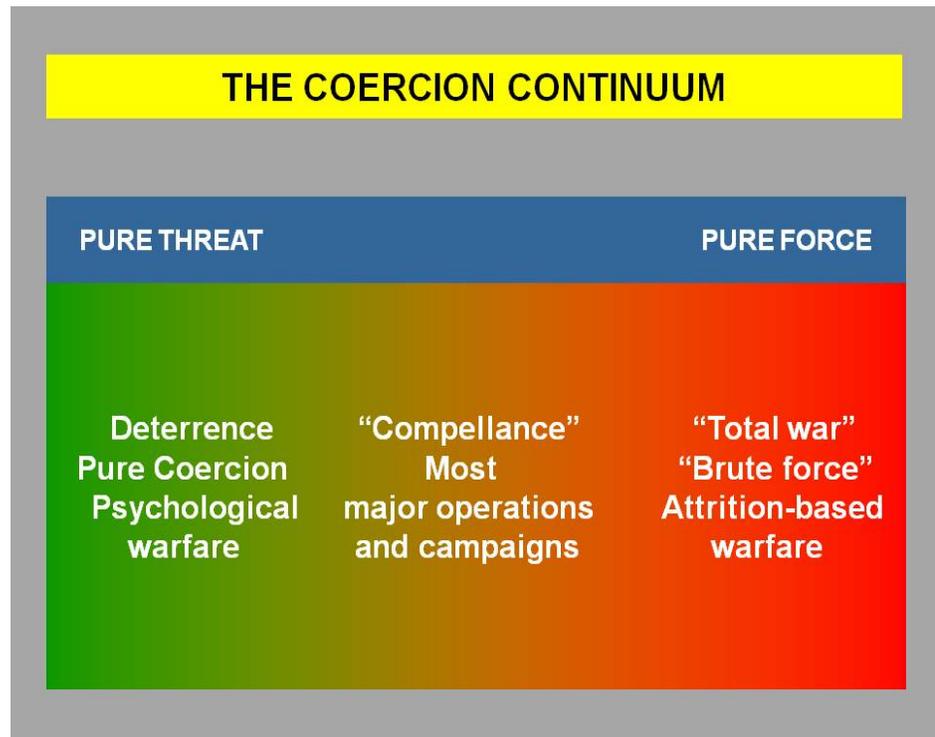


Figure 3.6. The Coercion Continuum

²⁸ Joint doctrine defines the end state as “the set of required conditions that defines achievement of the commander’s objectives” (JP 3-0). The Air Force definition on page 12 of this document is provided to further refine and illustrate the concept, but the joint definition is most applicable here.

Notes on the Terms “Lethal,” “Nonlethal,” “Kinetic,” and “Non-kinetic”

The terms “lethal” and “nonlethal” are currently recognized, although not formally defined, in joint doctrine. The existing dictionary definitions of these words describe them adequately. Joint doctrine refers to “lethal or nonlethal military force” (JP 3-0), “lethal and nonlethal fires” (JP 3-09, *Joint Fire Support*), and “lethal and nonlethal effects” on targets (JP 3-09). This volume refers to the effects that both lethal and nonlethal weapons and fires have on targets exactly as joint doctrine does.

Two other terms are in widespread, if informal, use as well: “Kinetic” and “non-kinetic,” intended to mean, roughly, weapons or actions that cause destruction of targets and those that don’t. To avoid confusion, the joint doctrine community deliberately removed all references to “kinetic” and “non-kinetic” in joint doctrine, substituting lethal and non-lethal. Nonetheless, the terms, even though informal, have a somewhat different meaning. They have attained general recognition in the military and elsewhere in the US government, so that even the President and his close advisors use them. President Obama, for instance, referred to “non-kinetic support to [operations in Libya]” in a letter to Congress concerning compliance with the War Powers Resolution (15 Jun 11).

Since the terms show no signs of disappearing from common use, this publication proposes definitions that convey useful and distinct military meaning while keeping them as close as possible to the technical meaning of the terms in physics. **Kinetic:** *Relating to actions designed to produce effects using the forces and energy of moving bodies and directed energy, including physical damage to, alteration of, or destruction of targets. Kinetic actions can have lethal or non-lethal effects.* **Non-kinetic:** *Relating to actions designed to produce effects without the direct use of the force or energy of moving objects and directed energy sources. Non-kinetic actions can have lethal or nonlethal effects.*

Effective use of airpower can help facilitate conflict resolution closer to the “pure threat” end of the continuum, helping achieve objectives and the end state on more favorable terms, in less time, and more efficiently than might otherwise be possible. However, airpower is capable of creating effects anywhere along the continuum. The destruction of German industry from the air during WW II represented one form of near-pure force strategy, as did the attrition of Iraqi tanks and artillery during Operation DESERT STORM. US maintenance of a credible deterrent during the Cold War approximated the “pure threat” end of the spectrum, helping prevent major combat operations. The Berlin Airlift of 1948-49 was an example of using peaceful means (albeit backed by implied force) to defeat an enemy’s strategy (“pure coercion”). Law of armed conflict (LOAC)-compliant air attacks upon key sites from which Serbian

leader Slobodan Milosevic's associates derived their income and influence probably helped compel him to withdraw Serbian troops from Kosovo during OAF. OAF's limited but threatening use of force is common to many operations and is in the middle of the coercion spectrum.

Attrition and Annihilation.²⁹ The larger the campaign and the greater the stakes for the actors involved, the more likely a conflict as a whole will approximate a "brute force" approach. Even in limited contingencies, however, attrition-based or "pure force" means may have to be used if the enemy's willpower cannot be broken by other means. Attrition-based strategies have the advantage of being relatively simple. The links between cause and effect are easy to understand: Enemy capability and enemy casualties tend to be inversely proportional. Unfortunately, strategies based on attrition are usually the most costly. Recent developments in precision munitions and targeting capability enable modern aircraft to attrit enemy fielded forces much faster than in previous conflicts. An effects-based approach to strategy development, however, requires that attrition and annihilation be considered when they are the only means of effectively achieving the objectives and end state. Attrition is seldom the most *efficient* way of attaining an objective, but it is sometimes the most *effective and timely* means of doing so.

Decapitation is a very specific, modified form of attrition that has been used as part of US strategy that entails the removal of enemy leadership through direct attack when that leadership constitutes a legal target in accordance with the LOAC and applicable US laws. It can also entail the use of direct attack to sever C2 links between enemy leadership and its fielded military forces. Decapitation supports punishment and denial (see below) by threatening the enemy leadership's survival or their basic ability to command and control their forces. Attacking the military chain of command supports annihilation or denial by rendering enemy C2 ineffective. This sort of decapitation can be accomplished or greatly aided by IO conducted by air, space, and cyberspace forces. Attacking national leadership, when it is a legal target, can support risk and punishment strategies by putting at risk the regime's ability to maintain power. Enemy regimes either comply with the coercer's demands or risk removal from power. Airpower is well suited to conducting either form of decapitation because it can often strike enemy leadership targets without having to first engage enemy fielded military forces that protect them. Air, space, and cyberspace effects can be created in concert to make such attacks more effective.

Decapitation tends to be most effective when an adversary is led by a single charismatic figure who cannot be easily replaced or when their organization has a rigid, hierarchical leadership structure where the leaders and their potential replacements can all be identified, located, and removed. It may be ineffective against a diffuse, cellular organization or one that has multiple leadership succession plans available—such as the United States' democratic government. Furthermore, when

²⁹ "Attrition strategy" is also referred to as "exhaustion" and "erosion" in some contexts, but they all have essentially the same meaning. See Russell Weigley, *The American Way of War*, and Hans Delbruck, *History of the Art of War*, for examples.

considering a decapitation strike, even if such an option exists, planners at all levels should anticipate who or what a potential replacement will be and consider if that will be better or worse in terms of desired effects than leaving the existing leadership intact, and instead attempting to coerce or compel them to change their behavior. In cases of strategic decapitation, no effective replacement for a charismatic leader may exist and the long-term stability of a country may be jeopardized, resulting in civil war and the long-term commitment of US and Allied/Coalition resources to attempt to recover and maintain stability.

Compellance.³⁰ Compellance aims to forcibly change an adversaries' behavior, whereas deterrence intends to change behavior without the actual use of force. Compellance generally takes one of three forms: *denial*, *risk*, or *punishment*, or consists of a combination of these. Denial attempts to reduce the probability that resistance will yield benefits; risk tries to raise the probability of suffering costs; and punishment tries to raise the costs of continued resistance.

- ★ *Denial.* Destroying or neutralizing a portion of the adversary's physical means to resist or of otherwise denying them the ability to execute a desired COA. This may take the form of limited attrition, or may entail a less direct mechanism, such as destruction of key war-making resources. Credible threat of force may also be used to deny certain strategy choices. Denial seeks to change adversary behavior by making his action seem pointless. Denial tries to convince adversaries that defeat is inevitable because their means of resistance will be removed, and thus it is better for them to capitulate. Most major operations and campaigns in traditional war involve use of denial as a coercion mechanism. Generally, the smaller and less intense the conflict, the less attrition-based denial is necessary. Most conflicts require some degree of denial, however. Air Force forces are well suited to conducting denial-based strategies against enemy fielded military forces because persistent and pervasive ISR allows the pinpointing of military targets and precision engagement enables discriminate and reliable action against those targets.

- ★ ★ *Paralysis.* A form of denial in which wide-spread, parallel attacks across the adversary's entire system, including his leadership and C2 mechanisms, render the adversary largely incapable of running his society or selected systems. Parallel attack is usually a valuable complement to other forms of denial, helping lessen military resistance and increasing the psychological effectiveness of attrition and destruction. Airpower is uniquely suited to inducing paralysis because it can strike the widest possible array of targets in the shortest time across the depth of the operational environment, potentially leaving no parts untouched, and all components of airpower can be used to facilitate inducing paralysis.

- ★ *Risk.* Placing that which the adversary values at credible potential for loss. Typically, risk strategies slowly raise the probability of damage to the adversary's

³⁰ The term was coined by Thomas Schelling in *Arms and Influence* and has been used extensively in the technical literature of coercion and deterrence theory.

systems. The key is to increase costs at a gradually increasing rate in order to convince the opponent that much more severe damage may follow if concessions are not made. Operations are slowly escalated in intensity, extent, or both. The coercer should signal clearly that the attacks are contingent on the adversary's behavior and will stop upon compliance with demands. At the same time, the coercer should be careful not to destroy everything of value to the adversary, for then it would be impossible to threaten more to come. For this reason, space and cyberspace capabilities may offer useful options by providing reversible effects that effectively coerce without causing permanent damage to adversary systems. Risk strategies have an uneven historical record, failing most notably during the Vietnam War's early bombing campaigns against North Vietnam; the early days of OAF used a form of risk strategy and were of limited success against Serbia. Risk strategies may have limited value in some contingencies, however, and may allow achievement of objectives at a lower cost than denial and attrition strategies. Airpower is generally the instrument of choice in pursuing risk strategies because of its ability to bypass enemy fielded military forces and put targets with strategic value at risk.

- ★ *Punishment.* Administering some form of damaging action against adversaries until they act in a desired manner (or ceases undesired action). The word is often used to refer to a strategy, "which attempts to inflict enough pain on enemy civilians so that they cause their leaders to change their behavior.... The hope is either that the government will concede or the population will revolt."³¹ While any such consideration of a punishment strategy may conflict with the LOAC, depending on the nature of a conflict, it may nonetheless be a feasible, if not always acceptable strategy. The elements of this strategy may also be executed against elements of an adversaries' personal or national power, as was done to some extent during OAF.

The term "punishment" in this context *does not mean "reprisal"*—it simply means inflicting damage (against any variety of target types) once an adversary has initiated undesired behavior in order to coerce a change in that behavior. *The United States does not conduct operations simply for the sake of reprisal.* Like risk strategies, punishment has a checkered history—it has worked less often than denial-based strategies—but it may be effective against an adversary with relatively low will or staying power. Such was the case in OAF, where a punishment strategy against the Serb leadership's income-producing industries (which were LOAC-validated military objectives) may have helped coerce a Serbian troop withdrawal from Kosovo. As with risk strategies, punishment may permit accomplishment of objectives at less cost than attrition or denial strategies. Strategists should clearly understand the adversary and his motivations for punishment strategies to work. Airpower enjoys unique advantages in pursuing punishment strategies, due to its ability to discriminately engage targets anywhere within an adversary's system across the entire operational environment, in all domains.

³¹ Robert A. Pape, *Bombing to Win: Air Power and Coercion in War.*

Deterrence, Assurance, and Dissuasion. The “pure threat” end of the coercion continuum involves the implied, rather than actual, use of force—where the *threat* of force alone may be sufficient to coerce. An overarching purpose of strategies at this end of the coercion spectrum is *prevention* – averting or hindering the emergence of conflicts and discouraging others from developing undesirable capabilities or COAs (for example, preventing proliferation of WMD), thus advancing US interests without the direct use of force. This requires the integration of all IOPs and may entail various forms of military coercion executed in concert. Subordinate commanders, such as COMAFFORs, may be called upon to perform detailed planning and execution in these scenarios, even though they may be working to create effects that directly meet the objectives the JFC, CCDR, and higher-level leadership have established. In many cases, airpower can offer CCDRs and other JFCs strategy options that can effectively coerce adversaries and still be available very quickly and offer great flexibility. The key to these forms of coercion is to threaten or assure with sufficient strength and credibility that opponents choose one’s preferred actions (or decide not to act), due to the perceived cost of non-compliance.

Purely coercive strategies may be implemented independently or in conjunction with operations at any point across the ROMO, including major wars. The “pure coercion” end of the spectrum consists of several distinct types of strategy options:

- ★ *Deterrence* is defined as “the prevention of action by the existence of a credible threat of unacceptable counteraction and/or belief that the cost of action outweighs perceived benefits. Deterrence is a state of mind brought about by the existence of a credible threat of unacceptable counteraction.³² For 60 years, the Air Force has provided a flexible, responsive, and stabilizing deterrent, through both nuclear and conventional forces. Nuclear deterrence remains a crucial, but not the only, means through which the Air Force deters. The ability to destroy targets using conventional weapons with pin-point accuracy anywhere on the globe with very little notice is a vital contribution to deterrence, as is the ability to forward-deploy a variety of capabilities swiftly; operate securely from forward-located, unimproved facilities; provide accurate, globally-integrated ISR; and use air mobility to deploy assets of all the Services rapidly around the world.

Deterrence today is not only a matter of averting nuclear war between global powers, but involves preventing use³³ of WMD by “rogue states,” non-state actors, regional powers in their own conflicts, and lesser states in conflict with the United States and its partners. It also involves using both nuclear and conventional means to deter adversaries from taking undesirable COAs. To a greater extent than during the Cold War, deterrence is also tied to uses of other elements of strategy, particularly compellance in the form of denial and risk. Deterrence is a *state of mind* and creating it in the leaders of rogue states or non-state (often radical and

³² JP 3-0.

³³ As well as transfer, procurement, and production of WMD, a fact as true of the subsequent discussions of assurance and dissuasion.

terrorist) actors may be considerably more difficult than doing so in more rational actors, such as major nation-states with clear interests to protect. Thus, a threat of punitive action that may have been effective in the Cold War may not be against an opponent willing to accept great risks and losses. Conversely, such a “reckless” opponent may be militarily deterred by denying that opponent a practicable chance of success in ways that were not possible against Cold War adversaries without serious threat of war. Joint doctrine provides significant guidance for uses of deterrence during the approach to conflict through flexible deterrent and response options.³⁴ Non-nuclear deterrence is also sufficiently fixed in joint doctrine that the joint phasing model includes a “deterrence phase,” dedicated to preventing “undesirable adversary action by demonstrating the capabilities and resolve of the joint force. It includes activities to prepare forces and set conditions for deployment and employment of forces in the event that deterrence is not successful.”³⁵ For deterrence to be effective, several conditions should be met:

- ★ ★ The threat must be communicated accurately to the target.³⁶
- ★ ★ The target must clearly understand the threat.
- ★ ★ The target must believe that the anticipated cost of their undertaking the action outweighs potential benefits.
- ★ ★ The target must believe that the “deterrer” will take the threatened action(s).
- ★ *Assurance* (also known as extended deterrence in relation to some nuclear deterrence discussions) is a set of strategy options closely related to deterrence, intended to persuade actual and potential partners not to pursue COAs contrary to friendly interests (for example, pursuit of their own WMD arsenals), because the United States and its allies can assure security under the umbrella of US and allied deterrent capability. Although nuclear deterrence has always been a vital aspect of assurance, there have always been diplomatic/political and non-nuclear military aspects to it as well. The creation of NATO is an example of where political and conventional military aspects played as large a part in assuring our allies as did nuclear deterrence. Today, assurance extends to non-nuclear military capabilities, like anti-missile defenses, to an even greater extent than in the Cold War.
- ★ *Dissuasion* is also closely related to deterrence, consisting of actions taken to persuade an actor that costs will be too high or benefits too low to justify embarking on a COA contrary to US interests. It evolved from the world of nuclear deterrence, to describe a form of “pre-deterrence” in which a potentially threatening actor is dissuaded not only from using threatening military capability (such as WMD), but from even developing or acquiring it in the first place. Dissuasion requires a whole-

³⁴ See JP 5-0, Appendices E and F.

³⁵ See JP 5-0, Chapter III.

³⁶ “Target” in this context refers to the term in its broadest possible meaning (the first definition 1 in JP 1-02): “An entity...considered for possible engagement or other action.”

of-government approach to succeed. It can also have a place in preventing a neutral or allied party from taking undesired action(s). There are several critical considerations for successful dissuasion:

- ★ ★ The party employing dissuasion should be able to elevate the target's perception of anticipated costs. This can be done through means like economic sanctions, political/diplomatic pressure, and military actions designed to lower the target's belief that it can prevail in conflict (exercises, arms sales to opponents, etc.)
- ★ ★ The "dissuader" should be able to lower the target's perception of anticipated benefits. This can be done by persuading the target that the capability it seeks is not survivable or the action it contemplates can be easily neutralized in the event of hostilities. It can also be done by diminishing the target's perception of the operational effectiveness of the capability or action, often through active and passive defenses. Finally, a target's benefit perception can be lowered by changing the character of the competition.

Deterrence, assurance, and dissuasion strategies will most often be implemented by US national leadership in conjunction with geographic CCDRs in a whole-of government approach, but Air Force forces can provide very capable and flexible coercive forces-in-being, equally useful in assuring international partners and of being instruments in dissuasive strategies. In many cases, the COMAFFOR's forces may be the coercive "tools of choice," due to their ability to be deployed and employed farther and more quickly than some other forms of military power, enabling them to form a more credible threat in some situations.

General Coercion Considerations. Past operations have shown that successful coercion of all types is a product of one or more of the following factors:

- ★ *Escalation dominance*—The ability to increase the adversaries' cost of defiance while denying them the opportunity to neutralize those costs (e.g., the threat of a major increase in the tempo of operations against them).
- ★ *Defeating the adversary's strategy*—Denying the adversary certain strategic options through deterrence or compellant mechanisms (e.g., preventing use of CBRN weapons through maintenance of a credible nuclear deterrent).
- ★ *Magnifying threats from third parties*, such as internal dissidents or hostile nations external to the conflict.
- ★ *Credible threat or use of force*—The adversary should have reason to believe that the coercing power will use force, even if that use is only implied (as in deterrence).
- ★ *Enemy susceptibility to coercion*—The adversary must be vulnerable in some way to the coercive mechanism chosen. The susceptibility of an adversary to any

coercive mechanism is usually inversely related to its willpower and the potential stakes of the conflict—the less it wants to be in the fight, the more susceptible it will be to coercion.

- ✪ *Understanding of the adversary's thinking and level of motivation*—Failure to understand the conflict as the adversary does generally results in “mirror imaging,” or projecting one’s own values, motivation, and perception of what is “rational” onto the adversary—which can be a formula for defeat. Motivation determines how susceptible an enemy is to coercion, so determining how strong the enemy’s will to fight is can help determine how much punishment and risk they are willing to assume before they change behavior.³⁷ Assuming equivalent perception of rationality may be equally dangerous: What US observers consider “irrational” may be entirely logical in the context of the adversary’s culture, religion, institutional structures and pressures, and psychological factors (such as the degree of stress adversary citizens or leaders are accustomed to). Commanders and strategists must attempt to understand what motivates their adversaries and how they think.

OTHER PRACTICAL DESIGN CONSIDERATIONS FOR AIRMEN

Airpower entails the use of military power and influence to create effects and 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 representing 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 domains³⁸ 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 up 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 non-destructive and non-kinetic actions) by the effects created rather than the targets’ physical locations within the battlespace.

³⁷ For greater detail concerning these factors and other coercive mechanisms, see AFDD 3-70, *Strategic Attack*.

³⁸ Land, air, maritime, space, and cyberspace.

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, and should no sooner 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 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 given the authority, 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 COGs, vital centers, 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 continuing 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 EMS, and time.**

Integrated with surface forces, airpower can reduce the need for operations like surface probing actions through such capabilities as wide-ranging 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 non-kinetic actions; and lethal and non-lethal effects,³⁹ are inherent in airpower, as is the

³⁹ These categories include nuclear weapons, which use both kinetic and non-kinetic means to create lethal and non-lethal effects.

ability to inflict both physical and psychological dislocation on an adversary. Thus, in cases where airpower presents the JFC with the preponderance of counter-surface effects, it may be appropriate for the 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 normally bring a better 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.

Joint doctrine allows for Service and functional components to be involved at various levels in the initial stages of joint strategy development. The JFACC's planners should normally aid JFC-level planners in the JOPP, and so be able to keep airpower planners still back in the 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 air, space, and cyberspace expertise. Each theater or 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 CDR 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 JOPPA as a process belongs to the JFACC, as does the air tasking cycle.⁴⁰ The JOPPA and the tasking cycle are performed in the AOC in cooperation with the COMAFFOR's staff. If not already provided, the JFACC should request or formulate a strategic communication plan to coordinate and influence all aspects of IO. This may help the JFACC 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

⁴⁰ Unless no JFACC is appointed and airpower planning functions are not retained at the JFC's level. See AFDD 1 for further explanation.

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, continuing 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. 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—usually related to the loss of lives and damage to cultural institutions—may drive nations out of wars. For example, Russia was driven from 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 OIF demonstrate. Operational-level commanders, such as the 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 LOAC-compliant strikes against the industries controlled by followers of Serbian leader Slobodan Milosevic in 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 was not considered in time to prevent the attacks. 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, forces may be constrained to conduct serial operations, in which all available assets should be dedicated to winning air superiority before any other offensive operations are conducted.

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 are integrated with each other, rather than one in support of another, 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.

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, 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.

CHAPTER FOUR

PLANNING OPERATIONS

If I always appear prepared, it is because before entering an undertaking, I have meditated long and have foreseen what may occur. It is not genius which reveals to me suddenly and secretly what I should do in circumstances unexpected by others; it is thought and preparation.

—Napoleon Bonaparte



AIR FORCE PLANNING IN THE GENERAL JOINT PLANNING CONTEXT

Joint operation planning employs an integrated process for orderly and coordinated problem solving and decision-making. In its peacetime application, the process allows the thorough and fully coordinated development of plans. During crises, the process is shortened as needed to support the dynamic requirements of changing events. During execution, the process adapts to accommodate changing factors in the operational environment and maximize the flexibility of operations. For today's commanders, plans are not useless – they are necessary points of departure – but planning as a process is still the most important.

Joint operation planning is conducted at every echelon of command, during peacetime as well as conflict, and across the ROMO. Joint operation planning is accomplished through the adaptive planning and execution (APEX) system, which is “the DOD-level system of joint policies, processes, procedures, and reporting structures, supported by communications and information technology, that is used by the joint planning and execution community to monitor, plan, and execute mobilization, deployment, employment, sustainment, redeployment, and demobilization activities associated with joint

NOTE: The joint operation planning process for air described in this publication is consistent with the JOPP described in JP 5-0 and **supersedes** the “joint air and space estimate process” described in previous doctrine documents. Airmen should conduct effects-based operational design and planning using the JOPPA process outlined in this publication, in JP 3-30, *Command and Control for Joint Air Operations*, and more fully detailed in AFTTP 3-3.AOC, *Operational Employment – Air Operations Center* and its annexes.

operations” (JP 5-0). The APEX system facilitates iterative dialog and collaborative planning between the many echelons of command, including between the JFACC and the JFC and other components. This helps ensure that the military IOP is employed in accordance with national priorities, and that plans are continuously reviewed and adapted to accommodate changes in strategic guidance, resources, the actions of adversaries and other actors, and the operational environment. Joint operation planning also identifies capabilities outside the DOD, and provides the means of integrating military actions with those of other IOPs and multinational partners in time, space, and purpose to create all effects necessary to achieve objectives required to attain the end state.

Deliberate and Crisis Action Planning

The APEX System formally integrates the activities of the entire joint planning and execution community (JPEC), which facilitates seamless transition from design and planning efforts to execution in times of crisis. APEX—and the joint operation planning and execution system (JOPES) technology that underpins it—provides for planning that is integrated from the national level down to theater and component levels. Under the larger APEX “umbrella,” joint operation planning is divided into deliberate and crisis action planning. Deliberate planning in the context of APEX is a process that is used to develop global and theater campaign plans, which operationalize CCDR’s ongoing theater or functional strategies in peacetime, as well as joint operation plans for contingencies identified in joint strategic planning documents. “Traditional” contingency plans (the type that have been developed by the JPEC for decades) are now often considered branches of ongoing CCDR theater or functional strategies. During deliberate planning, the SecDef, CCDRs, or JFCs determine the level of detail required and provide in-progress review of planning processes. This process prepares for possible contingencies based on the best available information and using forces and resources apportioned in strategic planning documents. It relies heavily on design assumptions about political and military circumstances that may prevail when the plan is implemented. Plan production generally takes six or more months and involves the entire JPEC. The Air Force Service component (the COMAFFOR’s staff) usually develops supporting plans following the same process used by the JFC.

CAP procedures are used in time-limited situations to adjust previously prepared OPLANs or otherwise conduct design and planning for military action. Here, the crisis may occur with little or no warning, the situation will be dynamic, and time for planning may be very limited. Design and planning should resolve the majority of the assumptions made during deliberate planning, if accomplished. In some cases, however, commanders and their strategists must start the process with a “blank slate,” accomplishing design and planning based on assumptions made in the absence of facts or the products of previous deliberate planning. An adequate and appropriate military response in a crisis demands flexible procedures keyed to the time available, rapid and effective communications, and use of previous planning and detailed databases and region analyses whenever possible. CAP often entails the positioning

estimates and coordination steps, conducted by national-level agencies down through Air Force major command staffs, which provide support to commanders and their staffs performing the JOPP and JOPPA to support COA selection and execution. Further, only JFC and Service component (e.g., the COMAFFOR's) staffs possess the information technology infrastructure to interface with many JOPES processes, thus the AOC's contribution to JOPES is dependent upon the COMAFFOR's staff.⁴¹ Specifics concerning the products of the deliberate and crisis action planning processes can be found in the JOPES / APEX manuals.⁴²

Absorbing lessons learned and adapting to them appropriately is critical to operational success. Observations should be captured after every operation in the form of lessons learned. Events should be documented in detail to provide information that improves planning and execution of future actions. Planners should review after-action reports and other lessons-learned analysis during the planning process to ensure they benefit from past experience.

The Relationship Between Operational Design and Planning

In many respects, operational design constitutes a necessary “front end” of planning, since the commander should frame the problem he or she seeks to solve and determine its scope and parameters. It logically forms the first steps of deliberate, crisis action, and other operational planning. It makes sense to determine an operation's overall end state before detailed employment planning begins (or, for that matter, before many aspects of deployment and force planning begin). In other respects, design and planning are complementary and even overlap: Design may begin before initiation of the JOPP or JOPPA, but some portions of the mission analysis stage of the JOPP and JOPPA may provide insights needed to properly frame an operational problem. Design often begins with step 1 of the JOPP (“Initiation”), but certain formal products of deliberate and crisis action planning (such as warning and planning orders) may be issued after design efforts have begun but before more detailed planning has started. Design may also continue after completion of initial JOPP and JOPPA planning. There is no clear demarcation between when design ends and planning begins (or vice versa), especially during the “first round” of design and planning. Strategists often also identify possible branches and sequels at various points based on planning assumptions. In doing so, they must often make assumptions in the absence of facts in order to allow planning to continue. The need for many assumptions is typical of designing and planning for ill-structured problems.

⁴¹ That is, those elements of the COMAFFOR's staff that do not directly support the COMAFFOR's operational responsibilities as JFACC; these elements remain explicitly under the COMAFFOR to help accomplish his or her responsibilities as Air Force Service component commander (and often remain in the AOC). See AFDD 1 for a delineation of the COMAFFOR's responsibilities.

⁴² Further information on these (and other forms of planning) can be found in CJCS Manuals (CJCSMs) 3122.01-03, *JOPES*, Volumes I through III. These manuals are currently being revised, re-designated, and supplemented as the “APEX family of documents.” See CJCS Guide 3130, *APEX Overview and Policy Framework*, for more information. See also JP 3-30 for the general joint perspective on the JOPPA.

Later, during plan execution and assessment, operational design may be conducted in concert with planning to adapt to emerging situations or behaviors. In this part of the process, commanders and strategists determine whether to implement pre-planned branches or sequels, or even initiate complete re-design of an operation.

THE JOINT OPERATION PLANNING PROCESS FOR AIR

The Air Force plans using the process known as the JOPPA. This is the process by which COMAFFORs create the detailed plans they require to effectively employ airpower, including the JAOP, OPORDs, and others. Since the COMAFFOR is normally the JFACC, the JOPPA is also the joint force air component's equivalent of the JFC's JOPP and can be performed in parallel with it. The JOPPA produces the JAOP and, as part of an ongoing battle rhythm, guidance that helps create the AOD, which guides the tasking cycle through its iterative execution. The JOPPA may also be used to produce required supporting plans and concepts, such as a long-range phased air targeting scheme (PATS), a phased air targeting scheme, an area air defense plan (AADP), an airspace control plan (ACP), operation orders required by the COMAFFOR's staff, and others. The JOPP and JOPPA each consist of seven steps, as depicted in Figure 4.2. Each of the stages is discussed below.

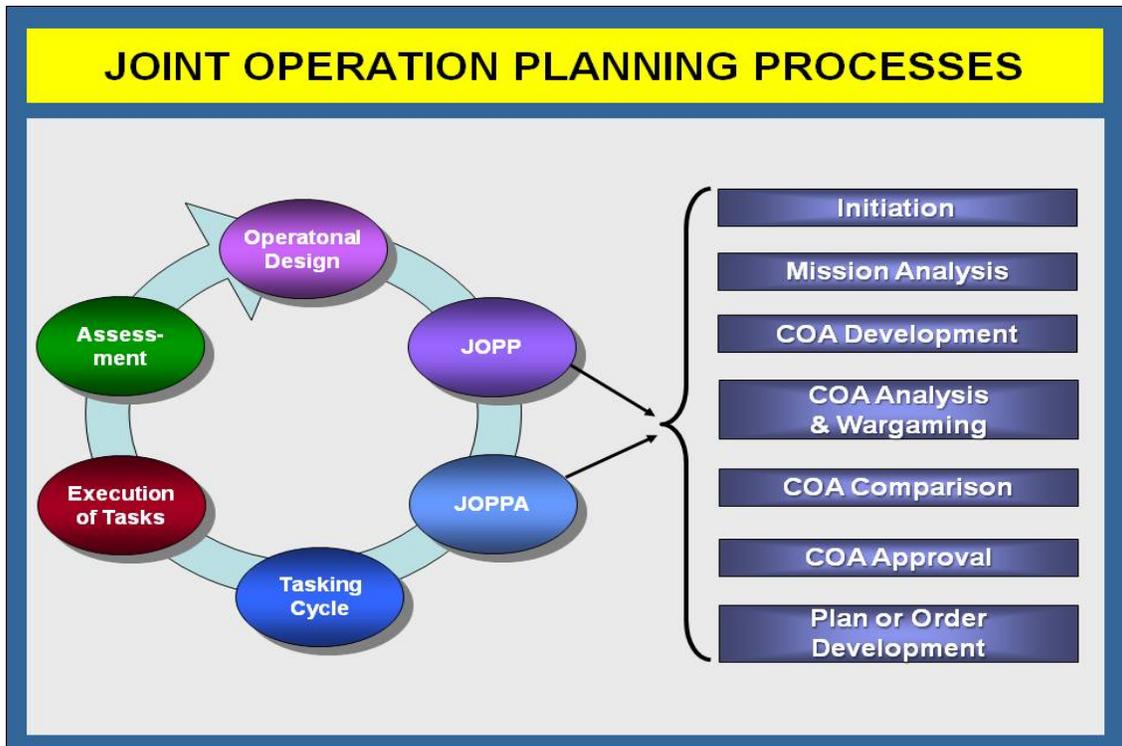


Figure 4.2. Joint Operation Planning Processes

The air component's senior strategists and other select members of the staff should join the JFC's Joint Planning Group (JPG) (or like body) to help create the JFC's OPLAN and OPORD (and other plans and orders, as required). They should review currently available forces and determine what, if any, additional forces or

capabilities may be required and where all forces should be located. When these strategists return to the AOC's strategy division (SRD) strategy plans team, they should then repeat the process, as the JOPPA, for their joint force component command, producing the JAOP. Inside the AOC, the SRD staff often leads operational-level planning, but is always supported by other COMAFFOR and AOC staff elements.

Initiation

Planning begins when an appropriate authority recognizes potential need to employ military capabilities in response to a potential or actual crisis and initiates strategy creation and operational design. At the strategic level, the initiating authority is national leadership—the President, SecDef, and Chairman of the Joint Chiefs of Staff. Below the national strategic level, that authority is usually a JFC (CCDR or JTF commander). At any level, however, a commander may deem it prudent to begin planning for a contingency when, in the commander's judgment, the situation warrants it.

Airpower strategists may have already been through several rounds of concept formation as part of operational design when the JFC initiates formal planning. Operational design may be a precursor to detailed planning and may help determine if military power is a suitable instrument for dealing with the problem or set of problems that national leaders wish solved. Operational design focuses on framing ill-structured problems in general terms, while the JOPP and JOPPA focus on solving more specific, medium- to well-structured problems.

It is vital for Airmen to become involved in the planning process at the JFC-level as soon as possible to understand the JFC's design concept and ensure that the capabilities of airpower are properly represented, integrated, and employed.

Mission Analysis

The primary purpose of mission analysis is to understand the problem at hand, the purpose of the operation, and to issue appropriate commander's guidance to focus the planning process. Mission analysis may already have been accomplished as part of operational design, but there is significant value in conducting an "airminded" mission analysis in dialog with the commander and AOC strategists, reviewing the products or reiterating the process of framing the problem "the plan" is intended to solve.

The commander's mission and intent statements should be created in this step of the process if they have not already been created during earlier design effort. These statements should include the military end state (MES) and the portions of it that the JFACC is tasked to deliver. If the problem the plan is intended to solve is not adequately framed, then the commander responsible for planning (e.g., the JFACC for the JOPPA) should "go back up the chain of command"—even to the level of national leadership—and request that it be further clarified.

Key inputs to this step include higher headquarters planning directives and other strategic guidance, initial staff estimates (if they exist), and JIPOE. JIPOE should be initiated in this step if it has not already been. The value of JIPOE products is directly tied to the intelligence and information needs stated by commanders and their planning staffs. In some cases, JIPOE may require that ISR assets be brought into an AOR long in advance of operations, which requires prior coordination and planning. See JP 2-01.3, *Joint Intelligence Preparation of the Operational Environment*, for thorough guidance on JIPOE.

As a result of this step, the commander and staff should be able to:

- ★ Assemble facts and assumptions about the operation.
- ★ Analyze higher headquarters mission and intent.
- ★ Determine operational limitations.
- ★ Analyze COGs (adversary and friendly) to determine critical requirements and vulnerabilities.
- ★ Determine potential DPs that contribute to affecting the COGs (to the extent possible before detailed planning is conducted).
- ★ Establish specified, implied, and essential tasks.
- ★ Conduct initial force structure analysis.
- ★ Prepare a mission analysis brief and initial staff estimates.
- ★ Publish the commander's planning guidance.

COA Development

A COA consists of the following information: what type of action should occur; why the action is required; who will take the action; and the expected outcomes. A valid COA is one that is:

- ★ **Adequate**—Can accomplish (or appropriately support) the JFC's mission within given commanders' guidance.
- ★ **Feasible**—Can accomplish the mission within the established time, space, and resource limitations.
- ★ **Acceptable (Balanced)**—Should balance cost and risk with the advantage gained and maintained.

- ★ **Distinguishable**—Should be sufficiently different from other COAs.
- ★ **Complete**—Should incorporate objectives, effects, and tasks to be performed; major forces required; concepts for deployment, employment, and sustainment; time estimates for achieving objectives; mission success criteria; and end state. It may also delineate appropriate trigger points for pre-planned branches and sequels.

Normally, strategists and other Airmen should have influenced the JFC's COA selection process. If this is so, both the JFACC's and COMAFFOR's staffs should be well informed to begin mission analysis for required supporting plan(s).

COA Analysis and Wargaming

COA analysis should identify the advantages of each proposed friendly COA on its own merits; COAs are not compared with each other in this step. This analysis should reveal or elaborate upon a number of factors, including (but not limited to):

- ★ DPs (validating them and showing how they are organized into lines of effort).
- ★ Required task organization adjustments.
- ★ Data for use in an appropriate COA comparison and wargaming tools.
- ★ Identification of plan branches and sequels.
- ★ Identification of potential high-value, high-payoff, and JFC time-sensitive targets.
- ★ A risk assessment and potential risk mitigation (including probable opportunity costs).
- ★ COA advantages and disadvantages.
- ★ Recommended CCIRs.
- ★ Determine additional information requirements.

Wargaming provides a means for the commander and staff to analyze COAs in light of the adversary's possible countermoves, improve their understanding of the operational environment, and obtain insights that they may not have otherwise gained. Based on time available, at a minimum, the commander should wargame each COA against the most probable and most dangerous adversary COAs identified through JIPOE. Wargaming is a conscious attempt to consider actions, reactions, and counteractions in order to visualize the flow of an operation. Every effort should be taken to avoid "mirror imaging" the adversary's intentions, capabilities, and decision-making. COA evaluation should be a disciplined and imaginative process based on

JIPOE. Wargaming may also highlight plan, information, or resource shortfalls, generating branch and sequel planning requirements, requests for information, requests for forces, and refinements to COAs, time permitting.

Wargaming is part of operational art, not science. It can be as simple as a table-top discussion or a narrative that describes probable actions and counteractions, as well as the assets and time used. It may be as complex as dedicated computer-aided modeling and simulation.⁴³ If the commander has determined evaluation criteria, he or she should reveal these to the staff as soon as possible. Wargaming may provide a number of potential COA evaluation criteria that the staff may select from during the subsequent COA comparison stage of planning. Such criteria may also help focus the wargaming effort and provide a framework for data collection by the staff, thus aiding both situational understanding and the COA comparison and selection processes that follow wargaming.⁴⁴

Commanders should consider establishing a team dedicated to pursuing the adversary's point of view (commonly referred to as "red teaming"). Such a cell can add substantially to the value of wargaming efforts and can assist ongoing JIPOE if adversary COAs have not yet been analyzed. This "red team" should role-play the adversary commander and staff. The red team, in whole or part, can be delegated to the JFC's JPG or like body to assist the JOPP at the JFC's level. If done properly, this should be a continuous process.

COA Comparison

COA comparison is a process where wargamed COAs are evaluated and compared against a set of criteria established by the staff and commander. This process should be as objective as possible, but this is art, not science, and some degree of subjectivity is often unavoidable. Having a "red cell" examine prospective COAs during and after wargaming may help mitigate subjective elements.

The commander and staff should develop and evaluate a set of important criteria or governing factors against which to evaluate COAs. Risks to forces and risks to mission should always be considered as evaluation criteria. Elements of operational design (e.g., integration, synergy, timing, and tempo) operational limits, and principles of joint operations⁴⁵ are good sources of other potential COA comparison criteria. COAs should be weighed against these criteria, advantages and disadvantages should be considered and efforts made to overcome disadvantages, reviews of feasibility and acceptability should be made, and relative merits should be evaluated. This process should yield a COA that supports the JFC's objectives and:

⁴³ See JP 5-0, Chapter IV, for sample wargaming steps.

⁴⁴ See JP 5-0, Chapter IV, for a detailed discussion of selecting evaluation criteria. Airmen should note, as they review the JP 5-0 discussion, that some techniques mentioned therein, such as using geographical sketches of maneuvers, may not be well suited for conveying the contributions of airpower and thus will have to be modified – or new methods explored – in order to convey the Airman's perspective.

⁴⁵ See JP 3-0, Appendix A.

- ★ Obtains the highest probability of success.
- ★ Mitigates risk to the force and mission to an acceptable level.
- ★ Places the force in the best posture for future operations.
- ★ Provides the flexibility to meet unexpected threats and opportunities.

COA Approval

The staff should determine the best COA to recommend to the commander. The recommendation should take the form of a commander's estimate document or briefing. This document or briefing should include the commander's intent—for the airpower component, the JFC, and US national leadership, including the military and strategic end states. The commander selects a COA or forms an alternate COA based upon staff recommendations and commander's personal estimate, experience, and judgment. Branches and sequels that the staff considers most likely or most dangerous may be reviewed and approved as part of this process as well. The approved COA is then developed into the appropriate plan or order.

Plan or Order Development

Deliberate planning results in plan development (e.g., an OPLAN, contingency plan, or commander's estimate); CAP typically leads to OPORD development; and the JOPPA yields a JAOP, often a long-range PATS, and possibly other products. During plan or order development the commander and staff in collaboration with subordinate and collaborating organizations, expand the approved COA into a detailed plan. The detailed plan:

- ★ States (or restates) the commander's mission and intent.
- ★ Describes the central approach the commander intends to take to accomplish the mission.
- ★ Provides for the application, integration, sequencing, and synchronization of forces and capabilities in time, space, and purpose (including interagency, multinational, and NGOs).
- ★ Describes when, where, and under what conditions any supported commander intends to conduct or refuse combat, as required.
- ★ Focuses on adversary and friendly COGs and their associated critical vulnerabilities.
- ★ Avoids discernable patterns and makes full use of ambiguity and deception.

- ★ Provides for controlling the tempo of operations.
- ★ Visualizes the campaign or operation in terms of the forces and functions involved.
- ★ Relates the assigned operational objectives, identified tactical objectives and desired tactical effects to the JFC's campaign plan and to other organizations' schemes as necessary; this enables the subsequent development of detailed tactical tasks and schemes of maneuver, and support requests to supporting commanders.

As part of the process, the AOC staff may develop a PATS. This plan is valuable to the JFC, JFACC, and other component commanders, enabling them to understand the weight of effort required to accomplish objectives by phase. This information flows from the JOPPA and should be recorded in a standardized plan format.

AN EFFECTS-BASED APPROACH TO PLANNING

EBAO informs every aspect of how the Air Force designs, plans, executes, assesses, and adapts operations. This section elaborates on the definitions of several key concepts and terms used in EBAO. There is no single "effects-based planning" methodology or process. Rather, understanding the principles of an effects-based *approach* to operations should yield certain insights and enhance comprehension of many general planning concepts.

"Effect" refers to "the physical or behavioral state of a system that results from an action, a set of actions, or another effect."⁴⁶ Effects are elements of a causal chain that consists of tasks, actions, effects, objectives, and the end state(s), along with the causal linkages that conceptually join them to each other. Actions are the results of assigned tasks. Actions produce specific direct effects, those effects produce other, indirect effects that **influence** the adversary and other actors within the operational environment, and this chain of cause and effect creates a mechanism through which objectives and ultimately the end state are achieved. The end state is a set of conditions that needs to be achieved to resolve a situation or conflict on satisfactory terms, as defined by appropriate authority.⁴⁷

Objectives at one level may be seen as effects at other, higher levels. **Effects, however, comprise all of the results of actions, whether desired or undesired, intended or unintended, immediate or ultimate.** From a military planning perspective, operations should be planned "from the top down," starting with the desired MES, determining subordinate objectives needed to bring about that end state, then deriving the effects and causal linkages needed to accomplish the objectives, and

⁴⁶ JP 3-0, definition 1.

⁴⁷ Note: This description is intended only to clarify the concept of end state, not to supplant the existing doctrinal definition in JP 3-0.

finally determining *the actions and resources necessary to create those effects*. “Tasks” refer to actions that have been assigned to someone to be performed. Tasks are assigned to accomplish an action or actions. The end state should explain the operation’s ultimate purpose – *why* one wishes to influence actors in the operational environment. The objectives and effects should explain *what* forms of influence one seeks to attain. The task and their resultant actions should explain *how* one is going to achieve desired forms of influence.

Perspective is important here. What may seem like an action to the operational-level warfighter may seem like an objective to warfighters at tactical units. Conversely, what may be an objective for a component commander may seem like an action to the President of the United States. This is illustrated in Figure 4.3.

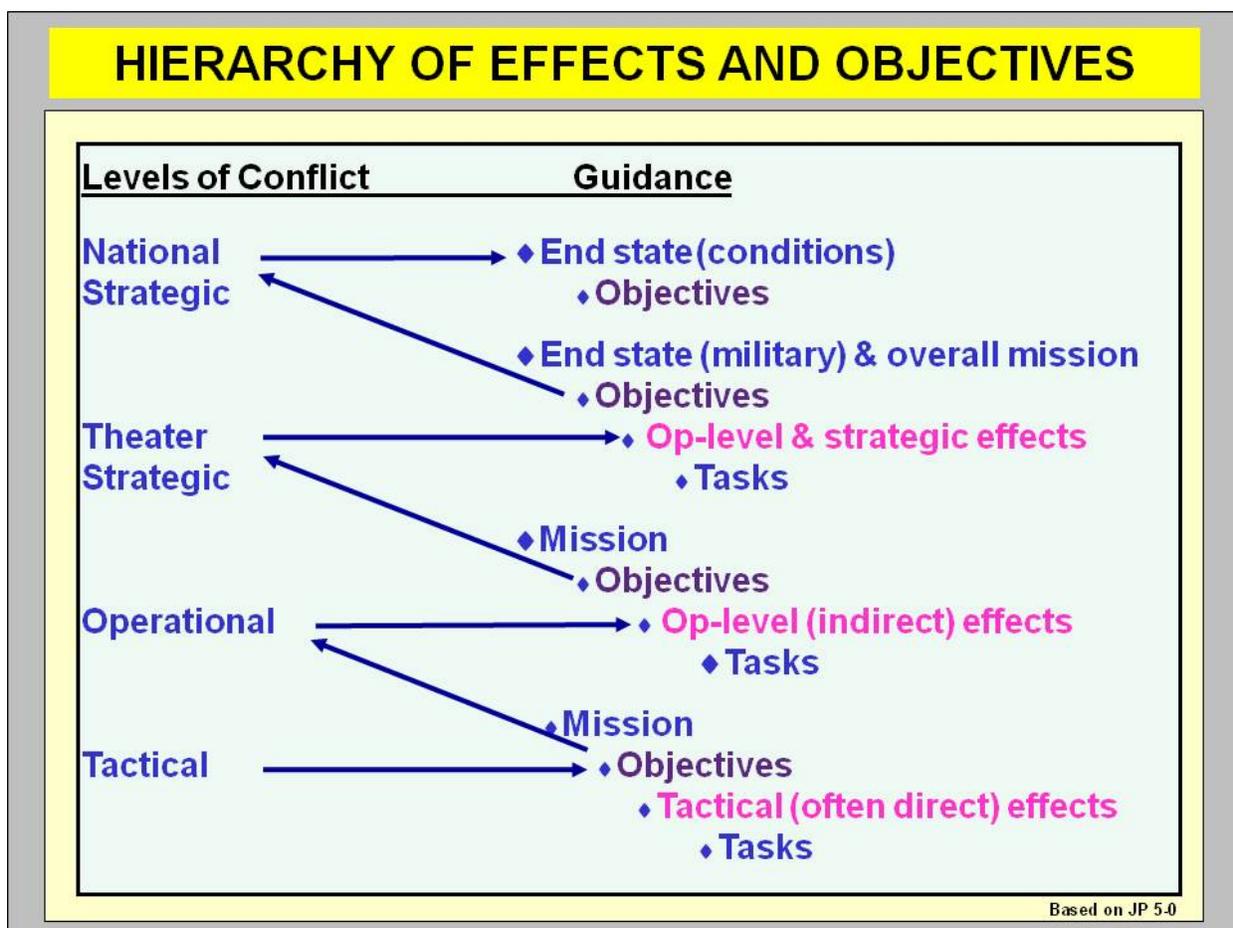


Figure 4.3. Hierarchy of Effects and Objectives

Planners should maintain awareness of the “big picture”—how the air component’s effects and objectives support the JFC’s effects and objectives. This is especially important during execution, where it is easy to get caught up in the details of daily processes and lose sight of the end state. For example, “gain and maintain air superiority to X degree in and over area Y for Z period” may be an **objective** for the JFACC, but will likely be one of the **effects** the JFC directs the JFACC to deliver in

support of the notional objective “defeat enemy A’s offensive into region B.” In turn, the JFACC’s **objective** may seem like an **action** to the President, who has given the JFC the desired effect of “defeating A’s offensive” in order to accomplish his national strategic objective of restoring stability and maintaining political order in the applicable global region.

For the purposes of this discussion, it is the operational-level warfighter’s perspective that matters—the perspective of both the JFC and the COMAFFOR (acting as JFACC), as well as strategists and planners in the AOC. From this perspective, actions are individual sorties, missions, or accomplished tactical tasks. Objectives are the air component’s tactical and operational-level objectives. Effects are the consequences of tasks, which link tasks to the objectives. From this perspective, a bomb dropped on a particular target is an *action* and the efforts designed to get the bomb there are the accompanying tactical *task*. The effects range from direct (the bomb detonates on target and causes the intended damage) through indirect at varying levels (the damage may disable an enemy air defense operations network, for instance, which helps gain air superiority), to objectives (“gain and maintain air superiority to X degree in and over region Y for Z period”). This “matrixed” interrelationship should help maintain unity of effort throughout the joint operation.

Actions

An action is performance of an activity to create desired effects. In general, there are two broad categories of actions that are relevant at the tactical and operational levels: Kinetic and non-kinetic. Examples of kinetic actions include the use of explosive munitions and directed energy weapons. Examples of non-kinetic actions include use of cyberspace weapons, an IO leaflet drop to encourage enemy surrender, and employment of electronic warfare capabilities.

Types of Effects

There are **four broad categories of effects**, which often overlap. These categories are: ***direct***, ***indirect***, ***intended***, and ***unintended***. Within these categories, especially within the realm of indirect effects, there are many subcategories. A few types (but by no means all) are highlighted in the following section because of their doctrinal implications. Understanding these types of effects is vital to an effects-based approach to war. The relationship among these four types of effects and the objectives, a special subset of intended indirect effects, is shown in Figure 4.4.

Direct Effects

Direct effects are the results of action with no intervening effect or mechanism between act and outcome. They are also known as “first-order effects.” In most cases they are physical, often immediate, and easy to recognize. They can usually be assessed empirically and can often be meaningfully quantified.

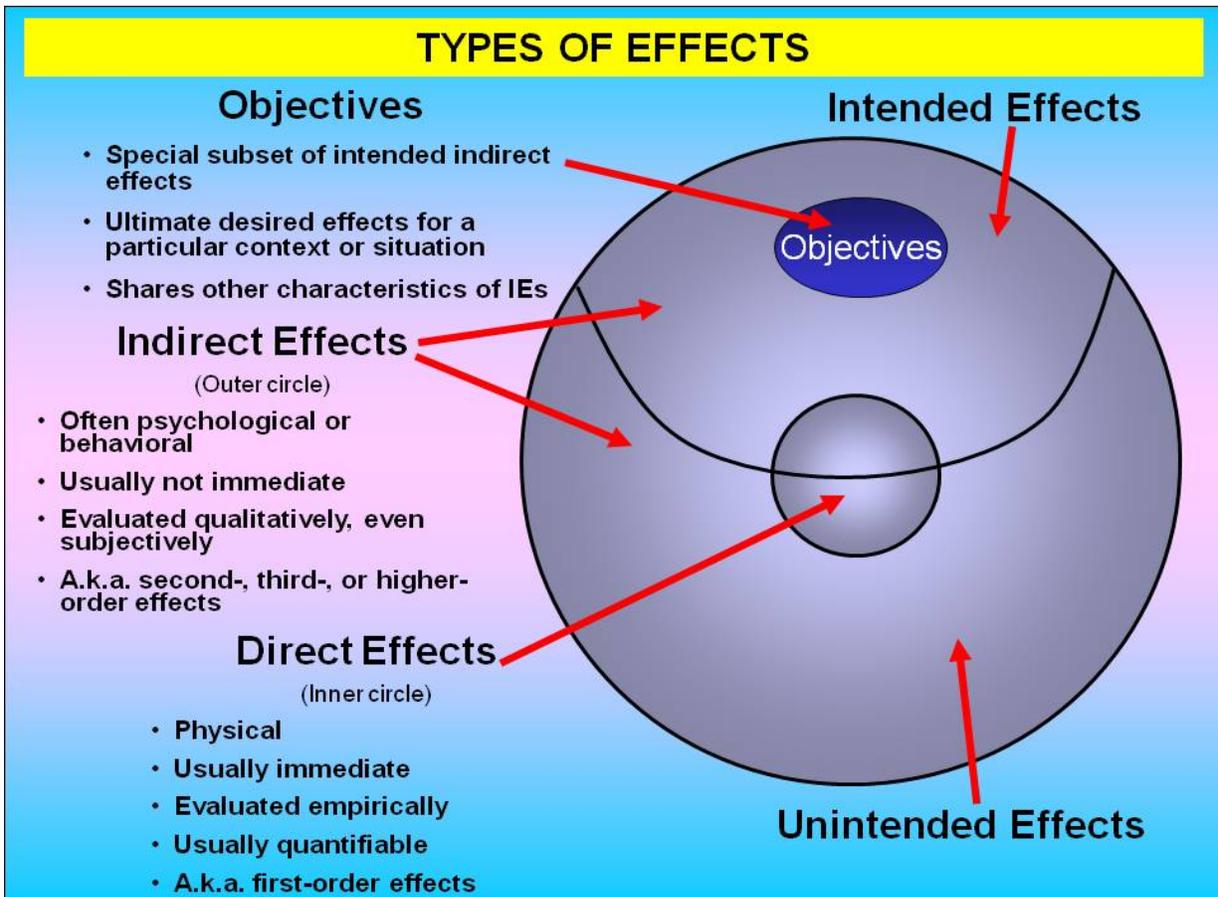


Figure 4.4. Types of Effects

Indirect Effects

Direct effects trigger additional outcomes—intermediate effects or mechanisms that produce additional outcomes or results. These are indirect effects, sometimes also known as “second-,” “third-,” or “higher-order effects.” Indirect effects can be categorized many ways, including physical, psychological, and behavioral. They may also occur in a cumulative or cascading manner, can be imposed sequentially or in parallel, and may be intended or unintended and lethal or non-lethal. They are usually displaced from direct effects in time and/or space, and often can be hard to quantify or measure empirically. They are often assessed or evaluated in qualitative terms. Generally, the less direct the effect—the further removed it is in the causal chain or in time from the initial action—the harder it is to predict before the fact and measure after. Historically, it has proven extremely difficult to predict beyond third-order effects with any degree of certainty.

Direct and Indirect Effects

A practical example of direct and indirect effects might involve a bomb hitting an enemy battlefield command vehicle.

The destruction of the vehicle and its crew by the bomb is the **direct effect** of the tactical action or task.

A part of the direct effect in this case is loss of the command vehicle's C2 equipment, leading to the indirect effect of degrading the unit's cohesiveness. The vehicle might also have represented a portion of the unit's physical combat capability, which is also degraded by its loss. Loss of so precise a target may help condition enemy troops to abandon their heavy equipment for fear of being killed near them, further degrading combat capability. Neutralization or degradation of the unit may be a tactical level objective. Loss of the vehicle and its crew may also degrade the unit's ability to communicate and function as part of a larger unit, so the capability and cohesion of larger echelons may be affected. If the vehicle contained a commander, this unit's ability to function will probably be further degraded, although if the commander was ineffective and his replacement talented, this may represent a net gain in enemy effectiveness, an unintended effect. If a senior commander was killed in the vehicle, this may have operational-level consequences, rippling down to all the enemy's tactical units and facilitating accomplishment of friendly operational objectives like defeat of the enemy army. If the senior commander was also an enemy national leader, this tactical action may have profound strategic consequences, affecting many enemy systems, affecting all instruments of the enemy's power, and greatly hastening achievement of friendly strategic objectives and the end state. All of these outcomes are **indirect effects**.

Indirect effects reflect that **the principal purpose of military operations is to influence the behavior of the adversary and/or other actors** in the operational environment. Even pure attrition does not seek a decrease in the size of an enemy force for its own sake. The real purpose of attrition is a weakening of resistance and resolve within the enemy force and its commanders, seeking to incline them toward ceasing resistance altogether, causing the attrited unit(s) to become combat ineffective (as through dissolution as a fighting force or surrender). Similarly, an enemy force that is being interdicted will likely not be destroyed outright, but *persuaded* that further movement toward its objective(s) will render it combat ineffective.

It should be clear that military operations consisting of non-kinetic action that lead to nonlethal effects, are almost purely persuasive, seeking influence without combat. For example, the Berlin Airlift, a very large, purely military effort, influenced Soviet behavior by using air mobility forces to resupply West Berlin, leading to the indirect effects of preventing starvation and increasing West Berlin's resolve. The airlift had a further indirect effect of demonstrating to the Soviet Union and its allies that West Berlin could be sustained without having to resort to combat, leading to the desired end state of a free West Berlin secured against Soviet aggression. All of these desired results involved influencing adversary behavior without firing a shot.

Objectives are the ultimate desired effects in a particular context or situation—*what* an actor desires to accomplish in a given set of circumstances. **Objectives should be clearly defined, decisive, attainable, and measurable.** Objectives exist at all levels, from national-strategic down to tactical, and all levels should be logically tied to each other and to the overall end state. All military operations should be directed toward achieving them. It can be beneficial to write objectives as if they were end state conditions, not tasks, since they are conditions required to meet the end state. Frequently, however, tactical objectives tend to be written in terms of tasks. Objectives are a special subset of indirect intended effects and share many of the characteristics of indirect effects, but planners and targeteers should not lose sight of the fact that **effects, in most planning and targeting contexts, refers to outcomes subordinate to and supporting achievement of the objectives.** Objectives are always planned and predicted. Even if a tactical-level “objective” is expressed in terms of direct physical damage (“destroy the enemy command vehicle,” or “attrit enemy armor by fifty percent”), the effect being sought is really indirect (degradation of enemy command function and cohesion in the first case; degradation of enemy combat power and ability to act in the second).

The desired outcome serves as the basis for using an effects-based approach. Effects-based planning starts with the end state and objectives and works to determine what actions and intermediate effects are needed to attain them. **Effects-based design and planning logically tie effects at all levels together and integrate the end state, objectives, effects, and actions into a logical, coherent whole.** An effects-based plan should be able to explicitly trace the reasons for every tactical action through the hierarchy of tactical effects and objectives, operational-level effects and objectives, to national and strategic ends. Actions that do not support the commander's intended structure of effects and objectives represent a waste of resources.

During planning, the end state and objectives should be created *before* subordinate effects and actions are identified. Planning based on the resources available to carry out a “customary” list of actions leads to “input-based” planning, which focuses on *how* to attack and answers the question, “given my resources, what targets *can* I attack?” It provides no guidance on *why* targets should be struck, or how operations support overarching objectives. Resources will always be limited and effects-based planning cannot take place in a vacuum devoid of resource

considerations. Resource considerations may constrain the joint force to follow certain COAs or restrain it from following others. Planning without consideration of resource limitations might lead to plans that are too resource-intensive to execute. Resources, however, should not be the factor that drives design and planning—the end state and objectives should. If the desired end state cannot be reached with given resources, then commanders should appeal for resources that will enable them to reach it, or inform their leadership that the objectives and end state are not realistic as stated.

Cumulative and Cascading Effects. Indirect effects can be achieved in a cumulative or cascading manner. Effects that result from the aggregation of many effects are said to be cumulative. These effects typically flow from lower to higher levels of employment.

Some indirect effects ripple through an adversary system, usually affecting other systems. These are called cascading effects. Typically, they flow from higher to lower levels and are the result of affecting nodes that are critical to many related systems or sub-systems.

As a practical matter, some of the most desirable effects have both cumulative and cascading aspects. The point at which a military unit “fails” and ceases to act as a coherent fighting force is a common example. The collapse

Cumulative and Cascading Effects

In the C2 vehicle example, the lessening of the enemy unit’s combat power through loss of the vehicle would be part of the **cumulative effects** of attack upon the unit, as would the unit’s eventual collapse through attrition of many of its vehicles and personnel. The effects of the loss of the combat commander in the vehicle on subordinate and associated units would be a **cascading effect**.

In the case of an integrated air defense system (IADS), air superiority may be achieved through the accumulation of effects against the IADS’ components and achieving it may cascade into many other desirable effects as it frees airpower resources to perform other missions and give other components of the joint force freedom of action.

An electrical network, as an integrated complex system, demonstrates a different aspect of cascading effects. Bombing many generator halls, substations, and power distribution junctions can cumulatively lead to the desired effect of widespread system failure. However, so can targeting a few critical nodes within the network, then allowing internal system stress to cause successive cascading system-wide failure. Nature has inadvertently caused such effects with US power grids several times and Coalition forces were able to achieve them early in Operation DESERT STORM by attacking a few key Iraqi power plants and distribution nodes.

itself may be triggered by an accumulation of losses (although the precise point at which collapse occurs is often difficult to predict) and represents a cumulative effect. The unit's collapse, however, may foster significant changes that spread through constituent elements, subordinate units, and other connected or related systems. These are cascading changes.

Cascading effects are generally preferable to cumulative, if it is possible to create them. Cascading effects may accomplish desired ends more effectively, since removal of critical nodes may ensure more thorough collapse or more complete neutralization than might a cumulative, attritional approach. They may also achieve ends more efficiently, requiring fewer resources to achieve equivalent effects, thus freeing them for other uses. Some systems do not lend themselves to this type of approach and it may not always be possible to identify or target key nodes, but targeting efforts should strive to do so whenever possible.

Other Types of Indirect Effects: Physical, Psychological, Behavioral, and Functional. Physical effects are the results of actions or effects that physically alter an object or system. Most physical effects are direct, but some may be indirect. Often, unintended or undesirable physical effects, like "collateral damage" can be major concerns in an operation.

Psychological effects are the results of actions or effects that influence the emotions, motives, and reasoning of individuals, groups, organizations, and governments. These may result in changes in the outward behavior of these actors, which are known as behavioral. "Behavioral effects" commonly refers to effects on the behavior of living constituents of systems. When the living components of a system act in concert to produce a given function (as when those manning an IADS operate that system), intended behavioral effects may lead to changes in the behavior of the system as a whole. These changes are known as "functional effects." While it is seldom possible to measure psychological effects in living systems directly, behavioral results (and related functional results) can be measured. Nonetheless, the intermediate psychological states leading to behaviors can be important to understanding causal mechanisms during planning. In most cases, targeting is intended to produce some change in enemy behavior. Unless the enemy is destroyed outright, all such changes entail a change in the enemy's emotions, motivations, or reasoning. Thus, **there is a psychological component to almost every set of effects in living systems and this component is often among the most important in terms of achieving objectives**, especially at the operational and strategic levels. Operational level objectives have historically entailed defeat of enemy forces, and defeat inevitably involves a psychological component. There are very few instances in history where an enemy, however thoroughly beaten, was completely denied means of resistance. Ultimately, collapse entails a series of choices framed by emotion, motivation, and reason. The same is true of the resistance of an enemy nation or system as a whole at the strategic level. Here, the psychological component is even stronger. In combat or coercive operations, defeat is an event that occurs in the mind of the adversary, who chooses to end resistance or aggression and otherwise act as we desire. All air,

space, and cyberspace efforts should contribute to this outcome. Good strategy requires realizing this and tailoring effects so as to produce the maximum psychological impact upon the enemy. A good example of this is Japan at the end of WW II. The atomic bombings of Japanese cities were intended to demonstrate that the Japanese homeland could be crippled and devastated without invasion—in fact, with relative impunity. The effects of psychological dislocation that the weapons imposed far outweighed their material destructiveness. This psychological impact aided greatly in coercing Japanese surrender, even though the Japanese home islands were still capable of robust defense.

Sequential and Parallel Effects. Sequential, or serial, effects are the results of actions or effects that are imposed one after another. In general, if commanders seek to cause adversary system failure, *it is often better to impose effects in parallel rather than sequentially. Parallel effects have greater potential for causing system-wide failures by placing stress on the enemy system in a manner that overwhelms its capacity to adapt.* This is common sense—everyone is better at handling problems coming one after another from a single source than from many different sources or directions simultaneously. Some of the advantages conferred by parallel attack are purely physical, but many are psychological. Simultaneous stress from many sources is a major cause of psychological strain or breakdown and thus effects-based targeting should attempt to place the enemy under maximum psychological stress at all times through parallel efforts. Even if one is seeking predominantly physical effects, the psychological strain may act in synergy with the physical to have more impact than the physical effects would on their own. Another advantage of parallel operations is that they can take less time to achieve desired effects and objectives. If shortage of time is an overriding concern in a campaign, planners and targeteers should recommend a parallel approach.

Parallel effects come at a cost, however: they are almost always harder to impose, require more of all resources (except time), are more complex, and should be planned more thoroughly, especially in terms of integration and synchronization of operations. Further, there may be reasons effects cannot or should not be imposed in parallel. In some cases, there may not be sufficient resources or capabilities to impose them in this manner. This was the case in the Combined Bomber Offensive during WW II. There were not enough bombers to attack German systems in parallel until very late in the war, when parallel attack on the transportation and fuel industries became possible (and were effective). In other

Sequential and Parallel Effects

In the case of an IADS, an example of **sequential effects** might be a counterair operation that first takes down early warning radars, then sector operation centers, then airfields and enemy aircraft, and finally now-autonomous enemy missile sites. **Parallel effects** might be the same operation conducted against all these nodes simultaneously in order to place greater stress on the system and complicate the enemy's adaptation requirements.

cases, a sequential approach is necessary because events need to happen in a certain order to enable other effects to take place and ensure success. Some degree of air superiority is almost always required prior to commencing major land or maritime operations.

For example, in the opening minutes of Operation DESERT STORM, certain key early warning nodes were targeted in order to facilitate penetration of Baghdad's air defenses by other coalition aircraft. This one sequential strike helped guarantee the success of the parallel efforts that followed. In other cases, political considerations may so restrain operations as to make a parallel approach infeasible or unacceptable.

Intended and Unintended Effects

Intended effects are the desired, planned, and predicted outcomes of an action or set of actions. They can be direct or indirect. They should always represent a net gain in terms of accomplishing objectives or the end state. Unintended effects are outcomes of an action that are not part of the original intent. These effects may be undesired or desired, presenting opportunities for exploitation. Almost all actions produce some unintended effects. These can be direct, but are usually indirect. If unplanned, they can also be desirable or undesirable from the friendly point of view, leading to outcomes that help or hinder achievement of friendly objectives. The case of the enemy commander being replaced by a more capable officer is an illustration of an undesired unintended effect. Unwanted civilian injuries or collateral damage to civilian property are examples of unintended effects that are planned, or for which risk is accepted, but which are undesired. Collateral civilian damage, of course, is a major concern for commanders today.

There is another aspect of unintended effects that is easy to overlook in planning. Even successful operations carry a cost in terms of lost opportunities. For example, destroying certain C2 or communications nodes in order to degrade enemy cohesion can remove valuable sources of friendly intelligence, or prevent transmission of surrender guidance by the adversary government. Likewise, destroying transportation nodes like bridges in order to impede enemy movement may interfere with future friendly schemes of maneuver or recovery efforts accompanying conflict resolution. **Effective planning should account for these "opportunity costs." Effective air, space, and cyberspace planning should also account for other components' schemes of maneuver, so that effects created by the airpower component are not undesired effects for the other components.** EBAO may often suggest alternatives to outright destruction that can create desired effects without removing future opportunities for exploitation or negatively affect the end state. For instance, in strategic attacks against enemy electrical power, carried out to cripple conflict-sustaining resources and disrupt national leadership functions, planners can use non-destructive weapons to bring down power for a given period of time, or can destroy only a few critical nodes, in order to avoid wholesale destruction of infrastructure that could impede later stabilization efforts. In other cases, good planning can suggest opportunities for exploitation. In Operation DESERT STORM,

planners deliberately took down bridges in Iraq that carried fiber-optic trunks in order to force Iraqi leadership to resort to more exploitable, radio-based communications, an effort that impeded later recovery efforts. This requires the integrated efforts of the entire joint, multinational, and multiagency team.

Lines of Effort

It is very helpful during design and planning to have a tool that depicts the relationship of effects to DPs, COGs, objectives, and other events and concepts, using the logic of purpose–cause and effect. Such a tool is usually arranged in proper time sequence to help commanders and strategists visualize how operations evolve and interact over time. LOEs provide just such a tool.

Commanders and strategists may use LOEs to link multiple actions and effects on nodes and DPs with COGs and objectives to enhance effects-based planning efforts. LOEs help visualize COAs, laying them out in time sequence and helping identify where certain effects should be created and where DPs are located in time relative to other events. LOEs may be particularly useful when working with interagency and multinational partners, helping commanders and strategists visualize how military means can support all instruments of national and multinational power.⁴⁸ The aggregate of the effects of all IOPs acting together form a series of LOEs leading directly to the strategic end state.

There is usually a discrete set of conditions that the military will be tasked to deliver. In some cases, a military portion of the end state may actually be a required part of the strategic end state—i.e., the military directly delivers a condition of the strategic end state. In many cases, however, LOEs employing other IOPs are required to complete the strategic condition that military action has enabled or partially achieved.

Each LOE can be broken down into constituent objectives, DPs, effects, and actions or tasks, as illustrated in Figure 4.5.⁴⁹

⁴⁸ LOEs are similar to physical “lines of operation,” but are logical lines that connect actions on nodes and/or decisive points related in time and purpose with an objective(s) (JP 5-0). There are also physical lines of operation: physical lines that define the interior or exterior orientation of a force in relation to the enemy or that connects actions on nodes and/or decisive points related in time and space to an objective(s) (JP 5-0).

⁴⁹ Adapted from Reilly, *Operational Design*.

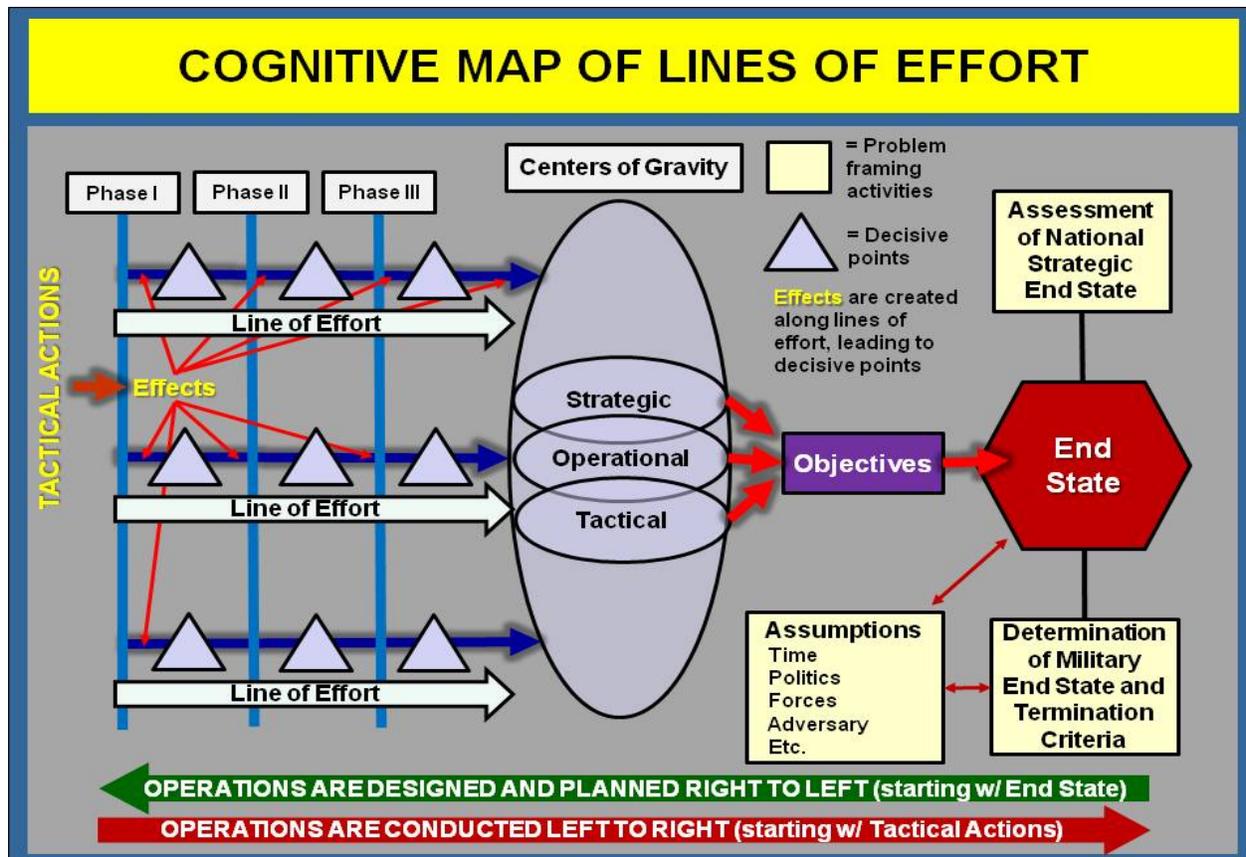


Figure 4.5. Cognitive Map of Lines of Effort

In most cases, single LOEs are connected to other LOEs within the operational environment. The interconnectivity between LOEs can be used to show key decision points that connect the CONOPS with branches and sequels. Potential DPs should be identified during mission analysis, if possible. The arrangement of operations involves a detailed consideration of how LOEs align with friendly and adversary COGs and the vertical and horizontal relationship of DPs between different LOEs. All LOEs should contribute to accomplishing objectives. Objectives that contribute to accomplishment of subsequent objectives along the same LOE *and* contribute to accomplishment of objectives in other LOEs may define DPs.

Each LOE can be refined further by including tactical-level objectives, effects, and, finally, individual tactical tasks. In theory, given sufficiently sophisticated planning tools, each organization's tasks could be shown as LOEs. Regardless of whether each task is so depicted, however, there is merit in each tasked organization understanding how their assigned task contributes to the overall end state. This helps keep effects-based principles in the minds of all involved in the process and can aid in understanding the cross-domain effects of given actions.

SERVICE COMPONENT PLANNING

There are two essential types of Service component planning that concern Air Force commanders and their staffs. The first is the ongoing planning performed in support of CCDRs' peacetime theater or functional strategies. Air Force strategists and planners develop component campaign support plans (CSP) and country support plans that implement the COMAFFOR's steady-state theater strategy, supporting both CCDR and Air Force strategy and guidance. (See Appendix B for further detail on this type of planning.) The second type is Service component planning performed in support of the JFC and the JFACC during a contingency.

Once a COA is selected through the JOPP for a particular contingency, the JFC normally develops an OPLAN or OPORD that describes the COA and tasks supporting commanders to implement the approved COA effectively. The primary purpose of the OPLAN or OPORD is to provide guidance and direction to subordinate units. The COMAFFOR develops Service component aspects of the COA, determines force and resource requirements, and builds or contributes to TPFDDs to implement the deployment and sustainment aspects of the COA. This effort should go hand-in-hand with employment concepts and COAs being developed by the JFACC portion of the COMAFFOR/JFACC's staff. Air Force Service component planners should also deploy to the JFC's staff to provide expertise during their COA development process, in order to help shape the COA from a Service component perspective. The Service component command staff also works within Service channels to identify combat support forces, critical materiel, sustaining supplies, filler and replacement personnel, and Reserve Component asset availability.

These products should then be cross-referenced by the JFC staff to ensure integration. Simultaneously and in coordination, the COMAFFOR's staff, usually led by the A3 (Director of Operations) or A5 (Director of Plans), should develop an Air Force component supporting OPLAN or OPORD to capture that information pertinent to Air Force forces deploying to and employing within the particular operational area. There may be rare instances when the COMAFFOR is not the JFACC, or no JFACC is appointed and some air component functional planning responsibilities are retained by the JFC's staff. See AFDD 1 and JP 3-30 for details on these situations.

The Service component supporting OPLAN or OPORD should be comprehensive enough to cover all combat support aspects of how the Air Force component should be employed. The Service OPLAN or OPORD may overlap the JFACC's JAOP—the sole employment plan for air component forces—in some respects, but this may be necessary to give appropriate guidance to the COMAFFOR's staff where their duties differ from those of the JFACC's staff. Deliberate planning is normally conducted in anticipation of future events, CAP is based on circumstances that exist at the time planning occurs. CAP can use plans developed in deliberate planning for a similar contingency. However, in a crisis, situational awareness is continuously fed by the latest ISR and operations reports. This will typically result in

changes to the deliberate planning products for many reasons that include the resolution of planning assumptions to facts based on current information.

This OPORD should include a basic plan plus appropriate annexes and appendices. Ownership of the annexes and appendices is divided amongst the COMAFFOR's staff, and, once developed and approved, should be made available to all Air Force units within the air expeditionary task force (AETF), as well as supporting component commands.

CHAPTER FIVE

EXECUTING OPERATIONS



Maneuver [the] adversary beyond his moral-mental-physical intentions nor focus his efforts to cope with the unfolding strategic design or related decisive strokes as they...overwhelm him.

- Col John Boyd
A Discourse on Winning and Losing

Many Air Force operations are executed by means of a tasking cycle. The cycle is used with some modifications for tasking operations in the air, space, and cyberspace and is the heart of the Air Force battle rhythm. Once execution begins, the commander continues to guide and influence operations through the AOD (and, in some cases, equivalent space and cyberspace operations directives).

THE TASKING CYCLE

The tasking cycle creates a daily articulation of the overall airpower strategy and planning efforts. The tasking cycle is the means Airmen use to accomplish deliberate and dynamic targeting, among other requirements.⁵⁰ The following discussion touches on targeting only as it relates to the tasking cycle and other aspects of an ongoing rhythm of operations. Conceptually, the tasking cycle—its people, processes, and products—forms the connecting link that transitions most airpower planning from the operational to the tactical level.

The tasking cycle develops the products needed to build and execute an ATO and related products, and accomplish assessment. Although it is presented below as six separate, sequential stages, in reality **the tasking process is bi-directional, iterative, multidimensional, and sometimes executed in parallel**. It is built on a foundation based on thorough JIPOE. The cycle typically consists of the following stages performed at various levels of command (illustrated in Figure 5.1):

- ★ Objectives, effects, and guidance.
- ★ Target development.
- ★ Weaponing and allocation.
- ★ ATO production and dissemination.

⁵⁰ For further details on the targeting process, see AFDD 3-60, *Targeting*, and JP 3-60, *Joint Targeting*.

★ Execution planning and force execution.

★ Assessment.

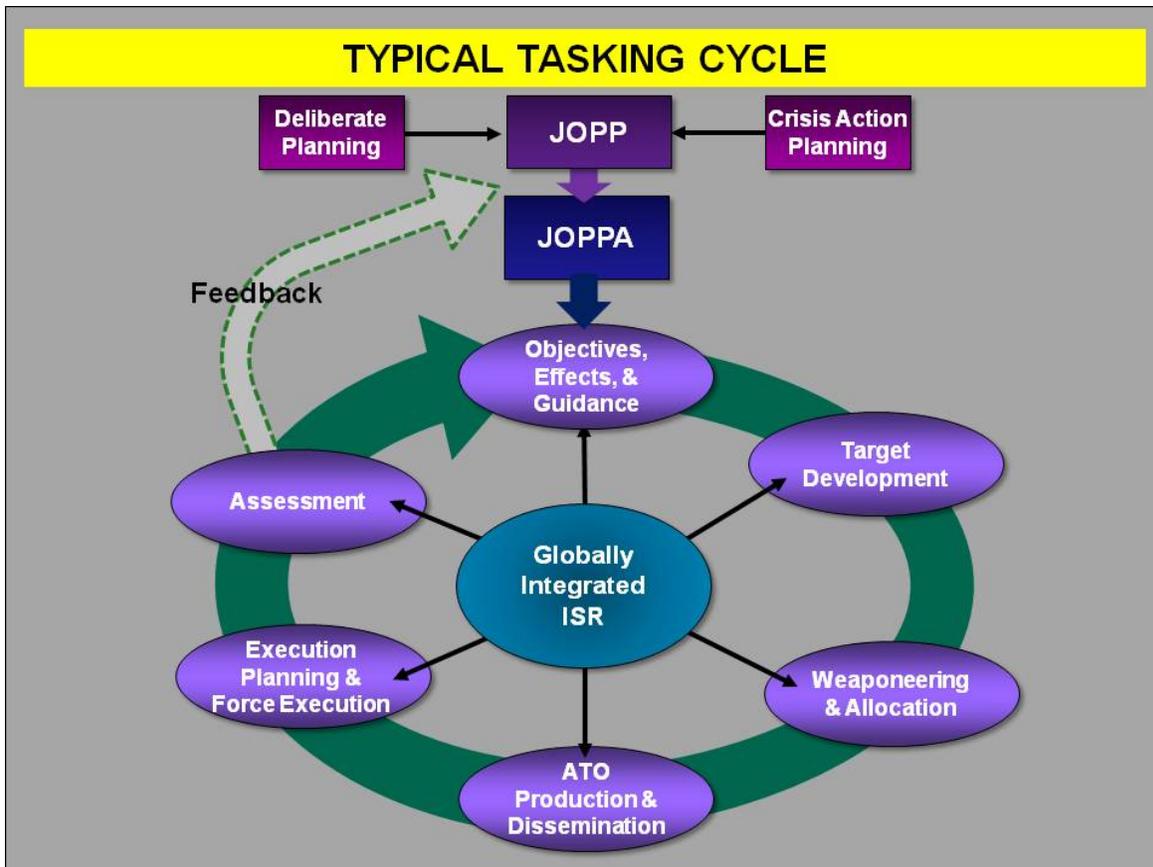


Figure 5.1. Typical Tasking Cycle

*Targeting and ATO production are essential to the tasking cycle. The tasking cycle encompasses the entire process of taking commanders' intent and guidance, determining where to apply force or other actions to fulfill that intent; matching available capabilities and forces with targets (integrating this effort with the ongoing targeting cycle); putting this information into an integrated, synchronized, and coordinated order; distributing that order to all users; monitoring execution of the order to adapt to changes in the operational environment; and assessing the results of that execution. The cycle is built around finite time periods that are required to plan, integrate and coordinate, prepare for, conduct, and assess operations in air, space, and cyberspace. These time periods may vary from theater to theater and much targeting effort may not be bound specifically to the cycle's timeframe, but *the tasking cycle and its constituent processes drive the AOC's battle rhythm and thus help determine deadlines and milestones for related processes, including targeting.**

A principal purpose of the tasking cycle is to produce orders and supporting documentation that places a flexible array of capabilities in a position to create desired effects in support of joint force objectives. This cycle is driven by the tyranny of time

and distance. For example, it takes time for ground crew to prepare aircraft for flight, for aircrew to plan missions, and for those crews to fly to the immediate area of operations from distant airfields. Likewise, commanders should have enough visibility on future operations to ensure sufficient assets and crews are available to prepare for and perform tasked missions. These requirements drive the execution of a periodic, repeatable tasking process that allows commanders to plan for upcoming operations. The ATO (usually 24 hours in duration) and the process that develops it (usually 44-96 hours in duration) are a direct consequence of these physical constraints.

The ATO articulates tasking for joint air, space, and cyberspace operations (unless there are separate space and cyberspace tasking orders) for a specific period of time, normally 24 hours. Detailed planning generally begins 72 hours prior to the start of execution to properly assess the progress of operations, anticipate enemy actions, make needed adjustments to strategy, and enable integration of all components' requirements. The actual length of the tasking cycle may vary from theater to theater. Length should be based upon JFC guidance, COMAFFOR direction, and theater needs. The length should be specified in theater standard operating procedures or other directives. If the length is modified for a particular contingency, this should be specified in JFC's OPLAN or OPORD, or in the JAOP. The key to both the flexibility and versatility of the tasking process (and both deliberate and dynamic targeting and collection) is a shared understanding among the functional components of anticipated operations in all domains during the period the relevant orders and directives cover. Misperceptions may arise because other components may not have visibility on the wide variety of missions tasked to the COMAFFOR in support of the JFC's objectives and because air, space, and cyberspace assets are often tasked to simultaneously conduct missions supporting overlapping operational phases. This shared understanding is largely accomplished by ensuring component liaisons are properly positioned during planning and execution.⁵¹

In contrast to the misperception that tasking requests must be provided to the AOC 72-96 hours in advance to allow targets to be struck by air assets, targets can actually be struck in minutes from when information is made available as part of the dynamic targeting process. Dynamic targeting takes place during the execution planning and force execution stage of the tasking cycle, which commonly corresponds to the mission planning and execution stage of the joint targeting process. Dynamic targeting utilizes the same basic six steps that apply to all targeting: Find, fix, track, target, engage, and assess (often referred to as F2T2EA), but it occurs in a much more compressed timeline. In dynamic targeting, F2T2EA provides a proven method of directing appropriate action against targets that are in some nature fleeting, emerging, or otherwise "time-sensitive." They require quick transition from receipt of intelligence ("trigger events"), through targeting solution, to action against the target.⁵² Additionally, ISR assets can collect against *ad hoc* targets via the dynamic collection process

⁵¹ See AFTTP 3-3.AOC for descriptions of the AOC's other Service and functional component liaisons.

⁵² See AFDD 3-60, *Targeting*, and JP 3-60, *Joint Targeting*, for additional information on Deliberate and Dynamic Targeting, and their relation to the larger context of the tasking cycle.

through coordination with the senior intelligence duty officer and the ISR Division in the AOC.

The net result of the tasking cycle is that there are usually at least five ATOs in various stages of progress at any one time(illustrated in Figure 5.2).

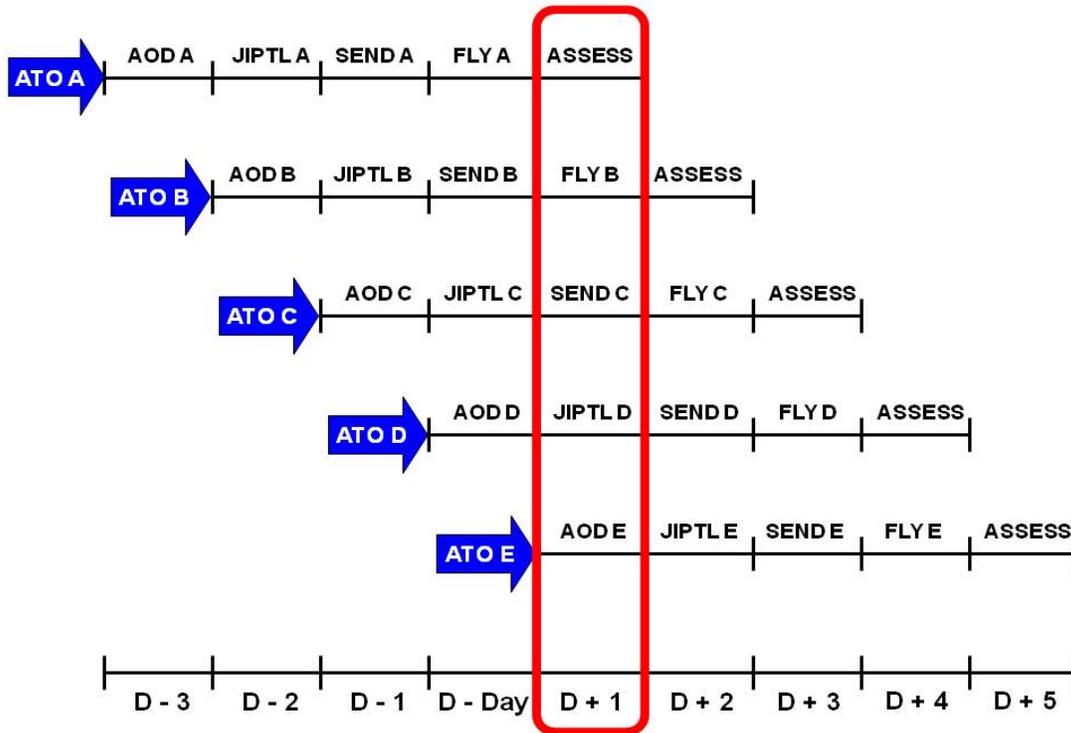


Figure 5.2. Notional AOC Battle Rhythm with Multiple ATOs

- ✦ At least one ATO undergoing assessment at various levels—Note: due to time lags in gathering and interpreting data from multiple sources, assessment of a given ATO usually occurs over many days.
- ✦ One currently being executed.
- ✦ One in production.
- ✦ One in detailed planning (target development and weaponeering).
- ✦ One in the strategy development (objectives and guidance) stage.

Some assets may not operate within the established cycle. These include most space assets, which are tasked via the space tasking order, although some theater-specific space operations will probably be included in the daily ATO for the sake of situational awareness/understanding, integration, and synchronization. Special operations most often operate within the dynamic targeting process. Many IO,

cyberspace, and intertheater air mobility assets operate within a different cycle as well, and it is critical for AOC planners to include SOF, IO, cyberspace, and mobility personnel who can assist with targeting and tasking these capabilities. In large operations, the existence of differing planning cycles among components can lead to increased complexity in the process. Most component planning cycles are approximately 72-96 hours. However, the requirement within the air tasking cycle to manage as many as five separate ATOs drives the requirement for discipline to manage defined inputs and outputs during particular slices of time. Also, dynamic targeting and collection take place within a much more time-constrained framework.

The AOC's combat planners work closely with the air mobility division (AMD) to integrate intertheater mobility into the ATO. Some long-range combat assets based outside the AOR, but operating within the joint operations area, may be airborne on a tasked mission before the ATO that covers their weapons' times over target is published. These assets require the most current draft ATO information and all updates that affect their missions. Other missions that are not under the COMAFFOR's control may be included in the ATO to provide visibility and assist coordination and deconfliction.

The tasking cycle supports every part of the JOPP and JOPPA, as well as the joint targeting cycle, and is interwoven throughout these other processes up to and including execution planning and force execution. Effective management of the tasking cycle comes at a high cost in terms of the volume and flow of information. Targeting and adversary (or "red") assessment, which are integrally related, impose a very large collection burden the joint force carries—to support deliberate targeting efforts before, dynamic targeting efforts during, and assessment during and after force execution. Successful execution requires in-depth information on such things as enemy force posture, capabilities, and movement; target vulnerability; enemy leadership's intentions, habits, and movement patterns; and the flow and interconnections of enemy behavior. Assessment of friendly capabilities is also critical, and includes feedback on Air Force, joint, and coalition component efforts and capabilities needed for tasking cycle planning and decision-making. The process also takes into account such things as friendly objectives, CONOPS, ROE, target time constraints, and friendly force capabilities.

TASKING CYCLE STAGES

Objectives, Effects, and Guidance

Purpose. This stage starts with JFC guidance to the joint force components. The JFC consults with the component commanders, decides on modifications to their schemes of maneuver, and issues guidance and intent. The overarching purpose of this stage is to *integrate* (not just synchronize and coordinate) component efforts at the operational, scheme-of-maneuver level.

During this stage, the JFACC also issues further guidance on the specific scheme of maneuver. Other broad guidance that may direct operations include the ROE (determined or reviewed as part of strategy creation or planning mission analysis), standing rules for the use of force (the equivalent of ROE often used in homeland operations), and the special instructions (SPINS) issued with individual tasking and control orders.

This is also the stage during which the JFACC recommends the assignment of total expected effort that should be devoted to the various airpower operations for a given period of time (often expressed by priority of objectives). Once the JFC approves this recommendation, this apportionment decision is translated to the AOC by means of the AOD.

The JFC should delegate authority to conduct execution planning, coordination, and deconfliction associated with joint airpower operations to the JFACC and should ensure that this process is a joint effort. The COMAFFOR, as the JFACC, should possess a sufficient C2 infrastructure, adequate facilities, readily available joint planning expertise, and a mechanism for accomplishing targeting, weaponeering, and assessment. The AOC provides the COMAFFOR with these capabilities.

This stage is also where effects and their accompanying assessment measures and indicators are determined, if not already determined during planning. The AOC SRD works closely with the targeting effects team (TET), (formerly known as the Guidance, Apportionment, and Targeting Team) and the ISR division to determine effects that achieve the stated objectives, select appropriate measures and indicators for assessment, and determine ISR requirements to collect against them. Other components also contribute allocation requests. Results of this effort may be published as lists of tasks or desired effects in the AOD.

Integration of the air component's scheme of maneuver with those of other components is often done through the efforts of a joint targeting coordination board (JTCB), which is a forum where all components can articulate strategies and priorities for future operations to ensure that they are integrated and synchronized. The JTCB is not part of the tasking cycle *per se*, but is a concurrent process that is closely related to the tasking cycle's opening stages. It begins during the objectives, effects, and guidance phase by reviewing operational-level guidance and assessing progress toward objectives, but may continue through the target development stage, since part of its charter is to review and submit coordinated joint integrated prioritized target list (JIPTL), as well as integrated and prioritized intelligence collection requirements.⁵³ The JTCB's operational-level "front-end" functions may be performed by a joint coordination board (JCB), or like body, which handles operational, scheme-of-maneuver-level issues and usually delegates tactical-level targeting decisions to the JTCB. If a JCB is formed, it may take the place of the JTCB in the earlier stages of the tasking cycle and the JTCB will concentrate on reviewing and approving the draft JIPTL. The JTCB or JCB should also work in concert with the Joint Collection

⁵³ For details on the duties and functions of the JTCB, see JP 3-60.

Management Board to develop and monitor intelligence collection requirements for the joint force and synchronize the collection plan with targeteers and operations personnel during the given tasking cycle's period of coverage.

Product: The Air Operations Directive. *The AOD (along with the space and cyber operations directives, where appropriate) is the primary vehicle for communicating desired effects to target developers and others involved in the tasking process.* The AOC SRD drafts the AOD for JFACC approval. In a normal battle rhythm, this is done on a daily basis.

Target Development

Purpose. In this stage, the deliberate targeting process is used to relate specific targets to objectives, desired effects, and accompanying actions. Targeteers and other planners take the effects determined during the previous stage and analyze which targets should be affected to create them. The purpose of the target development process is to relate target development to tasking. There are no absolutes in target development or its relation to the tasking cycle. As noted, all the stages of the tasking process are interwoven. Target development efforts can frequently force refinement of desired effects or even objectives, especially if weaponeering and allocation efforts indicate that a particular targeting avenue of approach is impractical. Target development efforts also frequently “reach forward” to influence weaponeering and allocation choices, dynamic targeting during execution, and the assessment process. Target development involves five distinct functions:

- ★ **Target analysis** takes the desired effects determined during planning and matches them to specific targets. It determines the necessary type, breadth, and duration of action that should be exerted on each target to create desired effects.
- ★ **Target vetting** leverages the expertise of the national intelligence community to verify the accuracy and fidelity of the intelligence and analysis used to develop targets.
- ★ **Target validation** ensures all vetted targets create the effects outlined in commander's guidance and are coordinated and deconflicted with agencies and activities that might present conflicts with proposed actions. It also determines whether a target remains a viable element of its target system. During the development effort, the targets may also require review and approval based on the sensitive target approval and review process, coordinated through the JFC to national authorities. The validation process also starts the integration and coordination of actions against the target with other operations. This continues even after the ATO is produced. Many offices and agencies should be coordinated with to prevent fratricide, collateral damage, or propaganda leverage for the enemy.
- ★ **Target Nomination.** Once targets are identified and validated, they are nominated through proper channels for approval. Historically, this has often detailed

consideration by a high-level coordinating body such as a JTCB or joint fires element, but evolving best practice suggests that detailed targeting functions should be delegated to components (as joint doctrine permits), leaving commanders free to concentrate on integrating the joint force scheme of maneuver in the JTCB and like bodies.

- ★ **Determining collection and exploitation requirements.** This stage begins with target analysis and runs parallel to the other stages. Intelligence collection and exploitation requirements should be articulated early in the tasking process to support target development and ultimately assessment. Targeteers should work closely with collection managers to ensure that target development, pre-strike and post-strike requirements are integrated into the collection plan. This stage attempts to answer the question, “how will we know we’ve achieved the desired effects?” by establishing requirements for each nominated target. Targeteers and collection managers should also monitor changes that occur throughout the tasking cycle in order to modify assessment requirements.

Once all of the components, allied, and agency target nominations for a given ATO are received, the TET prioritizes the nominated targets and places them in a target nomination list (TNL) based on the commander’s objectives. The TET then vets the TNLs through the appropriate coordinating bodies representing the joint force components and other required agencies to ensure their requirements are supported, joint force priorities are met, and desired effects are created. The following products are derived from the TNL, once fully vetted.

Products:

- ★ **The joint integrated prioritized target list (JIPTL)** is a prioritized list of targets and associated data approved by the JFC or designated representative. An approved JIPTL is the central product of the target development stage.
- ★ **The joint integrated prioritized collection list (JIPCL)** is a prioritized list of intelligence collection and exploitation requirements needed to support indications and warning, analysis, future target development, and to measure whether desired effects and objectives are being achieved.
- ★ **The no-strike list (NSL)** is a list of objects characterized as protected from the effects of military operations under international law or ROE. Attacking these may violate LOAC or ROE, or interfere with friendly relations with indigenous personnel or governments. Targets on this list normally require approval from SecDef or Presidential level to strike.
- ★ **The restricted target list (RTL)** is a list of targets that have specific restrictions imposed upon them. Actions on restricted targets are prohibited until coordinated and approved by the establishing authority. Targets are restricted because certain types of actions against them may have negative political, cultural, or propaganda

implications, or may interfere with projected friendly operations. The RTL is nominated by elements of the joint force and approved by the JFC. Targets on this list may only be struck with JFC or higher approval. Actions taken by an opponent may remove a target from the RTL.

Weaponeering and Allocation

Purpose. Weaponeering is the part of the tasking cycle that estimates the quantity and types of lethal and non-lethal weapons needed to create desired effects against specific targets. Allocation, in the broadest sense, is the distribution of limited resources among competing requirements for employment. This has two aspects that are relevant to the tasking cycle: allocation of targets and allocation of forces. Weaponeering and allocation function together to produce the master air attack plan (MAAP). These efforts commence before the JIPTL is approved and continue past MAAP production into execution planning. They are integral to all of targeting.

Weaponeering. Targeteers and other planners quantify the expected results of lethal and non-lethal weapons employment against prioritized targets to create desired effects. This does not predict the outcome of every munitions delivery, but represents statistical averages based on modeling, weapons tests, and real-world experience over many uses. While modern precision and near-precision weapons increase delivery accuracy to historically unprecedented levels, collateral damage and probability of destruction calculations still must be considered due to potential weapons, fusing, or delivery system malfunctions; the effects of weather and terrain; potential enemy jamming, concealment, and deception; as well as the unknowns involved in attacking deeply buried targets..

Commanders and planners take considerable precautions to avoid or minimize civilian casualties and damage to civilian infrastructure. The danger of collateral damage varies with the type of target, terrain, weapons used, weather, and the proximity of civilians and their structures. According to LOAC, incidental damage to civilian objects must not be excessive in relation to the expected military advantage to be gained. If an attack is directed against dual-use objects that might be legitimate military targets, but also serve a legitimate civilian need (e.g., electrical power or telecommunications), then this factor should be carefully balanced against military benefits when making a weapon selection, as should end state considerations, such as reconstruction and stabilization. Established ROE and LOAC also address collateral damage concerns. For example, it may sometimes be necessary to strike a target more precisely than might otherwise be necessary in order to avoid unwanted civilian damage (an undesired effect). Certain levels of collateral damage estimation require expertise that lies beyond the JFACC's—or even JFC's—control and should be coordinated via federated and reachback relationships.

Allocation. After the JFC approves the apportionment decision, planners begin to decide upon allocation, which is the distribution for employment of limited resources and forces among competing requirements. There are two types of allocation relevant

to the tasking cycle. The first is “allocation of effort” and it starts early in the tasking processes. In line with guidance and apportionment decisions and other components’ allocation requests, the SRD’s strategy plans team manages the broad allocation of *effort* over time within the AOD process (more than just the MAAP’s specific allocation of aircraft and weapon systems). The TET should work closely with the SRD and the MAAP team to ensure that the prioritized list supports the JAOP and AOD appropriately. The TET then collects target nominations from other sources and works allocation of targets that have been planned against the effects and objectives to build the JIPTL for the ATO’s duration. Approaching JIPTL construction in this way helps avoid an ad hoc, target-servicing approach.

The second type of allocation is “force allocation.” Having refined the prioritization and allocation of effort down to the tactical task level within the AOD, the TET decides, *based on the AOD’s allocation of effort*, which targets will be struck (in accordance with the targeting scheme they have developed) and the MAAP allocates weapon systems to that targeting scheme and decides how to best package and route them. The MAAP allocates airpower by melding available capabilities and resources with the TET’s weaponeering recommendations. The result of both types of allocation, ultimately, is a translation of the total weight of air effort into the total number or sorties or missions required to create desired effects.

Although not complete until the MAAP is produced, force allocation also starts early in the cycle. The MAAP team determines an overall sortie flow for the ATO period and determines how that flow should be divided into “packages”—discrete sets of missions and sorties designed to complement each other or provide required support (for example, tankers and electronic warfare assets “packaged” with the strike assets they are supporting). Packages are arranged in sequence and used to determine a timeline and resource requirements for the ATO period. Each package should be deconflicted in time, space, and effect. A vital part of allocation is creation of an assessment plan. ISR assets should be carefully orchestrated to ensure optimal coverage of the operational environment.

Products:

- ★ **The MAAP** is the JFACC’s time-phased air, space, and (often) cyberspace scheme of maneuver for a given ATO period, synthesizing commander’s guidance, desired effects, supported components’ schemes of maneuver, friendly capabilities, and likely enemy COAs. It shows allocation of friendly resources against approved targets.

- ★ **The sortie allotment (SORTIEALOT)**, if produced, is a means by which the JFC can allot sorties to meet requirements of subordinate commanders that are expressed in their air employment and allocation plans. In many real-world situations, the JFC seldom directly allocates sorties. This responsibility is usually delegated to the JFACC. The SORTIEALOT message is often used as a means for

the JFACC to communicate back to other joint force components how their allocation requests were fulfilled and other results of the force allocation process.

ATO Production and Dissemination

Purpose. This stage finalizes the ATO and associated orders, physically produces them, and disseminates them to units. It is based on commanders' guidance (as detailed in the AOD), the MAAP, and component requirements. *Airspace control and air defense instructions should be provided in sufficient detail to allow components to plan and execute all missions listed in the ATO.* These are usually captured in the airspace control order (ACO) and the SPINS. These directions should enable combat operations without undue restrictions, balancing combat effectiveness with the safe, orderly, and expeditious use of airspace. Components may submit critical changes to target requests and asset availability during this stage of the cycle.

Products:

- ★ **The ATO** is the medium by which specific missions are tasked and disseminated to components, subordinate units, and C2 agencies. It normally provides specific instructions to include call signs, targets, controlling agencies, etc., as well as general instructions. The ATO may subsume the ACO and SPINS, or these may be published as separate orders.
- ★ **SPINS** are a set of instructions that provides information not otherwise available in the ATO, but is necessary for its implementation. This may include such information as commanders' guidance (often including the AOD itself), the C2 battle management plan, combat search and rescue procedures, the communications plan, and general instructions for inter- and intratheater airlift.
- ★ **ROE** are rules issued by higher authority, (e.g., the JFC or the President), establishing "imperatives" – constraints and restraints – that the joint force must observe. They should be published separately, versus being buried in the SPINS or another document.
- ★ **The ACO** provides direction to integrate, coordinate, and deconflict the use of airspace within the operational area. (Note: this does not imply any level of command authority over air assets.)
- ★ **The reconnaissance, surveillance, and target acquisition (RSTA) annex** is produced during this stage by the AOC's ISR Division. The RSTA annex is the ISR supplement to the ATO. It contains detailed tasking of intelligence collection sensors and processing, exploitation, and dissemination (PED) nodes and provides specific guidance to tasked ISR assets (including ISR platforms, sensors, and PED nodes/architecture), as well as other assets tasked to perform ISR tasks. This product outlines the entire JFACC ISR plan for a given ATO, possibly at multiple classification levels.

Execution Planning and Force Execution

Purpose. Execution planning includes the preparation necessary for combat units to accomplish decentralized execution of the ATO. It generally consists of the 12 hours immediately prior to the start of a given day's ATO execution period. Force execution refers to the 24-hour period in which a particular ATO is executed by units in the field. The AOC aids both, preparing input for, supporting, and monitoring execution. The JFC usually delegates the authority to redirect assets per his or her priorities. The JFACC also coordinates redirection of sorties that were previously allocated to support component operations with affected component commanders. Under the Air Force doctrine of centralized control and decentralized execution, unit commanders are given the freedom and flexibility to plan missions and delivery tactics as long as they fall within timing requirements, ROE, commander's intent, and create desired effects.

During execution, the AOC is the central agency for revising the tasking of forces. It is also responsible for coordinating and deconflicting any changes with appropriate agencies or components. It may or may not have authority to re-direct use of space or cyberspace capabilities supporting theater efforts, depending upon the asset and command relationships.

Due to the dynamics of the operational environment, the JFACC may be required to make changes to planned operations during execution. The AOC should be flexible and responsive to changes required during execution of the ATO. Forces not apportioned for joint or combined operations, but included on the ATO for coordination purposes, can be redirected only with the approval of the commander who has operational control over them. During execution, the JFACC is also responsible for retargeting assets to respond to emerging targets or changing priorities. This is the stage of operations during which dynamic targeting and dynamic intelligence collection take place. The commander may delegate the authority to re-direct missions to C2 mission commanders as necessary, but they should still notify the AOC of all redirected missions.

Combat Identification (CID). The rational use of force relies on the capability to identify adversary entities as a precursor to taking action against them, especially if doing so entails the use of force. CID of *all* battlespace entities is thus a critical enabling capability in any use, or potential use, of military force. Identifying adversary or enemy entities is essential, but so is identifying friendly and neutral entities. "Blue force tracking" (BFT) is a core function of CID. BFT is the employment of techniques to identify and track US, allied, and coalition forces for the purpose of providing commanders enhanced situational awareness and reducing fratricide.

Results and Products. This is the stage in which targets are actually struck (or otherwise acted upon) and direct effects are created. Other products include physical

damage assessments and mission reports used in helping make physical damage and other assessments.

Assessment

Purpose. Effective planning and execution require continuing evaluation of the effectiveness of friendly and enemy action. Consequently, assessment is much more than traditional “battle damage” or “combat assessment.” Planning for it begins prior to commencement of operations, takes place throughout planning and execution, and continues after conflict is over. Each level of assessment feeds the levels above it and provides a basis for broader-based evaluation of progress. This subject is covered in detail in Chapter Six.

Products. Products include various tactical and operational assessment products discussed further in the next chapter, along with recommendations for future action.

CHAPTER SIX

ASSESSING OPERATIONS



However beautiful the strategy, you should occasionally look at the results.

— Sir Winston Churchill

Assessment is a continuous process that measures the overall effectiveness of employing joint force capabilities during military operations. It is also the determination of the progress toward accomplishing a task, creating an effect, or achieving an objective (JP 3-0). The purpose of assessment is to support the commander's decision-making process by providing insight into the effectiveness of the strategy and accompanying plans. Many types of assessment exist, and may be used in support of operations, but assessment in this document refers to activities that support the commander's decision-making process. In an effects-based approach, assessment should provide the commander with the answers to these basic questions:

- ★ Are we doing things right?
- ★ Are we doing the right things?
- ★ Are we measuring the right things?

The first question addresses the *performance* of planned air, space, and cyberspace operations by assessing the completion of tasks. The second question addresses the level at which the commander's desired *effects* are being observed in the operational area and prompts examination of the *links* between performance and effects. The third question addresses the process of assessment itself and the importance of understanding how one chooses to measure the links between performance, cause, and effect. When determined properly, the answers to these questions should provide the commander with valid information upon which to base decisions about strategy.

While often depicted as a separate "stage" of the tasking cycle for conceptual clarity, assessment is actually interwoven throughout design, planning, and execution. The assessment process should begin as the broad strategy is laid out (including development of assessment criteria), continue through detailed planning (with the development of metrics and data sources), and extend to evaluation of measures during and after execution. This process is iterative as assessment results influence future strategy and planning.

Assessment consolidates data from many sources and summarizes that data clearly, concisely, and in context. It should follow a rigorous, defensible analytical process that provides commanders and planners the ability to view details of methods used and results produced. It communicates relevant uncertainty in the data and the associated risks. In short, assessment provides analytically supportable judgments on a commander’s strategy.

LEVELS OF ASSESSMENT

Assessors perform many types of assessment across the strategic, operational, and tactical levels to inform a wide array of decisions. Figure 6.1 displays some common types of assessment and, broadly, the levels where each would most likely be applied (the depiction is not all-inclusive). The figure also shows the level of commander who commonly directs a given type of assessment (e.g., the JFC and JFACC). At all levels—but especially at the operational level—the JFACC and staff should observe how the JFC takes information “on board” and craft assessment products that convey the Airman’s perspective without seeming “air-centric” or presenting a biased view.

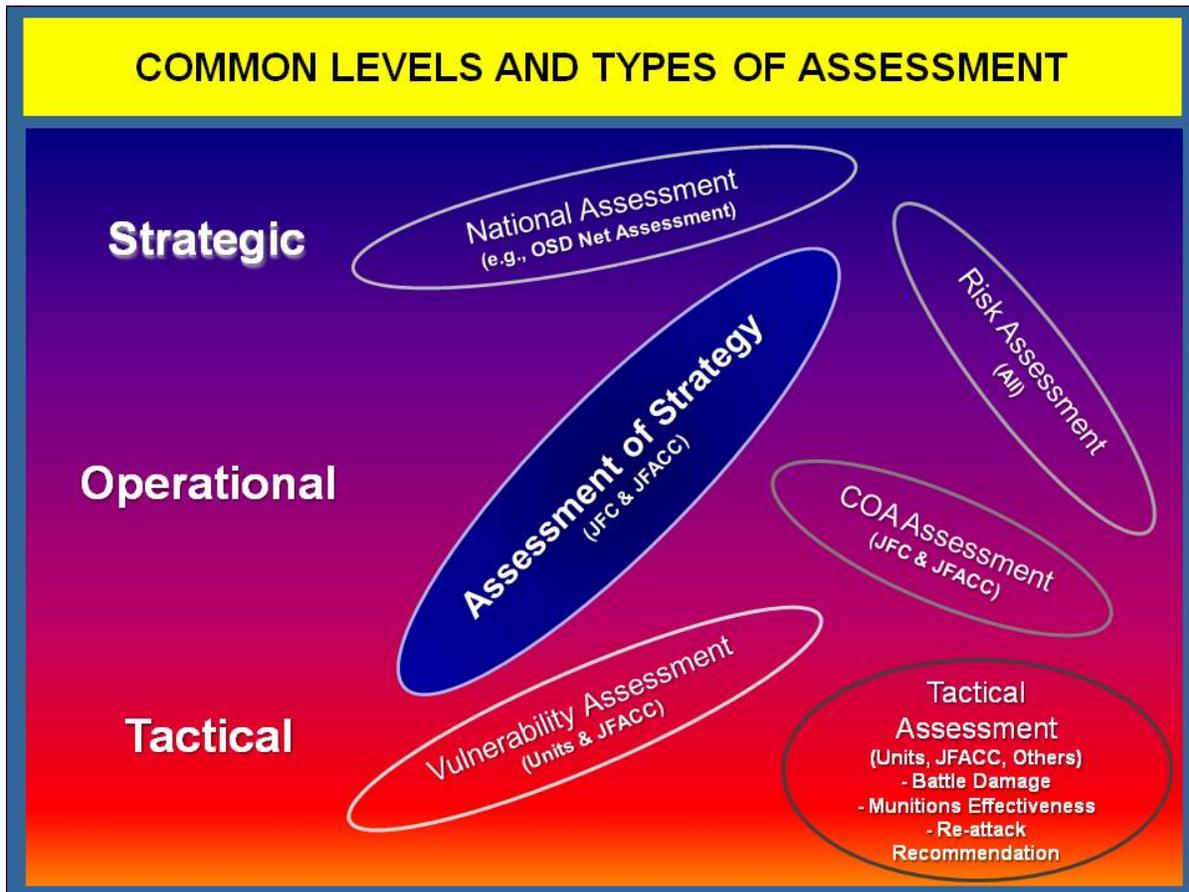


Figure 6.1. Common Levels and Types of Assessment

Tactical assessment (TA) is generally performed at the unit or joint force component level and typically measures physical, empirical achievement of direct effects. TA is an umbrella term covering battle damage assessment (BDA), munitions effectiveness assessment, and recommendations for re-attack (and often referred to in joint doctrine as “combat assessment” [CA]).⁵⁴ These forms of assessment focus on offensive and kinetic actions. BDA consists of three phases. Phase I BDA (which helps answer the question, “we doing things right?”) measures whether or not the weapon impacted the target and functioned as designed. Phase II BDA measures what effect the weapon had on that individual target. Phase III BDA then measures the effect of striking a particular target on the overall target system (as in, what effect does taking out a C2 node have on the overall IADS?, all of which might relate to the overall effect of gaining and maintaining air superiority). TA should also be accomplished following tactical employment of non-kinetic actions and non-offensive capabilities. Examples include MISO (e.g., Commando Solo missions), PA (e.g., media engagements), cyberspace operations (temporary utility outages), operations security (OPSEC; effectiveness of encryption), etc. TA is described in greater detail in AFDD 3-60, *Targeting*.

Operational Assessment. Assessment at the operational level begins to evaluate complex indirect effects, track progress toward operational and strategic objectives, and make recommendations for strategy adjustments and future action extending beyond tactical re-attack. Assessment at this level often entails evaluation of COA success, assessment of the progress of overall strategy, and joint force vulnerability assessment. These are commonly performed by joint force component commanders and the JFC and their staffs

Operational assessment evaluates a wide range of data: quantitative and qualitative, objective and subjective, observed and inferred. Some measures can be expressed empirically (with quantitative measures); others, like psychological effects, may have to be expressed in qualitative and subjective terms. Both rely on extensive data and analysis from federated intelligence partners, including other USG agencies and multinational partners.

Strategic assessment addresses issues at the joint force (“theater strategic,” as in bringing a particular conflict to a favorable conclusion) and national levels (enduring security concerns and interests). It involves a wide array of methodologies, participants, and inputs. The President and SecDef rely on progress reports produced by the CCDR or other relevant JFC, so assessment at their levels often shapes the nation’s, or even the world’s, perception of progress in an operation. This places a unique burden upon assessors, planners, strategists, and commanders to be accurate, meaningful, and complete in their analysis and communicate results clearly and logically.

⁵⁴ The Air Force has chosen “TA” over “CA” because it is more broadly applicable and descriptively accurate: Not all operations (and hence not all assessments at the tactical level) involve combat. The name should apply to tactical-level evaluation across the ROMO. The terms, however, are functionally equivalent for most purposes.

The time frames considered by the various assessment types may vary widely, from rather short intervals at the tactical level to longer time horizons at the strategic level, even reaching well beyond the end of an operation, as lessons learned are determined and absorbed. The relationship among the various assessment types is not linear, with outputs from one type often feeding multiple other types and levels.

ASSESSING STRATEGY

The purpose of assessing strategy is to give commanders dependable insights into whether their strategy is effective and to measure progress toward the end state(s) that the commander is tasked to deliver. This type of assessment can be conducted for any commander from the tactical through the strategic level and should address the four main components of a strategy:

- ★ **Ends**—The commander’s end state and the objectives required to obtain it. These are generally derived from the commander’s intent statement.
- ★ **Ways**—The tasks or actions undertaken to help achieve the ends, as generated during the detailed planning process.
- ★ **Means**—The resources put toward accomplishing the ways. The doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) construct is often a useful source for examining and developing the means.
- ★ **Risk**—The cost and amount of uncertainty and vulnerability the commander is willing to accept in executing the strategy.

Again, it is critical to integrate the assessment process with strategy and plan development. The assessment process begins with a review and analysis of lessons learned from previous operations, continues through design (where broad assessment criteria are often decided upon), detailed planning (where specific measures and indicators are usually selected to accompany objectives, effects, and tasks), and extends to evaluation of measures and indicators once tasks have been accomplished. Some forms of assessment continue long after the particular conflict or operation has concluded, supporting, for example, munitions effectiveness assessment and the lessons learned process.

Assessment considers all these components, with the goal of developing insights into whether a strategy is working and what areas may need to be re-evaluated if that strategy is not working. Figure 6.2 depicts this strategy-centric approach to assessment.

Throughout the assessment process, the assessor’s focus should remain on informing the relevant commander’s decisions. Even though various forms of

guidance, including commander's intent, may be documented, the assessment team should work to derive assessable effects from these statements. Often the commander's intent is written in terms of what operations the commander plans to undertake and not in terms of the conditions that they hope will result from these operations. *Thus, planning for assessment should begin in dialog with the commander during the design process. Assessment is also iterative, working to converge on a reasonably assessable commander's end state.* In addition, understanding the objectives and tasks of the commander's boss is crucial in forming a comprehensive assessment.

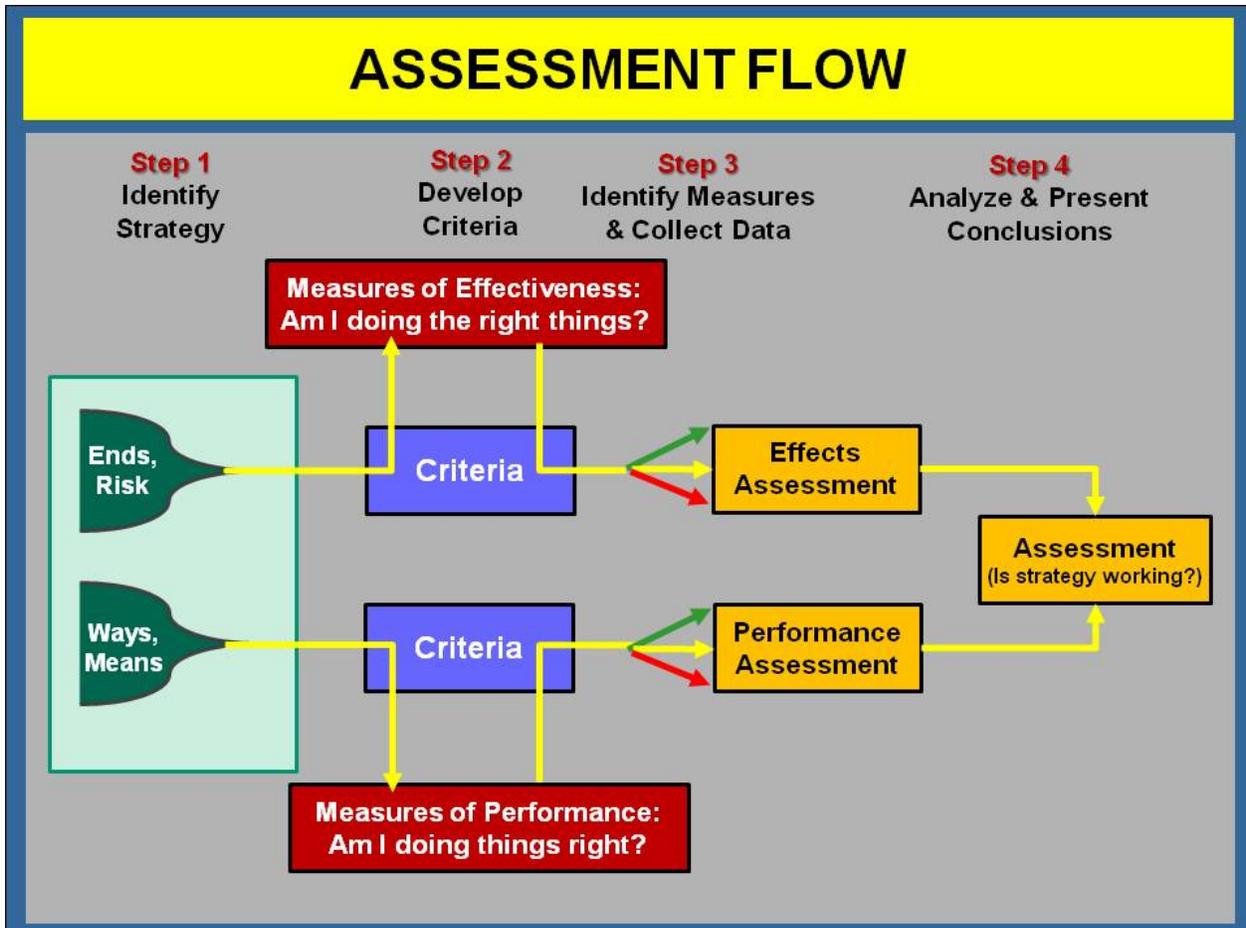


Figure 6.2. Assessment Flow

Given the fluid nature of complex military operations involving high-order effects, judgment should be an intrinsic part of any assessment. Instead of developing criteria or measures that take all judgment out of the process, the goal is to build a framework for the development of logically defensible judgments, which often involve qualitative (unquantifiable) and even subjective elements.

ASSESSMENT CRITERIA

Criteria define the attributes and thresholds for judging progress toward the end state and accomplishment of required tasks. *Development of assessment criteria is the critical component of the assessment process and should be accomplished before specific measures or data requirements are defined.* Developing measures without a clear understanding of how those measures fit into a judgment of the effectiveness of the overall strategy often leads to laborious data collection and analysis processes that provide little to no value to the decision-makers. Spending additional time to thoroughly consider and develop meaningful and relevant assessment criteria will help avoid this pitfall.

Criteria help focus data collection by ensuring that assessment measures relate clearly to the elements of the strategy being assessed. As data is collected, the criteria translate that data into meaningful insights on the commander's strategy, which may be presented in a variety of ways to visually display progress (or lack thereof) to the Commander. These may include "stoplight" charts, "thermometer" charts, sliding scale charts, and/or a variety of bar and pie graphs, as detailed in AFTTP 3-3.AOC. All have strengths and limitations. Which is used will depend in some part on the personality and preferences of the Commander. However, a variety of means should be used to comprehensively display progress toward objectives and avoid losing relevant data by artificial form limitations. Criteria should be developed for the ends, ways, and means at each level of assessment. Well-written criteria should adhere to some basic attributes:

- ★ **Relevant to the effect or action being assessed.** The criteria should relate directly to the commander's end state, tasks and success thresholds as outlined in the strategy.
- ★ **Mutually exclusive across the assessment categories** (e.g., *good, marginal, poor*) for a given effect or action assessed. This ensures that only one category is appropriate for a given outcome.
- ★ **Collectively exhaustive across the range of outcomes for a given effect or action.** This helps ensure that most, if not all, potential outcomes are covered by the criteria.
- ★ **Well-defined.** Specific and relevant definitions should be developed for any confusing or ill-defined terms used in the criteria. Planners should attempt to objectively define success thresholds and the boundaries between assessment categories whenever possible (e.g., what is the criteria for transition between the 'good' and 'marginal' categories?). *Nonetheless, judgment is always necessary when assessing the overall strategy.*

For example, if the commander's objective is to gain and maintain air superiority in a given theater of operations, criteria for the ends (i.e., objectives and other effects)

should directly address to what degree enemy air defenses have interfered with friendly operations. Planners should select criteria that give the commander meaningful insight into the degree of interference and use these criteria to judge progress toward the objective. Similarly, planners should determine meaningful criteria for establishing whether the tasks undertaken to achieve air superiority have been accomplished. In this example, the commander and planners would want to know if the desired area was covered with mission-capable air superiority assets for the desired period of time.

Some additional criteria selection guidelines may help planners:

- ✦ The lines between categories are often hard to determine, especially with some commonly used assessment display techniques like “stoplight” charts (for instance, it may be hard to answer, “*when do we go from good [“green”] to marginal [“yellow”]?*”) Planners should set objective and concrete boundaries as much as possible, recognizing that some degree of subjectivity (and hence judgment) will always be necessary.
- ✦ Try to select criteria that allow depiction of trend data, which may ultimately be among the most meaningful criteria. (E.g., “*effectiveness is still marginal on this ATO, but the trend is rapidly improving, so we can probably allocate a lower weight of effort to air superiority on future ATOs, despite the current status.*”)
- ✦ Try to avoid arbitrary terms like “some,” “prohibitive,”⁵⁵ and “significant.” They do not lend themselves to objective definition. (In the example above, for instance, criteria boundaries could hinge on percentages of desired area, mission-capable assets, and desired timeframe.)
- ✦ Sliding scales can often be a useful display format, since it helps show relative magnitude of differences. For instance, on a one-to-ten scale, eight may not be much better than seven, but is considerably better than five, even though eight may be “good” or “green” on a stoplight chart and both five and seven “marginal” or “yellow.”

When assessing complex military operations, subjective data in the form of subject matter expert (SME) inputs will often provide the most meaningful (or only available) data. To avoid personal biases and ensure an adequate level of consistency in the assessment, SME inputs should simply provide the information necessary to address the relevant measures of effectiveness. For example, when assessing the achievement of air superiority, it is more effective to ask a SME about the degree to which adversary air has interfered with their operations, rather than asking directly whether the Air Force has achieved an appropriate level of air superiority. The assessment criteria should turn the SME’s inputs into a value judgment on air superiority in accordance with the commander’s strategy.

⁵⁵ Even though this term is part of the joint definition of air superiority (see Glossary). That is part of the point: Some terms may lend themselves to selection of arbitrary criteria simply by how they are defined.

ASSESSMENT MEASURES

Assessment measures are simply the data elements that, via the criteria, provide insight into the effectiveness of the commander's strategy. Assessment measures are commonly divided into two types:

- ★ **Measure of Performance (MOP)** — A criterion used to assess friendly actions that are tied to measuring task accomplishment.
- ★ **Measure of Effectiveness (MOE)** — A criterion used to assess changes in system behavior, capability, or operational environment that is tied to measuring the attainment of an end state, achievement of an objective, or creation of an effect.

MOPs address the ways and means that are employed during execution to help achieve desired effects; they indicate progress toward accomplishing planned tasks or actions. MOEs assess progress toward creating desired effects and thus achieving the objectives and end state (Simply put, MOPs help tell us if we are doing things right; MOEs help tell us if we are doing the right things).

The distinction between MOEs and MOPs can depend on their context within the commander's strategy. The exact same measure can be an MOP for one commander and an MOE for another, lower echelon commander. Figure 6.3 illustrates a practical example of this delineation.

MOPs versus MOEs A Simplified Example

A JFACC working with the ground component attempting to stop a major enemy ground offensive might assess their forces' *performance* by measuring the number of interdiction sorties successfully flown against a crucial element of enemy follow-on forces. If the forces flew the planned number of sorties or more without loss, the JFACC can assess that forces are "doing things right."

The JFACC might assess *effectiveness* by measuring how many of the targeted enemy forces made contact with friendly forces in coherent platoon-size or larger formations. If that number is small, protecting friendly troops and effectively blunting the enemy offensive, the JFACC may conclude that the forces' efforts were effective—that they "did the right thing."

These are very different types of assessment, requiring different measures, and can lead commanders to very different conclusions. Too often, commanders may focus on MOPs (in part because they are more easily measured and yield empirical answers), and pay inadequate attention to MOEs.

Both are necessary, but conceptually different. Please see an illustration in Figure 6.3 and further explanation in the "Assessment Interpretation" section.

Developing good measures is an art, though there are some general guidelines that can aid in developing high-quality measures:

- ★ **Measures should be relevant and necessary.** Measures should relate to the effect or task they are intended to describe and should feed directly into the already-established criteria. Collection of irrelevant measures that do not shed light on the effectiveness of the commander's strategy is a misuse of valuable time and resources. Focusing primarily on collecting the data necessary to apply to the developed criteria should help avoid the creation of superfluous measures.
- ★ **Measures should represent a scale, not a goal or objective.** Metrics developers may be tempted to write a goal or criterion as a measure. Instead, the goal should be included in the criteria in accordance with the commander's risk tolerance and thresholds. Operators and planners should establish these goals (objectives) in coordination with the assessors. Examples:

★★ *Bad Measure:* No friendly fighter losses.

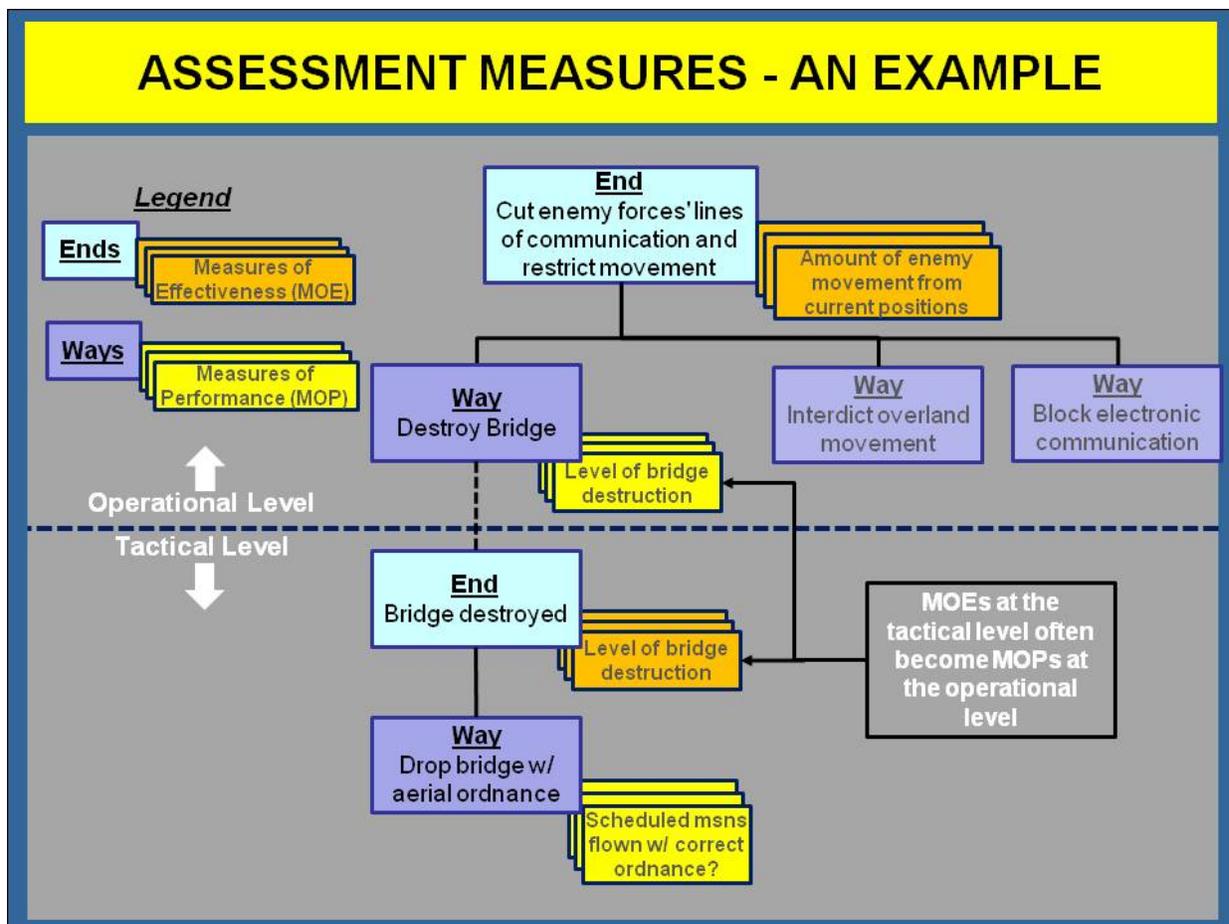


Figure 6.3. Assessment Measures – An Example

★★ *Better Measure*: Number of friendly fighters destroyed or damaged by enemy air defenses.⁵⁶

- ★ **The data satisfying a measure should be observable, or at least inferable.** The measurements can be quantitative (numerical) or qualitative (non-numerical). In general, the more objectively measurable the better, but **commanders and planners should avoid “the numbers trap:” blindly using rates, numbers, and other quantitative metrics, especially in assessing effects, since their seemingly “empirical” and quantified elements may be based on wholly subjective assumptions** and the number may be meaningless—thus they may often lack direct linkages to the objectives or ends outlined in the strategy, while sometimes also imparting an illusion of “scientific validity” merely because they are quantified. Examples:

★★ *Bad Measure*: Civilian populace attitude toward stability forces.

★★ *Better Measure (Quantitative)*: Percentage of surveyed civilian population giving “favorable” rating to stability forces; number of riots and civil disturbances in response to friendly force activities; amount of enemy propaganda, graffiti, etc., discovered; and so on.

★★ *Bad Measure*: Progress towards opening new air base.

★★ *Better Measure (Qualitative)*: Current phase of air base stand-up (secured land, runway operational, 30-day sustainment capability in place, long-term sustainment capability in place).

- ★ *Measures should be clear and concise.* They should be written in plain language so that someone with no prior knowledge of the measures can still understand the data requirements. Examples:

★★ *Bad Measure*: Status of enemy fighters.

★★ *Better Measure*: Number or percentage of enemy fighters confirmed destroyed or rendered combat-ineffective.

Measures should be drafted during planning so that associated intelligence collection needs may inform surveillance and reconnaissance requirements. Measures may need to be refined or amended during the tasking cycle as the operational situation changes. Selection of assessment measures is an iterative, ongoing effort.

Measure the entire plan, but do not overdo it. All elements of the strategy should be measured, and there may be multiple measures required to fully address the

⁵⁶ Note that this is greatly oversimplifies the process, since measures such as that above would probably include friendly sorties forced to jettison ordnance – hence rendered mission-ineffective - due to enemy action, and similar measures.

Overall, assessment interpretation can be broken into two major types: effects and performance assessment. **Effects assessment**, based on MOEs, should provide the commander with the overall picture of progress toward objective or end state achievement. **Performance assessment**, based on MOPs, should provide commanders with an overall picture of how well their forces are executing the strategy's ways and means.

The relationship between effects assessment and performance assessment can be characterized in several basic ways. The scores may be similar, the performance assessment may be higher than the effect assessment, or the effects assessment may be higher than the performance assessment.

In the first case, similar effect and performance assessments suggest the operation is proceeding as expected with effects being achieved in proportion to the level of subordinate task completion. This does not necessarily mean that the operation is on schedule, and a correlation between effect and performance does not necessarily imply causality. The assessment should continue to be monitored for any changes to the apparent equilibrium.

Disconnects between effect and performance assessments indicate that portions of the plan may require further examination. A high performance assessment paired with a low effect assessment is an indication that the completion of planned tasks is not leading to the desired effects. Numerous issues including data latency, delayed effects, or a misunderstanding of the enemy system may be driving the score mismatches. Examples of score mismatches include:

- ★ You may have confirmation of successful leaflet drops (high performance) supporting special operations efforts to turn the local population against the adversary, but there has been no change in the number of civilian tip-offs on adversary activity in the area (low effectiveness).
- ★ You may have BDA indicating the destruction of national power production (high performance) which was done with the intent of limiting enemy C2, but the adversary's integrated air defense system is still operating in a coordinated and timely fashion, showing no apparent degradation (low effectiveness).

In other words, the assumptions about the direct links between the achievement of tasks and the objectives they support may be flawed. In this situation, the primary focus of the assessment should be to identify and highlight these imbalances to the strategists and planners so they can recommend changes to the strategy or plan.

Conversely, when the effect is assessed higher than the performance, desired effects are being achieved without the expected completion of corresponding tasks. Again, numerous issues including data latency, enemy deception, good fortune, and misunderstanding of the enemy system could lead to this apparent contradiction. For example:

- ★ BDA indicates that strikes on enemy strategic surface-to-air missile (SAM) sites missed their targets (performance); however, the adversary has not fired any SAMs during the last five ATO cycles (effectiveness).
- ★ Planners have not taken any of planned actions against enemy fighters (poor performance); however, the adversary is not flying any fighters (high effectiveness).

In these cases, the commander may be able to reallocate resources to another objective. Identifying these opportunities allows the commander to execute operations more effectively and efficiently. However, a high effect assessment paired with a low performance assessment may be temporary if much of the enemy's capability to adversely impact the desired effect remains. For example, in the example above, the enemy could bring their aircraft out of hiding and begin inhibiting friendly air operations. Capturing such remaining capability helps determine the operational risk commanders would incur if they choose to reallocate resources. If the commander decides the risk is acceptable, assessors should work with the strategists and planners to identify and prioritize those objectives warranting additional resources.

A significant consideration when interpreting effectiveness and performance results is that complex systems often begin internal change without showing outward signs that are measurable to observers. It is thus often necessary for commanders, planners, and strategists to counsel patience in following a particular COA to allow time for desired changes to work their way through targeted systems and manifest themselves as desired behaviors in the operational environment.

ADDITIONAL ASSESSMENT CONSIDERATIONS

Assessment processes differ according to the level at which they are performed, what type or portion of an operation is being assessed, and what organization is tasked to perform them. Nonetheless, there are five basic elements that are common to most strategy assessment efforts. These are briefly summarized below:

- ★ **Define and understand the strategy.** Developing end states and the ways and means to achieve them is critical to successful assessment and later recommendations for change. Those responsible for assessing a strategy should be involved in its design and planning from the start. Assessment should always flow from a thorough understanding of the commander's intent.
- ★ **Develop criteria.** Criteria define the attributes and thresholds for judging progress toward the end state and accomplishment of required tasks. They help ensure that only relevant and necessary data is monitored for and collected, and that consistent and logical feedback is provided to the commander.
- ★ **Identify measures and collect data.** Assessment measures—including MOEs and MOPs—should be drafted as part of operational design and planning, and should

relate directly to the criteria they are supporting. Data for assessment exists throughout the operational environment, and monitoring and collection requires the concerted efforts of those responsible for a given level of assessment, along with federated⁵⁷ military organizations, other USG agencies, and multinational partners. Monitoring and collection should be planned.

- ★ **Analyze.** Analysts should look critically at the data stream that emerges from data collection. While well-defined assessment criteria and measures should ensure relevant data is being collected, analysts should continually evaluate the usefulness of the collected data toward the assessment. Analysis is and will likely remain more art than science and requires adept and experienced analysts. This is one of the reasons that federated support to assessment is so important.
- ★ **Present insights and recommendations.** Based on the analysis, strategists and planners may make recommendations, ranging from a simple re-attack on a tactical task level to major re-direction of a campaign (as through a branch or sequel). Successful adaptation requires constant reevaluation of assessment criteria, analysis, and recommendations for future action to commanders at all levels.

Assessment can be labor- and time-intensive. Some effects, especially at the operational level and above, but also when dealing with level II and III BDA (effects on a target or target system), may only become evident over extended periods of time and require the use of multi-source and multi-discipline intelligence. An example of this is the targeting of buried facilities. In such cases, there may be evidence that a weapon hit the target, but due to delayed fusing, the degree of its effective functioning may be very difficult to determine. It may take communications intercepts, studies of electrical usage, or “pattern of life” analysis over time to determine whether or not such a facility is still functioning and, if functioning, to what degree it is still effective. Nevertheless, assessment should be responsive to the commander’s decision-making cycle, whatever the scale or pace of the operation. Future campaigns and major operations may not afford commanders the luxury of time and resources that assessment has historically consumed. Further, as effects-based principles have become accepted, commanders prefer to measure many of the indirect effects that friendly actions create, increasing requirements for assessment resources. Commanders can facilitate a sound effects-based assessment processes by the following means:

- ★ Prepare to perform effects assessment, especially during AOC exercises. Commanders, strategists, planners, and ISR specialists should know what they should be getting from the assessment process and how to get it.

⁵⁷ Federation, although not formally defined refers to the relationships and agreements created with intelligence and assessment experts across many different disciplines in the DOD, in non-DOD agencies, multinational partners, and others, to facilitate the free exchange of expertise, analysis, and assessment. See AFDD 3-60 for more information.

- ✦ Institute federated and reachback partnerships in peacetime. Federation partners should know what the desired objectives and effects are. Obtaining immediate feedback from agencies and units requesting an effect provides an immediate assessment of whether or not a particular effect was achieved.
- ✦ When necessary, employ estimated physical damage assessment techniques to assess the results of combat operations. Modern weapons are sufficiently accurate and precise that they may be assumed to have accomplished their intended direct effects unless some evidence exists to the contrary. Using estimate damage assessment may free up time and manpower resources that can then be devoted to effects assessment. Although “assuming” physical damage is never the desired approach, manpower and other limitations may sometimes make it necessary.
- ✦ Prepare assessors to capture the risk trade-offs the commander may have to assume when disparities between task accomplishment and effects assessments occur. While assessors should focus on effects assessments, they may still need to count “holes in the ground” made by friendly ordnance for specific target sets.

CONCLUSION



Air Power is, above all, a psychological weapon—and only short-sighted soldiers, too battle-minded, underrate the importance of psychological factors in war.

—Sir B.H. Liddell Hart

US leadership and its multinational partners will continue to depend on airpower (in all its forms) to achieve objectives. Airpower offers commanders at all levels a variety of options, including the capability to help build multinational partnerships and in some cases coerce adversaries without the direct use of force. Additional options continue to emerge as the Air Force expands its cyber and space capabilities, and airpower's inherent speed, range, flexibility, precision, lethality, and persistence ensure it will continue to be in high demand for the full spectrum of military options and at the forefront of our national military capabilities.

The Air Force expects may expect operations to consist of continuous, simultaneous combinations of offensive and defensive combat, stability, and civil support activities conducted in a complex, highly integrated, networked, and distributed environment,. Such environments may require airpower to integrate with ground units operating in noncontiguous areas of operations, with ground planning driven to the tactical level, requiring considerable small unit and individual initiative.

The ongoing proliferation of anti-access and area denial weapons and technologies will also challenge airpower planners in the near- to mid-term future. While emerging friendly technologies may help answer this challenge, the Air Force's exceptional ability to create synergy through cross-domain effects will probably remain a critical US advantage in the future as well.

Airmen integrate airpower operations across all domains and across the ROMO to gain and maintain control of the domains from we operate, while decisively affecting operations in the land and maritime domains as well. The Airman's perspective recognizes airpower's unique capabilities and contributions and aids us in the entire process.

The Airman's outlook is informed by an effects-based approach to operations, which emphasizes that all military actions must be logically tied to achieving the end state; that effective use of the military requires integration of all elements of power; that all conflict seeks to cause behavioral, not just physical, change; and that the implications of complexity, friction, and the human element can have profound effects in all operations.

EBAO also teaches Airmen that operational design, planning, execution processes, and assessment form one, inextricably bound process that is made less effective and less efficient if “pulled apart” and conducted in a “stove-piped” manner. As such, AFDD 3-0 integrates the various processes involved in planning and operations into a single entity rather than dividing them, as has often been done in the past.

The key to success in today’s conflicts lies in the ability to adapt—to find a means of gaining continuing advantage. The United States’ enemies are becoming adept at changing their strategies and tactics to exploit the circumstances and friendly countermeasures. In the future, the United States and its allies, partners, and friends will need to remain skillful at adapting in order to maintain continuing advantage over them. Airpower can provide a key asymmetric, precise, pervasive, and flexible element to achieve national objectives.

At the very heart of warfare lies doctrine...

APPENDIX A

CENTER OF GRAVITY ANALYSIS METHODS

A COG is a source of power that provides moral or physical strength, freedom of action, or will to act. Analyzing COGs provides a means of focusing friendly efforts, both offensively and defensively. There are a number of tools and techniques available to identify and analyze COGs. Joint doctrine (cf JP 5-0, *Joint Operation Planning*, Chapter Four) presents one model, but there are others, each with its own assumptions, strengths, and weaknesses. All, however, attempt to *relate what is critical to what is vulnerable in some useful way*—to identify and prioritize critical, targetable vulnerabilities. Each of the common methods is examined in this appendix, with a short summary discussing the strengths and weaknesses of each.

One thing all models have in common is that any COG a commander chooses to affect should always be linked to one or more objectives. If the objective changes, the COG may also change. At the strategic level, a COG could be one or a set of leaders (political or military), an alliance, a military force, a set of critical functions, or national will. At the operational level, a COG is often associated with an adversary's military capabilities, such as a powerful element of the armed forces, but could also include other capabilities in the operational environment. COGs can emerge or change over time, due to the interplay of friendly, adversary, and other forces in the operational environment. They may be based on the end state, mission, and objectives as well as the adversary's strategy.

COG analysis takes place as part of JIPOE, mission analysis, or both. Commanders should consider not only the adversary's COGs, but also identify and protect their own COGs. An effects-based approach to operations should orient on creating effects in time and space that decisively affect a COG.

The Joint Model

The model endorsed in joint doctrine (JP 5-0) is also known as the Marine Corps model, the "CG-CC-CR-CV" Model, and the "Strange Model," for its developer, Dr. Joe Strange of the Marine Corps War College.⁵⁸

Description. This model starts with the joint definition of a COG as a source of strength, freedom of action, or will to act. It then analyzes the COG to determine, (in order) its:

⁵⁸ Note that this model uses the abbreviation "CG" for center of gravity. For all purposes, "CG" and "COG" should be considered synonymous.

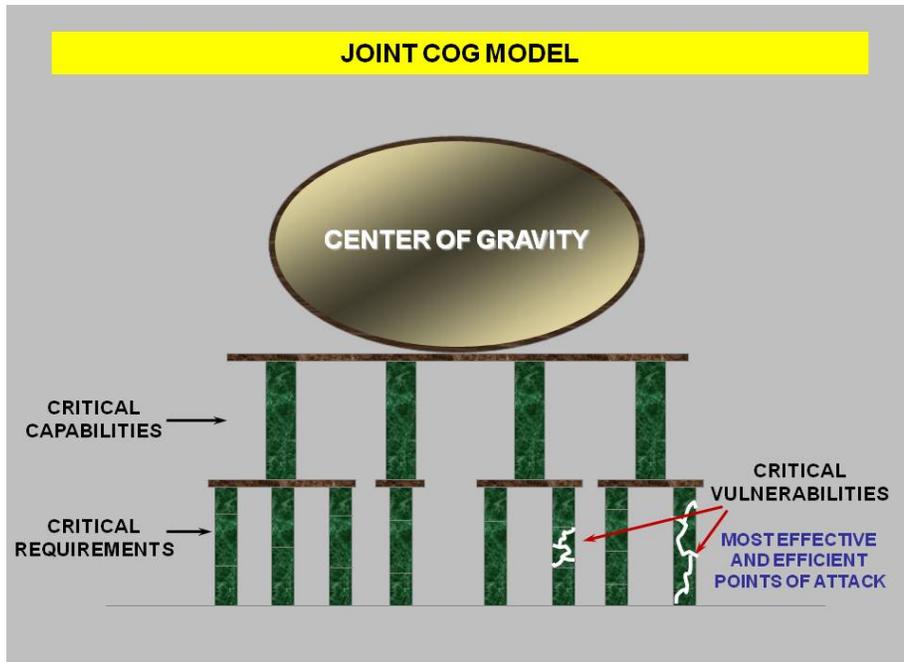


Figure A.1. Joint COG Model

- ★ *Critical capabilities (CCs)*: Those means that are considered crucial enablers for a COG to function as such (and is essential to the accomplishment of the specified or implied objectives).
- ★ *Critical requirements (CRs)*: Essential conditions, resources, or means for a CC to be fully operational.

JOINT COG MODEL EXAMPLE (WORLD WAR II)

COG: Industrial base supporting German war effort

CC: Obtain essential materials

- Transport essential materials to factories
- Process essential materials in factories
- Transport finished products to fronts

CR: Organic & intermediate essential materials

- Financial means
- Transportation system
- Electrical power
- Fuel for power (petroleum, oil, & lubricants)
- Factories
- Skilled labor

CV: Ball bearings (intermediate essential material)

- POL
- Rail yards & rolling stock (transportation system)

Figure A.2. Joint COG Model Example (WW II)

- ★ *Critical vulnerabilities*: CRs, or components thereof, that are deficient or vulnerable to attack (or other effect) that will create decisive or significant effects on the COG.

COGs are nouns—tangible or intangible sources of power. CC can be thought of as verbs—things a COG does. CRs are nouns—those *things* a critical capability needs to function as such. CVs are those critical

requirements that are vulnerable.

Advantages. This is an intellectually complete manner of analyzing COGs. It clearly relates critical elements to vulnerabilities via a logical causal chain. It has been endorsed in joint doctrine and is taught in some form in most, if not all, Service schools.

Disadvantages. This method can be difficult to “operationalize”—to work through intellectually in such a manner that it yields actionable tasks and targets. Doing it properly thus takes time. This model has significant power, but analysts may sometimes find it difficult to derive valid critical capabilities or properly determine vulnerabilities from requirements. (Experience has shown that these are the most common points at which the model “breaks down.”) Analysts should use care and have a very thorough understanding of the system they are analyzing. This method also tends to be more labor and information intensive than other models.

The Strategic Ring Model

This model is also known as the “five-rings model” and as “Warden’s Rings,” after its developer, Col (Ret) John A. Warden III.

Description. The basic structure of this model is not of COGs, per se, but of characteristics common to all living organisms. It posits that there are one or more COGs within each ring of the systems; it is thus really a very simple systems analysis tool as much as it is a tool for COG analysis.

The model maintains that there are certain functions necessary for every system to function:

- ★ A C2 and information processing system, such as the leadership and C2 apparatus within a military or the central nervous system of a human body.
- ★ The processes necessary for the survival of the system, such as communications, food production and distribution, financing, and manufacturing in a state, or respiration and blood circulation in a living body.
- ★ A system of infrastructure, like the electrical power distribution or transportation systems of a nation, or the bone and vascular systems of a body.
- ★ A population: Such as the aggregate of individuals within a nation or armed force; the cells within a body.
- ★ A fighting or defense mechanism, such as the fielded armed forces of a nation or the immune system of a body. (Note that Col [Ret.] Warden chooses to call this ring, “fielded forces.”)

Advantages. This model shows the central value of leadership as a COG—it helps demonstrate the value of shock and dislocation on all rings through effects on leadership. It also shows that airpower does not have to fight its way through enemy fighting mechanisms (fielded forces) to affect the critical adversary systems defended by them, as other forms of military power often do.

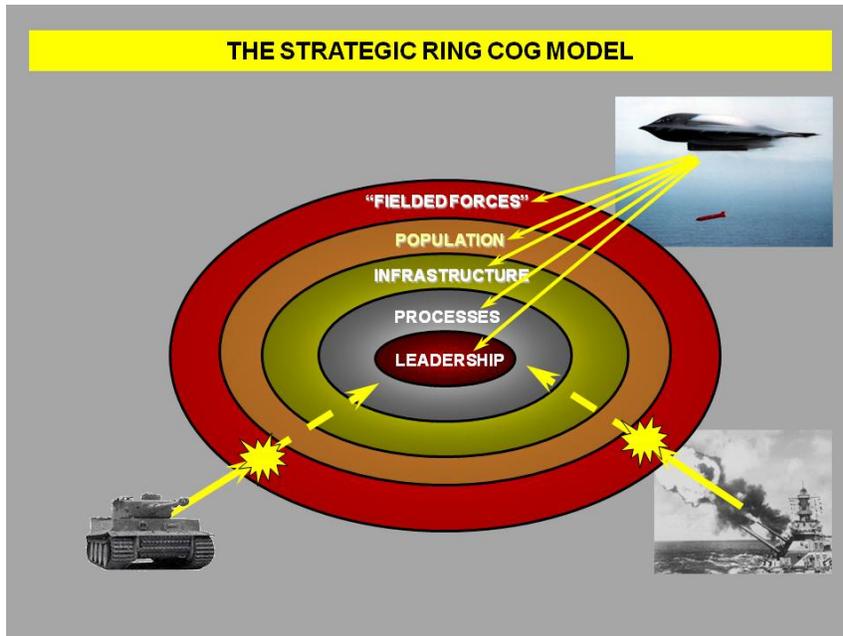


Figure A.3. The Strategic Ring COG Model

Disadvantages. This model makes no distinction between what is critical and what is vulnerable; in fact, it confuses the two. If applied blindly (“we’ve drawn our five rings and those are our COGs”), it can encourage mirror imaging of the adversary’s system and lead to a mechanistic and reductionist inputs-based approach to targeting. (Experience has shown that some teams using only this method will list the five categories as *the*

COGs and immediately begin listing “customary” target sets below them. This is the antithesis of effects-based targeting.) Finally, this model considers the subject system in isolation, ignoring its connectivity to external systems and other aspects of the operational environment. This is the antithesis of a systems approach to COG analysis.

The National Elements of Value Model

This is also known as the NEV model and Barlow’s Model, after its originator, Col (Ret) Jason Barlow.

Description. This model is generically similar to the strategic rings model, but seeks to show a greater degree of interconnectivity as well as connectivity to external systems. The national elements of value include:

- ✦ *Leadership:* The political and military decision-makers within the government.
- ✦ *Industry:* All of a country’s manufacturing, agriculture, research and technical enterprises as well as those parts necessary to support them, such as power production, water supply, and raw materials.
- ✦ *Armed forces:* Self explanatory.

- ★ *Population*: A country's ubiquitous features that are important, but hard to categorize and quantify; e.g., nationalism, morale, the will of the people, esprit de corps, ethnocentrism, ability to endure hardship, and religious conviction or fervor.
- ★ *Transportation*: All modes.
- ★ *Communications*: The physical means thereof.
- ★ *Alliances*: The friends, trading partners, and neighbors, from which a country receives support for continuing the conflict.

NEVs are interdependent and self-compensating. They are a critical means of system adaptation, redistribution, and recuperation. The lines connecting NEVs (depicted in Figure A.4) are constantly varying in size and texture, as they represent the strength and direction of influence, both formal and informal, and the various lines of command, control, and authority inherent between the elements.

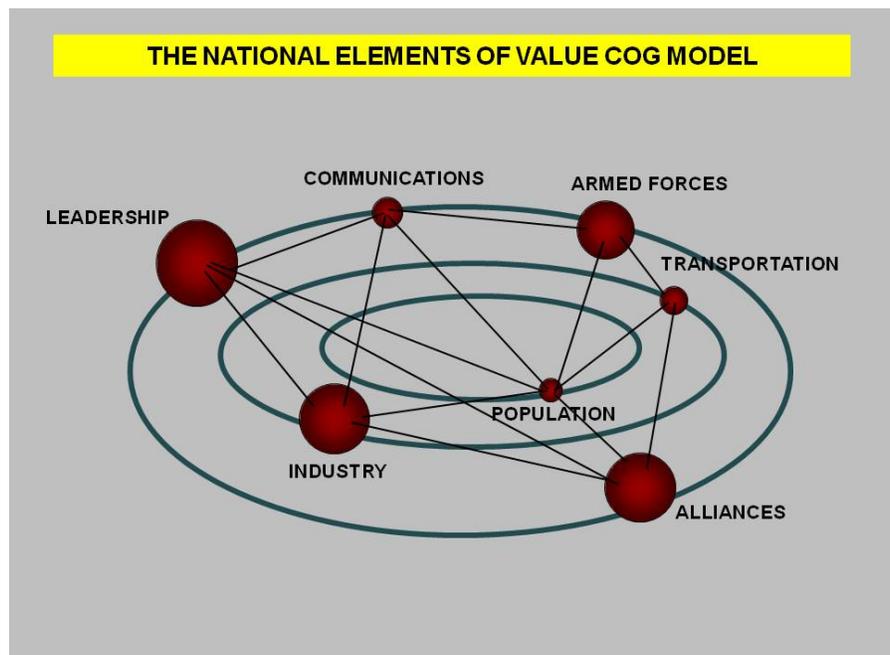


Figure A.4. The National Elements of Value COG Model

Although the NEVs are the same for every country, they vary in importance from country to country and from day to day within a given country. In general, it can be assumed that commanders make rational decisions concerning their NEVs.

Advantages. This model provides a somewhat more sophisticated analysis of the elements of a nation state than does the strategic ring model. It also accounts for connectivity between elements and to entities external to the system.

Disadvantages. The NEV model is designed to evaluate national systems and thus may be of limited value in analyzing non-state actors. Further, like the strategic ring model, it does not really provide a means of analyzing individual elements as systems, and thus may have the same disadvantages the strategic ring model does: oversimplification, a cookie-cutter approach, and a tendency to fit preconceived

targeting information to the model, rather than letting the model drive targeting decisions.

The CARVER Method

This is a model used in the special forces world to assist mission planning and targeting and may have some validity in evaluating COGs.

Description. “CARVER” stands for “criticality, accessibility, recuperability, vulnerability, effect, and recognizability.” Its elements are used to conduct a comparative assessment of previously identified critical elements, according to the following criteria:

- ✦ *Criticality:* How essential is this element to the successful functioning of its parent component, complex, or system?
- ✦ *Accessibility:* How susceptible is this element to attack given its defenses and friendly offensive capabilities?
- ✦ *Recuperability:* How quickly and easily can this element recover from inflicted damage or destruction?
- ✦ *Vulnerability:* How susceptible is this element to neutralization, damage, or destruction given friendly offensive capabilities?
- ✦ *Effect:* What is the confidence that successfully prosecuting this element as planned will create the overall desired effect of the mission?
- ✦ *Recognizability:* How easily recognizable is this element (i.e., differentiated from surrounding nodes) considering sensor capabilities, employment conditions (weather, etc.) and time available to analyze the situation and take action?

The CARVER method is really a means to help analyze which COG to act against, given determination by other methods. One should rate each of the prospective COGs (or their critical vulnerabilities) as objectively as possible according to the six criteria above, and then total the scores to give some indication of which element might be the most lucrative for attack or other action.

Advantages. This method can offer useful insights, more on which CR is vulnerable or which CV to attack than on what constitutes a COG and how it relates to the rest of the adversary’s system.

Disadvantages. This is only a partial COG analysis tool and should be used in conjunction with other methods to assist in determining the most lucrative elements for targeting.

Synthesis

Time and manpower permitting, one of the best methods of analyzing COGs is to synthesize the methods described above. One notional means of doing so is to:

- ★ Identify adversary COGs.
 - ★★ Begin with the strategic rings model because of its simplicity.
 - ★★ Apply Barlow's NEV model for greater detail and functional nuance.
- ★ Identify critical vulnerabilities.
 - ★★ Employ the joint (Strange) model (CG-CC-CR-CV) to determine CVs.
- ★ Validate and prioritize the identified CVs.
 - ★★ Apply the CARVER method to rank CVs as subjects for action.
- ★ Re-accomplish the first three steps for friendly COGs. Reassess periodically through COA wargaming and during each iteration of design and planning.

APPENDIX B

SPECIALIZED PLANNING PERSPECTIVES

This appendix describes planning considerations that are specifically applicable to various operations the Air Force conducts in and from the air, space, and cyberspace domains. Commanders and planners should be aware that each function and operation has specialized planning considerations.

SPACE OPERATIONS PLANNING

Space operations should be integrated into the JFC's planning processes to magnify joint force effectiveness. Global space forces support multiple theater and national objectives and are controlled by the Commander, United States Strategic Command (CDRUSSTRATCOM). Most space planning is thus done by United States Strategic Command (USSTRATCOM). Space planners participate in day-to-day global and functional intertheater operations through the Joint Functional Component Command for Space (JFCC Space; supported by 14th Air Force) and the Joint Space Operations Center (via the 614 AOC), at the direction of CDRUSSTRATCOM. Planning for use of space assets should be integrated throughout the plans developed and executed by all CCDRs, whether geographic or functional.

Space Integration Considerations

Integration of theater space requirements should consider both a global and a theater perspective. Global integration is the responsibility of CDRUSSTRATCOM. Theater integration is the responsibility of the geographic CCDR and the component commander designated as the space coordinating authority (if the CCDR does not retain this authority). During conflicts including Operation DESERT STORM, OAF, OEF, and OIF, several space-related considerations surfaced that may directly impact US military success. Planners should take the following actions when developing COAs:

- ✦ Determine theater requirements in terms of desired effects, not specific tactics or assets.
- ✦ Consider theater missile warning requirements, such as timeliness, tolerance of false reports, coverage, and data distribution.
- ✦ Identify accuracy requirements so Global Positioning System assets can be better deployed and employed.
- ✦ Consider increasing bandwidth needs (voice, data, imagery, and video communication) through arrangements with communications experts (A6 or J6), the local or regional frequency manager(s), and the space integration experts who are

liaisons to USSTRATCOM's JFCC SPACE, the regional satellite communications support center, or the global satellite communications support center.

- ★ Account for space-based ISR and assessment requirements.
- ★ Make use of both military and civilian space-borne meteorological support assets.
- ★ Gain understanding of the operational environment, including full knowledge of threats to friendly space operations.
- ★ Consider integrating non-kinetic space control capabilities into the operation plan, if appropriate.
- ★ Consider strikes on adversary space control capabilities and alternatives for possible loss of friendly space capabilities.
- ★ Consider the potential benefits of permitting an adversary unrestricted use of space assets to allow for friendly exploitation of adversary information.

CYBERSPACE OPERATIONS PLANNING

Planning for Ongoing Operations

The speed of operations in cyberspace compresses traditional decision cycles. Nonetheless, the observe-orient-decide-act (OODA) loop remains a valid construct for decision-making in cyberspace despite the greatly accelerated speed of operations. In cyberspace, actions and responses can take fractions of a second, so prior planning and preemptive actions are necessary—both offensively and defensively—to ensure friendly freedom of action. Cyberspace planners participate in day-to-day global and functional intertheater operations through Air Force Space Command (via 24th Air Force) and the 624th Operations Center at the direction of Commander, United States Cyber Command. General planning considerations for the continuous, cyclic, and iterative nature of ongoing operations in cyberspace are:

- ★ Strategic plans should include all IOPs in order to prepare for possible simultaneous effects across all levels of warfare and multiple domains.
- ★ Planning should include protection from adversary operations that may be targeting across multiple domains.
- ★ Planners should interface with appropriate ISR and operational organizations to prepare for the possible effects from cyberspace operations, to include effects on the plans themselves.
- ★ Planners should integrate cyberspace capabilities into the overall operation plan, as appropriate.

- ★ Theater requirements should be determined in terms of desired effects, not specific tactics or assets.
- ★ Planners should consider the potential benefits of permitting an adversary wide, or even unrestricted, use of cyberspace assets, to allow for friendly exploitation of intelligence information.

Planning For Major Operations and Campaigns

In addition to day-to-day ongoing missions, operations in cyberspace can be planned as part of major operations and campaigns. In these cases, planning should be fully integrated into the JOPP at the JFC level and the JOPPA at the component level. This kind of operational planning does not significantly differ from planning for operations in other domains in terms of processes.

During the execution stage of major operations and campaigns, cyberspace operators should work in conjunction with the JFACC's time-phased air, space, and cyberspace scheme of maneuver for a given tasking period, synthesizing commander's guidance, desired effects, supported components' schemes of maneuver, friendly capabilities, and likely enemy courses of action, and allocating friendly resources against approved targets.⁵⁹

PEACETIME CAMPAIGN PLANNING

Peacetime Campaign Planning Insights

The 2008 *Guidance for Employment of the Force* introduced the requirement for Geographic Combatant Commands (GCCs) to develop theater campaign plans (TCPs) and the Services to develop CSPs. A peacetime campaign integrates and synchronizes a number of continuing missions and activities, including ongoing operations, security cooperation, posture/access, unit and individual training, exercises, deterrence, and the initial phases of contingency plans. Contingency plans are now considered branch plans of the TCP.⁶⁰ Some insights have emerged with regard to campaign planning:

- ★ The TCP is the implementation of a GCC commander's theater strategy. The Air Force component CSP is the implementation of the COMAFFOR's theater strategy, supporting both combatant command and Air Force strategy and guidance.
- ★ Theater campaign planning is an interagency endeavor, requiring support of US national security objectives and alignment with USG efforts.

⁵⁹ For more information, see AFDD 3-12, *Cyberspace Operations*.

⁶⁰ See JP 5-0 for more information.

- ★ Campaign planning implies the need to conduct detailed country-level planning.
- ★ Theater campaign plans are not simply theater security cooperation plans by another name. Security cooperation is vitally important, but it represents just one element of a peacetime campaign.
- ★ Theater campaign plans are effective tools in a challenging fiscal-constrained environment. OSD, Congress, and others are likely to ask increasingly harder questions regarding security cooperation activities and funding.

Theater Campaign Planning Considerations

As the Air Force develops and matures an enterprise approach to campaign planning, several key planning considerations are evident:

- ★ Peacetime campaigns and all Air Force activities in support of the GCC are planned and executed “by, with, and through” the regional COMAFFOR.
- ★ The USAF peacetime campaign requires strategy, design, planning, execution, and assessment with as much attention and energy as combat-oriented campaign planning. The COMAFFOR’s entire staff must be involved.
- ★ The peacetime campaign must be strategy- and requirements-driven.
- ★ In the peacetime campaign, every Airmen should be:
 - ★★ Employed with a clear understanding of mission, accountability, and expectations.
 - ★★ Appropriately trained for every mission.

INFORMATION OPERATIONS PLANNING

IO remains a key enabler for joint force operations. One of the JFC’s priorities in any conflict should be achieving decision superiority over the adversary. This entails gaining and maintaining information superiority as well as controlling the information environment. Much of this can be accomplished through IO capabilities within the cyberspace domain.

IO can create strategic effects (both desired and undesired), even when employed at the joint force component level (as by the JFACC). IO include vital core activities such as:

- ★ Military deception.
- ★ OPSEC.

- ★ Counterintelligence.
- ★ MISO.
- ★ PA.

The specific activities of IO should support the commander's objectives by:

- ★ Conveying selected information and indicators to target audiences.
 - 1.
- ★ Helping shape the perceptions of targeted decision-makers.
- ★ Helping to secure friendly information (particularly in cyberspace).
- ★ Protecting against espionage.
- ★ Protecting against sabotage and other adversary intelligence gathering activities.
- ★ Communicating desired unclassified information about friendly activities.

In terms of strategy, operational design, and planning, IO should be explicitly integrated into COA selection and planning efforts as early as possible. In fact, JP 5-0 identifies “informational flexible deterrent operations,”⁶¹ which can be implemented by the President or SecDef. The informational IOP should be integrated into planning as early and at the highest levels possible. Examples of operational-level effects that influence operations functions can contribute include:⁶²

- ★ Hindering an adversary's ability to strike by creating confusion in the operational environment.
- ★ Slowing or ceasing an adversary's operational tempo by causing hesitation, confusion, and misdirection.
- ★ Reducing an adversary's C2 capability while easing the task of the war-to-peace transition.
- ★ Using IO capabilities instead of physical destruction to prevent or lessen reconstruction costs during the war-to-peace transition.
- ★ Influencing adversary and neutral perceptions of leaders, military forces, and populations, away from adversary objectives to US objectives.
- ★ Disrupting adversary plans, thereby enhancing US plans and operations.

⁶¹ See JP 5-0, Appendix A.

⁶² For more information concerning IO and influence operations, see AFDD 3-13, *Information Operations*.

- ★ Negatively impacting an adversary's ability to lead by affecting their communications or understanding of the operating environment.
- ★ Disrupting the adversary commander's ability to focus combat power.
- ★ Influencing the adversary commander's estimate of the situation.
- ★ Conducting IO actions that reduce friendly vulnerabilities to physical and cyber attacks.
- ★ Protecting forces during humanitarian operations from asymmetric and insurgent threats.

ELECTRONIC WARFARE (EW) PLANNING

EW, in the form of electronic attack, electronic protection, and EW support, is waged to secure freedom of action in portions of the EMS. EW is conducted to secure and maintain freedom of action for friendly forces in the electromagnetic operational environment and to deny the same to adversaries. It can create decisive standalone effects, as well as support military operations by generating various levels of control, denial, detection, exploitation, and related effects through the EMS. EW is a vital part of all phases of operations and campaigns. The JFC commonly empowers the JFACC to organize, execute, and oversee the conduct of EW through a joint electronic warfare cell (EWC) in the AOC. The EWC coordinates with other planning and targeting activities to develop and monitor EW plans and operations in support of the JFC. The EWC should be able to plan EW in order to support air, space and cyberspace efforts as well as provide EW support to ground, maritime, and special operations. In response to the ATO, wing and unit staffs and individual aircrews conduct detailed tactical planning for specific EW missions. The EWC is usually represented throughout the tasking cycle as well as having a small plans element operating outside the cycle. The representatives in the different divisions and teams (strategy, TET, MAAP team, etc.) concentrate on the basic components of a given tasking cycle day, while the plans element ensures continuity with the EWC's overall EW planning.

EW planning requires a broad understanding of enemy and friendly capabilities, tactics, and objectives. Employment of EW assets should be closely integrated into, and supportive of, the commander's overall planning effort. This planning requires a multidiscipline approach with expertise from operations (ground, air, space, cyberspace, and information), intelligence, logistics, and weather.

The EWC should incorporate EW into the AOD. They should also work with the AOC's Strategy Plans Team to develop EW annexes to OPLANs and branch plans. Finally, the EW representative should work with the Strategy Assessment Team to assess the effects provided by EW.

NUCLEAR OPERATIONS PLANNING

CDRUSSTRATCOM and JFCs plan for the employment of nuclear weapons by US forces in a manner consistent with national policy and strategic guidance. Conditions leading to US employment of nuclear weapons may not necessarily lead to an all-out exchange of WMD. However, the employment of nuclear weapons signifies an escalation of any conflict **and is always a Presidential decision**. As with all military actions, nuclear targeting and attack functions are accomplished in accordance with international law, international agreements and conventions, and ROE approved by the President and the SecDef.

USSTRATCOM is tasked through the Unified Command Plan and the Joint Strategic Capabilities Plan (JSCP) to provide nuclear planning. The JSCP's nuclear supplement establishes parameters and constraints that are the basis for nuclear targeting. It defines the threat to be countered, provides the projected threat environment, and levies requirements on the targeteers in terms of the desired effects, including such considerations as probability of damage. Additional guidance is also provided by geographic CCDR OPLANs and Chairman, Joint Chiefs of Staff emergency action procedures. Nuclear operations planning should be integrated into operation plans to create effects needed to achieve the supported CCDR's desired objectives.

Since the fundamental role of nuclear weapons is to deter nuclear attack and defend the vital interests of the United States and its partners, advance planning is critical to the effective use of these weapons. Targeting guidance and plans should be current, be tied to national and theater intelligence assessments, and satisfy specified objectives. However, as stated before, their use is always a Presidential decision. Complete destruction of enemy forces may not be required to create the desired effects; rather, containment and a demonstrated will to employ additional nuclear weapons may suffice to achieve national objectives. Other considerations for nuclear operations include:⁶³

- ✦ **Preplanned Options.** Preplanned options are a means of maintaining centralized control while minimizing the impact on response time.
- ✦ **Emerging Targets.** Requirements may arise to strike follow on and newly emerging targets in support of the desired national end state.
- ✦ **Adaptivity.** Adaptive plans provide the increased flexibility to strike newly discovered targets as expeditiously as possible, but do increase risk.

⁶³ For details on nuclear operations, see AFDD 3-72, *Nuclear Operations*.

IRREGULAR WARFARE PLANNING

Planning for conducting warfare in an irregular environment involves some unique considerations. To systematically account for and understand the challenges associated with this type of warfare, the commander's estimate should begin with the grand strategy and account for the multitude of different planning and participating organizations that hold a stake in the overall operation. It is often harder to frame the problem than to solve it. Therefore, it is imperative for commanders to use all available resources to understand the strategic context and to appropriately frame the problem(s) faced (that is, conduct appropriate operational design). Failure to comprehend the current situation may lead to the implementation of a COA that was developed to solve "the wrong problem." Once the crisis or problem is properly framed and understood, commanders can determine the appropriate COA. Extensive recent IW experience has shown that executing a COA without an adequate balance of C2, awareness of the operational environment, and creation of friendly, cooperative relationships with the population risks failure. The absence of any of these will weaken the links between tasks and effects. All three are also interdependent and the lack of any one will reduce the effectiveness of the other two. Therefore, it is important that planners provide adequate capability in all three of these areas when preparing for IW operations. When feasible, plans for air, space, and cyberspace operations within an IW environment should:⁶⁴

- ★ Focus on the commander's estimate on understanding the environment and the challenge(s) and problem(s) it presents.
- ★ Encourage and support partner nations' solutions to their problems of subversion, lawlessness, insurgency, terrorism, and other threats to internal security.
- ★ Place emphasis on efforts to develop and sustain self-sufficiency.
- ★ Be developed in close coordination with the other component commanders' process to effectively exploit the air component's capabilities and limitations.
- ★ Be coordinated closely with other joint, US government, and partner nation organizations.
- ★ Determine a sustainable operations tempo as well as appropriate force requirements.
- ★ Consider the effect of sustained operations on assets and personnel.
- ★ Continually rely on feedback and assessment in order to shape operations and modify existing plans.

⁶⁴ For more information on operations in IW, see AFDD 3-24, *Irregular Warfare*.

- ✦ Provide for effective C2, awareness of the operational environment, and knowledge of efforts needed to build partners' capabilities to ensure effectiveness of IW plans.

SUPPORT PLANNING

The JOPP and the JOPPA involve detailed planning for the placement and support of friendly forces. The JOPP and JOPPA are the processes through which the COMAFFOR and his or her staff accomplish support planning. The COMAFFOR and staff should be able to maintain awareness of the status of forces, recognize what support capabilities are needed where, and direct resources to minimize operational constraints and the potential for operational pauses. Air Force resources are limited and are designed to serve the needs of a wide variety of commanders and their personnel in dispersed areas around the world. Agile combat support (ACS) personnel at the operational level should understand the total commitment of ACS resources necessary to support the entire theater, as well as the impact this has across the entire Air Force. *Centralized control and decentralized execution, coupled with effective reachback and distributed operations, are critical to maintaining the balance between the supply and adequacy of Air Force combat support resources necessary for combat operations in new or existing theater locations.*

In permissive environments, early negotiations with the partner's authorities conducted through the US Embassy are essential for effective base support and expeditionary site planning. Issues to be negotiated in various agreements include access rights, status of US forces in country, rights to carry arms, rights to use of real property and disposition of property upon mission completion, tax concerns, host nation support to forces, the role of the host nation security or police forces in providing base defense and security for US military forces, and other issues determined by the JFACC. Throughout every step of this process, the staff judge advocate general should provide legal counsel and the negotiated settlements may be documented in Memoranda of Understanding (MOU).

Threats to an airbase may exist in all environments, but more so in uncertain and hostile environments. The Air Force uses a "threat continuum" to describe them, and commanders should recognize that any given threat may be present at any point along the continuum. Commanders should consider the effects that might be produced by the threat, not just the nature of the threat itself. A threat can be small in execution, but produce large-scale effects. These threats can undermine mission capability as severely as they can sabotage engagement with enemy forces.⁶⁵

Commanders should prepare for a variety of CBRN environments using ACS capabilities to support continued operations, regardless of the CBRN environment.⁶⁶

⁶⁵ For further information, see AFDD 3-10, *Force Protection*, and AFTTP 3-10.1, *Integrated Base Defense*.

⁶⁶ For further information, see AFDD 3-40, *Counter-Chemical, Biological, Radiological, and Nuclear Operations*.

Base Support and Expeditionary Site Planning

Base support and expeditionary site planning are foundations of Air Force expeditionary operations. Base support and expeditionary site planning govern the expeditionary site survey process (ESSP) that provides the focus, guidance, integration, and prioritization of the actions of site survey teams. ESSP provides the capability to rapidly assess potential operating locations through the effective collection, storage, and use of extensive site data to support warfighter decision-making. Expeditionary site surveys should be conducted pre-conflict when possible. The initial site survey team collects data on the site characteristics (“what’s there?”) and determines the site’s potential use in supporting operations. The objective of the first series of actions is to begin developing the common installation picture (“can we do it?”). Planners can identify operating locations and develop recommendations for the theater’s aircraft beddown plan (“does it make sense?”). Follow-on site survey teams (usually composed of unit level personnel) collect additional data and determine the site’s capability to support and sustain specific operations. An initial site survey, at a minimum, should include an airfield survey (pavement survey, available ramp space, fuel capabilities, etc.), a threat assessment, and a beddown assessment.

Operational planners armed with accurate and detailed location information can make informed deployment decisions. During OAF, OEF, and OIF, operational planners were challenged to make the most of the limited resources on hand such as time, airlift, equipment, and personnel to maximize military operational effectiveness. In response to a natural disaster (volcano, tsunami, etc.), US forces may mobilize to support a humanitarian relief operation. Although not usually opposed by the local sovereign governments, local insurgent considerations and diplomatic/political constraints might make the security of the airfields used “uncertain.” The COMAFFOR’s staff should accomplish extensive planning to ensure that facilities, personnel, and materiel that will be on the ground for such an operation are moved in as quickly as possible, adequately protected and sustained during operations, and effectively recovered as soon as possible after mission objectives are achieved.

In accordance with base support and expeditionary site planning principles, effective beddown and sustainment planning permits the Air Force to maximize the effects of force application while operating with limited resources. During the planning process, it is essential for planners to oversee ACS capabilities and their resource requirements for the entire theater and understand the impacts at all levels of war. Impacts should be rapidly coordinated with theater movement planners and Air Force depots to ensure the location is programmed into necessary support systems.⁶⁷

HEALTH AND MEDICAL PLANNING

In today’s environment, detailed planning to support all aspects of force health protection and surveillance of intentional use of biological and chemical warfare is

essential throughout all aspects of operations planning. It is vital this process begins early with comprehensive review of medical intelligence, early public health evaluation of environmental health threats, and comprehensive prevention and protection measures throughout support areas and forward deployed locations. Commanders should be prepared to support the requirement of their medical staff to provide necessary health data to the Defense Medical Surveillance System.⁶⁸

AIR MOBILITY OPERATIONS PLANNING

Air mobility plans should ensure the orderly deployment, sustainment, employment, and redeployment of forces and equipment. Air mobility operations also require integration and synchronization across the Air Force's functional and geographic AOCs, and simultaneous integration with other Air Force, joint force, and coalition force assets.

User requirements, such as the overarching strategy, order of arrival, and duration of air mobility operations, drive air mobility operations. Once planners identify requirements, they can be prioritized, validated, allocated, and tasked. Most deliberate planning relies on standing OPLANs and TPFDD products. The Air mobility forces and capabilities available for tasking affects deliberate planning. Air mobility planners participate in day-to-day global, functional intertheater operations through 18th Air Force and the 618 AOC (Tanker Airlift Control Center [TACC]) at the direction of United States Transportation Command.

The strategy used to fulfill requirements for air mobility operations depends on a number of factors:

- ★ **Threats and Integrated Defense.** Planners need to integrate intelligence information on the threat lay-down, consider aircraft vulnerability, and determine the most appropriate assets and employment strategy.
- ★ ★ **CBRN Threats.** Planners should take into account the logistical and asset transportation needs for maintaining individual protective equipment levels (protective suits and masks, medical countermeasures, decontamination kits, etc.).
- ★ **Cargo and Personnel.** The type of cargo, number of personnel, time constraint and desired effect determines the asset and method of air mobility.
- ★ **Receiver Air Refueling Requirements.** Due to the diversity of air refueling missions, air mobility planners should consider how much fuel will be offloaded, where the refueling will take place, when rendezvous will occur, and the type of receiver (boom vs. drogue).

⁶⁸ For more information, see AFDD 4-02, *Medical Operations*.

- ★ **Access.** Successful air mobility operations depend on a network of facilities, diplomatic clearances, airspace rules and restrictions around the globe, air refueling tracks, and usable destinations including airfields and drop zones.
- ★ **Basing and Airfield Suitability.** Planners should consider runway and taxiway width, runway length and surface conditions, runway orientation relative to surface weather effects, ramp considerations, pavement weight-bearing requirements, fuel capability, contingency and working maximum on ground (MOG) capacity, availability of aircraft servicing and loading equipment, and many other factors.
 - ★★ **MOG Considerations.** Planners should be most concerned with “working MOG,” the highest number of specific type aircraft able to operate in and out of an airfield or allowed on the ground during a given span of time, based on simultaneous support. This is different from the parking MOG, which is the number of aircraft that can fit, or be parked, on the ramp.
- ★ **Host-Nation Support.** Legal advisors should be consulted to determine what agreements already exist and whether status of forces agreements (SOFAs) or acquisition support agreements are in effect. SOFAs normally include such factors as status of personnel, operating rights and responsibilities, landing fees, duties, taxes, and so on.
- ★ **Airspace Control.** Air mobility planners need to consider air mobility operations in domestic, international, and military controlled airspace. For mobility operations in military controlled airspace, air mobility planners need to request and coordinate the use of military controlled airspace. Once approved, planners should follow the ACP, and ACO.
- ★ **Communications.** Air mobility planners need to understand and consider secure and non-secure voice and data link communications capabilities and limitations with airlift and tanker assets in planning air mobility operations. Planners should consider that communications with airlift and tanker assets should be maintained in order to maintain flexible use of these assets.
- ★ **Emission Control (EMCON).** Planners should consider the use of EMCON procedures to reduce the amount of information regarding combat or politically sensitive missions that enemy forces could gather.
- ★ **Weather.** Planners need accurate, relevant, and timely weather information in order to adjust aircraft flow, loads, and timing to ensure effective, efficient, and safe task accomplishment. In order to exploit this information, planners require access to reliable host nation and US/Coalition military-specific weather measurements.⁶⁹

⁶⁹ For further information on air mobility operations and planning, see AFDD 3-17, *Air Mobility Operations*.

SPECIAL OPERATIONS PLANNING

SOF missions are often high-risk operations, with limited windows of execution, and often require first-time success. Given the limited size and sustainability of SOF, adequate support is vital to the success of the mission and should be properly planned. The following are some common SOF planning considerations:

- ★ **Mission Rehearsal** is often a critical element of special operations mission preparation. Often, rehearsal of certain mission elements is necessary because of the inherent complexity and high risk associated with these missions. However, due to mission requirements, rehearsals may not always be feasible. SOF also operate within dynamic tasking cycles that meet the JFC's needs, thus it may be challenging when SOF are not operating with the JFACC's forces and normal JFACC ATO timeline restraints.
- ★ **Security.** OPSEC, communications security, and physical security are vitally important to SOF. SOF habitually operate from secure training sites and employment bases, in order to shield the small, tailored forces from the attention of hostile intelligence collectors.
- ★ **Intelligence.** Special operations planning and execution are intelligence-intensive, requiring timely and accurate intelligence information. Tailored, all-source ISR information is vital in support of SOF. All-source intelligence should be broad in scope, yet adequately detailed.
- ★ **Communications.** C2 communications should enable SOF operators to rapidly deploy and dynamically operate on a global scale with assured connectivity and security in all environments. Tactical communications are carried by SOF airborne and supporting or supported ground forces to communicate with command stations and other SOF elements in operational missions to locate, capture, strike, or kill enemy forces. Interoperability between tactical communications and C2 networks is critical.
- ★ **Planning and Execution Coordination.** The special operations component deconflicts and coordinates all special operations with the JFACC via the special operations liaison element. This liaison element is fully integrated into the AOC in order to integrate, coordinate, and deconflict special operations planning and execution (all operations, not just SOF air), with the JFACC.⁷⁰

⁷⁰ For additional information, see JP 3-05, *Special Operations*, and AFDD 3-05, *Special Operations*.

UNMANNED AIRCRAFT SYSTEM (UAS) PLANNING

Remotely piloted aircraft (RPA)⁷¹ and other UAS bring capabilities such as persistence, flexibility, autonomy, and efficiency to the JFC. However, there are some unique issues commanders and planners should consider when employing these systems.

- ★ **Allocation and Tasking.** The JFC process for determining component UAS allocation and tasking is no different than for manned aircraft. However, long endurance, theater-ranging RPA may allow transferring tasking and support to multiple users during a single mission. If an RPA is retasked to support another commander's objectives during a mission, close coordination amongst all parties is required.
- ★ **Command and Control.** UAS generally rely on a nearly continuous stream of communications for both flight and payload control. Communications availability, frequency deconfliction, **and** bandwidth protection, are important considerations. Some UAS have a beyond-line-of-sight control capability and may conduct remote split operations (launch/recover site not collocated with mission control site), which can add flexibility but presents unique basing and C2 challenges.
- ★ **Mission Planning.** UAS must be included in the development of the ACO, ATO, and SPINS, and should follow all planning guidance and procedures. Except for smaller UAS that will not likely conflict with other airborne operations, all UAS should be included on the ATO for deconfliction. Note: Inclusion of UAS on the ATO does not imply any change in command relationships or tasking authority. Detailed planning for lost link, loss of positioning data, and other emergency procedures and recoveries is required due to UAS dependence on information and control data links.

GLOBAL INTEGRATED ISR PLANNING

The AOC is the best location to integrate the JFC's theater-wide airborne ISR capabilities, to include reachback and distributed ISR support. JP 3-30 states the responsibilities of the JFACC include "planning, coordinating, allocating, and tasking assigned airborne ISR assets to accomplish and fulfill JFC tasks and requirements." Subtasks of this responsibility include:

- ★ Identifying and managing JFACC ISR requirements.
- ★ Managing JFC (theater-level) requirements in conjunction with other Service components and with validation from the JFC.

⁷¹ When referring to Air Force category four and five unmanned aircraft operated by a pilot, it is an RPA. (AFDD 3-52, *Airspace Control*.)

- ✪ Tasking theater airborne ISR assets to satisfy the JFC's and JFACC's requirements.

Experience has shown that centralized control of ISR capabilities under the JFACC provides joint components with the most capability in the most efficient manner, since the JFACC's AOC staff is manned and trained to best allocate and employ these capabilities in accordance with the JFC's priorities.

Joint Intelligence Preparation of the Operational Environment

JIPOE is a systematic continuous process of analyzing the threat and environment to provide the commander with the situational awareness and understanding necessary for decision-making. JIPOE is an effective analytical process used during peacetime and during hostilities at all levels of command, from the JFACC in support of JOPPA to the JFC in support of JOPP.

JIPOE focuses intelligence for the commander and the commander's supporting C2 elements. JIPOE facilitates getting "inside" the enemy's decision-making cycle. Specifically, JIPOE focuses on the interrelationship between the threat and environment and the effect of that interaction on both friendly and enemy courses of action. JIPOE results in the production of adversary courses of action, named areas of interest, and high-value targets, which are inputs to the JFC and JFACC planning, intelligence collection, and targeting processes.

Air Force intelligence entities at all levels, in cooperation with federated US national-level and international partners, should use JIPOE principles, focusing on environmental and threat characteristics and activities, which significantly enhance Air Force operations.⁷²

WEATHER

Air Force weather operations are critical to a commander's battlespace awareness across the range of military operations. Few military endeavors, including those of adversaries, are immune to the effects of the environment. Neglected or ignored, weather can adversely affect even the most carefully planned and executed campaigns and operations.

Anticipation of weather's effects should be an integral part of planning, Air Force weather operations help anticipate when the natural environment will affect friendly and enemy air, space, and surface operations, possibly offering friendly force commanders an exploitable asymmetric advantage. Air Force weather operators constantly monitor, assess, and report the state of the natural environment. To be relevant to decision-makers, Air Force weather experts should know the past, current,

⁷² For more information on intelligence operations in general and ISR, see AFDD 2-0, *Global Integrated Intelligence, Surveillance, and Reconnaissance Operations*.

and future state of the atmosphere and space environment and then translate that into impacts on operations. In essence, weather operations provide two distinct yet related basic functions: 1) describing past, current, and future environmental conditions, and 2) enabling the exploitation of environmental information at key decision points through expert weather planning.⁷³

HOMELAND OPERATIONS PLANNING

AOCs provide a full spectrum of planning for airpower operations in support of operations in the homeland. The Air Force Northern Command AOC provides support for homeland operations in the CONUS North American Aerospace Defense Command (NORAD) region and United States Northern Command for planning within the CONUS, Puerto Rico, and the US Virgin Islands, as well as to the Alaska NORAD region and JTF-Alaska for planning within Alaska. The Pacific Air Force's AOC supports United States Pacific Command for planning within Hawaii, Guam and other US Pacific territories and atolls. The 618 AOC (TACC) supports homeland operations through effective use of air mobility capabilities to achieve combatant commander requirements.

Memoranda of agreement (MOA) or MOU with CONUS communities, and Hawaii and US Pacific territories, as well as standing OPLANS and execute orders with homeland-based military units normally assigned to other combatant commands, can clarify such issues as response procedures and capabilities, and reimbursement of costs. MOA and MOU provide a means to answer numerous questions from other government agencies and NGOs before a disaster or accident occurs, and allow for planning how military units respond, what local authorities expect of them, and what they are allowed to do.⁷⁴

⁷³ For more information on weather considerations, see AFDD 3-59, *Weather Operations*.

⁷⁴ For more information, see AFDD 3-27, *Homeland Operations*.

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GLOSSARY

Abbreviations and Acronyms

AADC	area air defense commander
AADP	area air defense plan
ACO	airspace control order
ACP	airspace control plan
ACS	agile combat support
AETF	air expeditionary task force
AFDD	Air Force Doctrine Document
AFI	Air Force instruction
AFSOF	Air Force special operations forces
AFTTP	Air Force tactics, techniques, and procedures
ALLOREQ	allocation request
AMC	Air Mobility Command
AMD	air mobility division (within an AOC)
AOC	air operations center
AOD	air operations directive
AOR	area of responsibility
APEX	Adaptive Planning and Execution system
ATO	air tasking order
BDA	battle damage assessment
BFT	blue force tracking
C2	command and control
CA	combat assessment
CAP	crisis action planning
CAOC	combined air operations center
CARVER	criticality, accessibility, recuperability, vulnerability, effect, and recognizability (method of center of gravity analysis)
CBRN	chemical, biological, radiological, and nuclear
CC	critical capability
CCDR	combatant commander
CCIR	commander's critical information requirement
CG-CC-CR-CV	center of gravity-critical capability-critical requirement-critical vulnerability model (method of center of gravity analysis)
CID	combat identification
CJCSM	Chairman of the Joint Chiefs of Staff Manual
COA	course of action
COB	collocated operating base
COG	center of gravity
COMAFFOR	commander, Air Force forces
CONOPS	concept of operations
CONUS	continental United States

CSP	campaign support plan
CR	critical requirement
CV	critical vulnerability
DOD	Department of Defense
DOTMLPF	doctrine, organization, training, materiel, leadership and education, personnel, and facilities
DP	decisive point
DSCA	defense support of civil authorities
EBAO	effects-based approach to operations
EMCON	emission control
EMS	electromagnetic spectrum
EO	executive order
ESSP	expeditionary site survey process
EW	electronic warfare
EWCC	electronic warfare coordination cell
F2T2EA	find, fix, track, target, engage, and assess (part of the targeting process)
FOB	forward operating base
GCC	geographic combatant commander
HHQ	higher headquarters
IADS	integrated air defense system
IO	information operations
IOP	instrument of power
ISR	intelligence, surveillance, and reconnaissance
IW	irregular warfare
JACCE	joint air component coordination element
JAOC	joint air operations center
JAOP	joint air operations plan
JCB	joint coordination board
JFACC	joint force air component commander
JFLCC	joint force land component commander
JFMCC	joint force maritime component commander
JFC	joint force commander
JFCC	joint functional component command
JIPOE	joint intelligence preparation of the operational environment
JIPCL	joint integrated prioritized collection list
JIPTL	joint integrated prioritized target list

JOPES	joint operation planning and execution system
JOPP	joint operation planning process
JOPPA	joint operation planning process for air
JP	joint publication
JPEC	joint planning and execution community
JPG	joint planning group
JSCP	Joint Strategic Capabilities Plan
JTCB	joint targeting coordination board
JTF	joint task force
LOE	line of effort
LOAC	law of armed conflict
MAAP	master air attack plan
MCO	major combat operation
MES	military end state
MISO	military information support operations
MISREP	mission report
MOA	memorandum of agreement
MOB	main operating base
MOE	measure of effectiveness
MOG	maximum on ground
MOP	measure of performance
MOU	memorandum of understanding
NATO	North Atlantic Treaty Organization
NEV	national elements of value
NGO	non-governmental organizations
NORAD	North American Aerospace Defense Command
NSL	no-strike list
OAF	Operation ALLIED FORCE
OEF	Operation ENDURING FREEDOM
OIF	Operation IRAQI FREEDOM
OODA	observe-orient-decide-act (decision cycle)
OPLAN	operation plan
OPORD	operation order
OPSEC	operations security
PA	public affairs
PATS	phased air targeting scheme
PED	processing, exploitation, and dissemination
POL	petroleum, oil, and lubricants
ROE	rules of engagement
ROMO	range of military operations

RSTA	reconnaissance, surveillance, and target acquisition
RTL	restricted target list
SA	security assistance
SAM	surface-to-air missile
SC	security cooperation
SecDef	Secretary of Defense
SFA	security force assistance
SGT	strategy guidance team
SIDO	senior intelligence duty officer
SME	subject matter expert
SOF	special operations forces
SOFA	status of forces agreement
SORTIEALOT	sortie allotment message
SPINS	special instructions
SRD	strategy division
TA	tactical assessment
TACC	Tanker Airlift Control Center
TACON	tactical control
TCP	theater campaign plan
TET	targeting effects team
TNL	target nomination list
TPFDD	time-phased force and deployment data
TST	time-sensitive target
UN	United Nations
US	United States
USG	United States Government
USSOCOM	United States Special Operations Command
USSTRATCOM	United States Strategic Command
WMD	weapons of mass destruction
WW II	World War II

Definitions

(Note: Joint publications listed as sources for terms reflect the source documents where they were originally defined ; all such terms are also incorporated in JP 1-02, unless indicated otherwise. In cases where alternative definitions not relevant to this document exist, they have been omitted and their omission has been annotated. Readers should refer to JP 1-02 for complete reference to existing definitions.)

action. The performance of an activity to create an effect. (AFDD 3-0)

Adaptive Planning and Execution system. A Department of Defense system of joint policies, processes, procedures, and reporting structures, supported by communications and information technology, that is used by the joint planning and

execution community to monitor, plan, and execute mobilization, deployment, employment, sustainment, redeployment, and demobilization activities associated with joint operations. Also called **APEX system**. (JP 5-0)

adversary. A party acknowledged as potentially hostile to a friendly party and against which the use of force may be envisaged. (JP 3-0) [*A party who opposes one's will or with whom one has a conflict, peaceful or otherwise.*] (AFDD 3-0) {Italicized definition in brackets applies only to the Air Force and is offered for clarity.}

agile combat support. The foundational and crosscutting capability to field, protect, support, and sustain Air Force forces across the range of military operations. Also called **ACS**. (AFDD 4-0)

airlift. Operations to transport and deliver forces and materiel through the air in support of strategic, operational, or tactical objectives. (AFDD 3-17)

airpower. The ability to project military power or influence through the control and exploitation of air, space, and cyberspace to achieve strategic, operational, or tactical objectives. (AFDD 1)

air superiority. That degree of dominance in the air battle of one force that permits the conduct of its operations at a given time and place without prohibitive interference from air and missile threats. (JP 3-01)

air supremacy. That degree of air superiority wherein the opposing force is incapable of effective interference within the operational area using air and missile threats. (JP 3-01) [*That degree of dominance in the air battle of one force over another that permits the conduct of operations by the former and its related land, sea, air, and space forces at a given time and place without effective interference by the opposing force.*] (AFDD 3-01) {Italicized definition in brackets applies only to the Air Force and is offered for clarity.}

allocation. In a general sense, distribution for employment of limited forces and resources among competing requirements, (JP 5-0)

assessment. 1. A continuous process that measures the overall effectiveness of employing joint force capabilities during military operations. 2. Determination of the progress toward accomplishing a task, creating an effect, or achieving an objective. 3. Analysis of the security, effectiveness, and potential of an existing or planned intelligence activity. 4. Judgment of the motives, qualifications, and characteristics of present or prospective employees or "agents." (JP 3-0)

assumption. A supposition on the current situation or a presupposition on the future course of events, either or both assumed to be true in the absence of positive proof, necessary to enable the commander in the process of planning to complete an estimate of the situation and make a decision on the course of action. (JP 5-0)

assurance (strategy). Persuading actual and potential partners not to pursue courses of action contrary to friendly interests because the United States and its allies can assure their security under the umbrella of US and allied deterrent capability. (AFDD 3-0)

asymmetric. In military operations the application of dissimilar strategies, tactics, capabilities, and methods to circumvent or negate an opponent's strengths while exploiting his weaknesses. (JP 3-15.1) [*Any capability that confers an advantage for which an adversary cannot directly compensate.*] (AFDD 3-0) {Italicized definition in brackets applies only to the Air Force and is offered for clarity.}

asymmetric operations. Operations that confer disproportionate advantage on those conducting them by using capabilities the adversary cannot use, will not use, or cannot effectively defend against. (AFDD 3-0)

behavioral effect. An effect on the behavior of individuals, groups, systems, organizations, and governments. (AFDD 3-0)

branch. [definition 4.] The contingency options built into the base plan. A branch is used for changing the mission, orientation, or direction of movement of a force to aid success of the operation based on anticipated events, opportunities, or disruptions caused by enemy actions and reactions. (JP 5-0)

campaign. A series of related major operations aimed at achieving strategic and operational objectives within a given time and space. (JP 5-0)

cascading effect. One or more of a series of successive indirect effects that propagate through a system or systems. Cascading effects typically flow throughout the levels of conflict and are the results of interdependencies and links among multiple connected systems. (AFDD 3-0)

causal linkage. An explanation of why an action / task or effect will cause or contribute to a given effect. (AFDD 3-0)

center of gravity. A source of power that provides moral or physical strength, freedom of action, or will to act. (JP 5-0)

coercion. Convincing an adversary to behave differently than it otherwise would through the threat or use of force. (AFDD 3-0)

combined. Between two or more forces or agencies of two or more allies. (When all allies or services are not involved, the participating nations and services shall be identified, e.g., combined navies.) (JP 1-02)

compellance (strategy). A type of coercion that involves a threat or use of force that compels rather than deters an adversary. (AFDD 3-0)

condition. 1. Those variables of an operational environment or situation in which a unit, system, or individual is expected to operate and may affect performance. 2. A physical or behavioral state of a system that is required for the achievement of an objective. (JP 3-0)

contingency plan. A plan for major contingencies that can reasonably be anticipated in the principal geographic subareas of the command. (JP 5-0)

counterinsurgency. Comprehensive civilian and military efforts taken to defeat an insurgency and to address any core grievances. (JP 3-24)

counterterrorism. Actions taken directly against terrorist networks and indirectly to influence and render global and regional environments inhospitable to terrorist networks. (JP 3-26)

crisis action planning. The Adaptive Planning and Execution system process involving the time-sensitive development of joint operation plans and operation orders for the deployment, employment, and sustainment of assigned and allocated forces and resources in response to an imminent crisis. Also called **CAP**. (JP 5-0)

cross-domain effects. Effects created in one or more domains through operations in another. (AFDD 3-0)

culminating point. The point at which a force no longer has the capability to continue its form of operations, offense or defense. (JP 5-0)

cumulative effect. An effect resulting from the aggregation of multiple, contributory direct or indirect effects. (AFDD 3-0)

cyberspace. A global domain within the information environment consisting of the interdependent network of information technology infrastructures, including the internet, telecommunications networks, computer systems, and embedded processors and controllers. (CJCS Chairman's Memorandum 0363-08)

cyberspace superiority. The operational advantage in, through, and from cyberspace to conduct operations at a given time and in a given domain without prohibitive interference. (AFDD 3-12)

decisive point. A geographic place, specific key event, critical factor, or function that, when acted upon, allows a commander to gain a marked advantage over an adversary or contribute materially to achieving success. Also called **DP** (JP 5-0)

deliberate planning. 1. The Adaptive Planning and Execution system process involving the development of joint operation plans for contingencies identified in joint strategic planning documents. 2. A planning process for the deployment and

employment of apportioned forces and resources that occurs in response to a hypothetical situation. (JP 5-0)

denial (strategy). A type of coercion that involves destroying or neutralizing a portion of the adversary's physical means to resist or of otherwise denying them the ability to execute a desired course of action. (AFDD 3-0)

design. 1. The process of creating an underlying scheme to govern the functioning, developing, or unfolding of a strategy or course of action. 2. An underlying scheme for an operation created through the process of design. (AFDD 3-0)

deterrence. The prevention from action by fear of the consequences. Deterrence is a state of mind brought about by the existence of a credible threat of unacceptable counteraction. (JP 3-0)

direct effect. First-order result of an action with no intervening effect between action and outcome. Usually immediate, physical, and readily recognizable (e.g., weapons employment results). (AFDD 3-0)

direct support. A mission requiring a force to support another specific force and authorizing it to answer directly to the supported force's request for assistance. (JP 3-09.3)

dissuasion (strategy). Actions taken to persuade an opponent that costs will be too high or benefits too low to justify embarking on a course of action contrary to friendly interests. (AFDD 3-0)

effect. 1. The physical or behavioral state of a system that results from an action, a set of actions, or another effect. 2. The result, outcome, or consequence of an action. 3. A change to a condition, behavior, or degree of freedom. (JP 3-0)

effects-based approach to operations. An approach in which operations are planned, executed, assessed, and adapted to influence or change systems or capabilities in order to achieve desired outcomes. Also called **EBAO**. (AFDD 3-0)

end state. The set of required conditions that defines achievement of the commander's objectives. (JP 3-0)

enemy. An adversary who actively opposes one's will through the use of violence and/or armed force. (AFDD 3-0)

federation. The cooperative effort between the air operations center and/or Commander, Air Force Forces staff and all other Services, agencies (including joint, national, and international) outside of it. (AFDD 3-0)

force health protection. Measures to promote, improve, or conserve the mental and

physical well-being of Service members. These measures enable a healthy and fit force, prevent injury and illness, and protect the force from health hazards. (JP 4-02)

force protection. Preventive measures taken to mitigate hostile actions against Department of Defense personnel (to include family members), resources, facilities, and critical information. (JP 3-0) [*The process of detecting threats and hazards to the Air Force and its mission, and applying measures to deter, pre-empt, negate, or mitigate them based on an acceptable level of risk.*](AFDD 3-10) {Italicized definition in brackets applies only to the Air Force and is offered for clarity.}

foreign internal defense. Participation by civilian and military agencies of a government in any of the action programs taken by another government or other designated organization to free and protect its society from subversion, lawlessness, and insurgency. (JP 3-22)

functional effect. An effect on the ability of a system to function as designed. (AFDD 3-0)

indirect effect. A second, third, or nth-order effect created through an intermediate effect or causal linkage following an action. An indirect effect is often delayed and typically is more difficult to recognize and assess than a direct effect. (AFDD 3-0)

indirect support. Security assistance and other efforts to develop and sustain host nation capabilities. This definition establishes a distinction between security assistance and forms of support involving direct operational employment of US forces which supports the guidance in the *National Security Strategy of the United States*. (AFDD 3-22)

information operations. The integrated employment, during military operations, of information-related capabilities in concert with other lines of operation to influence, disrupt, corrupt, or usurp the decision-making of adversaries and potential adversaries while protecting our own. Also called **IO**. (SecDef Memo 12401-10)

intelligence. 1. The product resulting from the collection, processing, integration, analysis, evaluation, and interpretation of available information concerning foreign countries or areas. 2. Information and knowledge about an adversary obtained through observation, investigation, analysis, or understanding. (JP 2-0)

intergovernmental organization. An organization created by a formal agreement between two or more governments on a global, regional, or functional basis to protect and promote national interests shared by member states. (JP 3-08)

irregular warfare. A violent struggle among state and non-state actors for legitimacy and influence over the relevant population(s). Irregular warfare favors indirect and asymmetric approaches, though it may employ the full range of military and other capacities, in order to erode an adversary's power, influence, and will. Also called **IW**. (JP 1)

joint. Connotes activities, operations, organizations, etc., in which elements of two or more Military Departments participate. (JP 1)

joint fires element. An optional staff element that provides recommendations to the operations directorate to accomplish fires planning and synchronization. (JP 3-60)

joint force air component commander. The commander within a unified command, subordinate unified command, or joint task force responsible to the establishing commander for making recommendations on the proper employment of assigned, attached, and/or made available for tasking air forces; planning and coordinating air operations; or accomplishing such operational missions as may be assigned. The joint force air component commander is given the authority necessary to accomplish missions and tasks assigned by the establishing commander. Also called **JFACC**. (JP 3-0)

joint intelligence preparation of the operational environment. The analytical process used by joint intelligence organizations to produce intelligence estimates and other intelligence products in support of the joint force commander's decision-making process. It is a continuous process that includes defining the operational environment; describing the impact of the operational environment; evaluating the adversary; and determining adversary courses of action. Also called **JIPOE**. (JP 2-01.3)

Joint Operation Planning and Execution System. An Adaptive Planning and Execution system technology. Also called **JOPES**. (JP 5-0)

joint planning and execution community. Those headquarters, commands, and agencies involved in the training, preparation, mobilization, deployment, employment, support, sustainment, redeployment, and demobilization of military forces assigned or committed to a joint operation. Also called **JPEC**. (JP 5-0)

kinetic. Relating to actions designed to produce effects using the forces and energy of moving bodies and directed energy, including physical damage to, alteration of, or destruction of targets. Kinetic actions can have lethal or non-lethal effects. (AFDD 3-0)

leverage. In the context of joint operation planning, a relative advantage in combat power and/or other circumstances against the adversary across one or more domains or the information environment sufficient to exploit that advantage. (JP 5-0)

line of effort. In the context of joint operation planning, using the purpose (cause and effect) to focus efforts toward establishing operational and strategic conditions by linking multiple tasks and missions. (JP 5-0)

line of operations. A line that defines the interior or exterior orientation of the force in relation to the enemy or that connects actions on nodes and/or decisive points related in

time and space to an objective(s). (JP 5-0)

link. 1. A behavioral, physical, or functional relationship between nodes. [2 and 3...] (JP 3-0)

measure of effectiveness. A criterion used to assess changes in system behavior, capability, or operational environment that is tied to measuring the attainment of an end state, achievement of an objective, or creation of an effect. Also called **MOE**. (JP 3-0)

measure of performance. A criterion used to assess friendly actions that is tied to measuring task accomplishment. Also called **MOP**. (JP 3-0)

military engagement. Routine contact and interaction between individuals or elements of the Armed Forces of the United States and those of another nation's armed forces, or foreign and domestic civilian authorities or agencies to build trust and confidence, share information, coordinate mutual activities, and maintain influence. (JP 3-0)

node. [...3.] An element of a system that represents a person, place, or physical thing. (JP 3-0)

non-kinetic. Relating to actions designed to produce effects without the direct use of the force or energy of moving objects and directed energy sources. Kinetic actions can have lethal or nonlethal effects. (AFDD 3-0)

objective. 1. The clearly defined, decisive, and attainable goal toward which every operation is directed. 2. The specific target of the action taken which is essential to the commander's plan. (JP 5-0)

OODA loop. The process of observing phenomena, orienting mentally toward them, deciding upon a course of action concerning them, and acting on that decision. Also known as the decision cycle. (AFDD 3-0)

operational art. The cognitive approach by commanders and staffs—supported by their skill, knowledge, experience, creativity, and judgment—to develop strategies, campaigns, and operations and organize and employ military forces by integrating ends, ways, and means. (JP 3-0)

operational assessment. Joint force components' evaluation of the achievement of their objectives, both tactical and operational, through assessment of effects, operational execution, environmental influences, and attainment of the objectives' success indicators, in order to develop strategy recommendations. It also includes any required analysis of causal linkages. (AFDD 3-0)

operational control. Command authority that may be exercised by commanders at any echelon at or below the level of combatant command. Operational control is inherent in combatant command (command authority) and may be delegated within the command. Operational control is the authority to perform those functions of command

over subordinate forces involving organizing and employing commands and forces, assigning tasks, designating objectives, and giving authoritative direction necessary to accomplish the mission. Operational control includes authoritative direction over all aspects of military operations and joint training necessary to accomplish missions assigned to the command. Operational control should be exercised through the commanders of subordinate organizations. Normally this authority is exercised through subordinate joint force commanders and Service and/or functional component commanders. Operational control normally provides full authority to organize commands and forces and to employ those forces as the commander in operational control considers necessary to accomplish assigned missions; it does not, in and of itself, include authoritative direction for logistics or matters of administration, discipline, internal organization, or unit training. Also called **OPCON**. (JP 1)

operational design. The conception and construction of the framework that underpins a campaign or major operation plan and its subsequent execution. (JP 5-0)

operational reach. The distance and duration over which a joint force can successfully employ military capabilities. (JP 3-0)

parallel attack. Offensive military action that strikes a wide array of targets in a short period of time in order to cause maximum shock and dislocation effects across an entire enemy system. (AFDD 3-0)

parallel operations. Operations that apply pressure at many points across a system in a short period of time in order to cause maximum shock and dislocation effects across that system. (AFDD 3-0)

partner nation. Those nations that the United States works with to disrupt the production, transportation, distribution, and sale of illicit drugs, as well as the money involved with this illicit activity. (JP 3-07.4) [*A nation that works with the United States for a mutually beneficial cause or purpose. This umbrella term includes friends, allied nations, coalition partner nations, host nations, and any other that the United States engages with for mutual benefit from the national security standpoint.*] (AFDD 3-0) {Italicized definition in brackets apply only to the Air Force and are offered for clarity.}

personnel recovery. The sum of military, diplomatic, and civil efforts to prepare for and execute the recovery and reintegration of isolated personnel. Also called **PR**. (JP 3-50)

phase. In joint operation planning, definitive stage of an operation or campaign during which a large portion of the forces and capabilities are involved in similar or mutually supporting activities for a common purpose. (JP 5-0)

physical effect. An effect that physically alters an object or system. (AFDD 3-0)

planning. The process of translating a strategy or design into a detailed, executable course of action or concept of operations. (AFDD 3-0)

problem framing. Establishing the context of a situation within which the commander must act in order to realize the operation's aims by examining the problem from multiple perspectives. (AFDD 3-0)

psychological effect. An effect on the emotions, motives, and reasoning of individuals, groups, organizations, and governments. They are commonly intermediate steps toward behavioral effects. (AFDD 3-0)

punishment strategy. A form of coercion that entails administering some form of damaging action against adversaries until they act in a desired manner or cease undesired action. (AFDD 3-0)

reachback. The process of obtaining products, services, and applications, or forces, or equipment, or material from organizations that are not forward deployed. (JP 3-30)

reconnaissance. A mission undertaken to obtain, by visual observation or other detection methods, information about the activities and resources of an enemy or potential enemy, or to secure data concerning the meteorological, hydrographic, or geographic characteristics of a particular area. (JP 2-0)

red team. An organizational element comprised of trained and educated members that provide an independent capability to fully explore alternatives in plans and operations in the context of the operational environment and from the perspective of adversaries and others. (JP 2-0)

risk strategy. A type of coercion placing that which the adversary values at credible potential for loss. (AFDD 3-0)

security assistance. A group of programs authorized by the Foreign Assistance Act of 1961, as amended, and the Arms Export Control Act of 1976, as amended, or other related statutes by which the United States provides defense articles, military training and other defense-related services by grant, loan, credit, or cash sales in furtherance of national policies and objectives. Also called **SA**. (JP 3-22)

security cooperation. All Department of Defense interactions with foreign defense establishments to build defense relationships that promote specific US security interests, develop allied and friendly military capabilities for self-defense and multinational operations, and provide US forces with peacetime and contingency access to a host nation. See also security assistance. Also called **SC**. (JP 3-22)

sequential effects. Effects that are imposed one after another. Also known as serial effects. (AFDD 3-0)

sequential operations. Operations that apply pressure in sequence, imposing one effect after another, usually over a considerable period of time. Also known as serial operations. (AFDD 3-0)

space superiority. The degree of dominance in space of one force over another that permits the conduct of operations by the former and its related land, maritime, air, space, and special operations forces at a given time and place without prohibitive interference by the opposing force. (JP 3-14) [*The ability to maintain freedom of action in, from, and to space, sufficient to sustain mission assurance. Space superiority may be localized in time and space, or it may be broad and enduring.*] [AFDD 3-14] {*Italicized definition in brackets apply only to the Air Force and are offered for clarity.*}

strategy. A prudent idea for employing the instruments of national power in a synchronized and integrated fashion to achieve theater, national, and/or multinational objectives. (JP 3-0)

strategic attack. Offensive action that is specifically selected to achieve national or military strategic objectives. These attacks seek to weaken the adversary's ability or will to engage in conflict, and may achieve strategic objectives without necessarily having to achieve operational objectives as a precondition. (AFDD 3-70)

strategic communication. Focused US government efforts to understand and engage key audiences in order to create, strengthen, or preserve conditions favorable for the advancement of US government interests, policies, and objectives through the use of coordinated programs, plans, themes, messages, and products synchronized with the actions of all instruments of national power. (JP 5-0)

surveillance. The systematic observation of aerospace, surface or subsurface areas, places, persons, or things, by visual, aural, electronic, photographic, or other means. (JP 3-0)

symmetric operations. Operations in which a capability is countered by the same or similar capability. (AFDD 3-0)

systemic effect. An effect on the entire operation of a system or systems. (AFDD 3-0)

tactical control. Command authority over assigned or attached forces or commands, or military capability or forces made available for tasking, that is limited to the detailed direction and control of movements or maneuvers within the operational area necessary to accomplish missions or tasks assigned. Tactical control is inherent in operational control. Tactical control may be delegated to, and exercised at any level at or below the level of combatant command. Tactical control provides sufficient authority for controlling and directing the application of force or tactical use of combat support assets within the assigned mission or task. Also called **TACON**. (JP 1)

target. 1. An entity or object considered for possible engagement or action. 2. In intelligence usage, a country, area, installation, agency, or person against which intelligence operations are directed. 3. An area designated and numbered for future firing. 4. In gunfire support usage, an impact burst that hits the target. (JP 3-60)

task. An action assigned to be performed by an organization or individual. (AFDD 3-0)

termination criteria. The specified standards approved by the President and/or the Secretary of Defense that must be met before a joint operation can be concluded, usually before end states are met. (JP 3-0)

traditional warfare. A form of warfare between the regulated militaries of states, or alliances of states, in which the objective is to defeat an adversary's armed forces, destroy an adversary's war-making capacity, or seize or retain territory in order to force a change in an adversary's government or policies. (DOD Directive 3000.07, *Irregular Warfare*, 1 Dec 08)

unified action. The synchronization, coordination, and/or integration of the activities of governmental and nongovernmental entities with military operations to achieve unity of effort.. (JP 1)

unity of effort. Coordination and cooperation toward common objectives, even if the participants are not necessarily part of the same command or organization - the product of successful unified action. (JP 1)

unintended effect. An outcome of an action (whether positive or negative) that is not part of the commander's original intent. (AFDD 3-0)

war. A violent struggle between rival parties to attain competing objectives. (AFDD 3-0)

wargaming. A conscious attempt to visualize the flow of an operation, given joint force strengths and dispositions, adversary capabilities and possible courses of action, the operational area, and other aspects of the operational environment. (AFDD 3-0)