STRATEGY RESEARCH PROJECT

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EFFECTS-BASED OPERATIONS: A NEW OPERATIONAL MODEL?

BY

LIEUTENANT COLONEL ALLEN W. BATSCHELET
United States Army

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LIEUTENANT COLONEL ALLEN W. BATSCHELET

Dr. Douglas Johnson
Project Advisor

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U.S. Army War College
CARLISLE BARRACKS, PENNSYLVANIA 17013

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ABSTRACT

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The post cold-war environment has caused the U.S. military to reexamine the way it will conduct military operations in the future. Today technological advances and changes in the international security environment may redefine how the United States will wage war. Success in meeting the national security challenges depends on the adequacy of national military strategy and the ability of the armed forces to execute their assigned tasks. Toward that end, the United States Joint Forces Command is examining current trends and emerging concepts regarding the application of military and other elements of national power. Such an examination depends on, among other inputs, experience, which must provide a critical source for validating current and generating new concepts. From observation of the 1990-1991 Gulf War, some in the United States argue that the war portended a new construct for the "American way of war." They posit that recent conflicts in Bosnia and Kosovo have also demonstrated a maturation of the new concept of effects-based operations. According to the proponents of effects-based operations, rather than relying on the old approaches of annihilation or attrition, the new way of conducting operations focuses on generating desired effects rather than focusing on objectives or the physical destruction of targets.

Examination of this concept resulted in the publication of a White Paper by the J9 Concepts Department of the United States Joint Forces Command on 18 October 2001 titled Effects Based Operations. The White Paper is, according to J9, "a result of pre-concept topic area exploration and subsequent command decision to proceed with concept development." It describes effects-based operations as "an enabler of the Rapid Decisive Operations Concept." This study will analyze the concept of effects-based operations and attempt to answer the questions, what, in the end, is effects-based operations? Is it a new concept? What utility, if any, is there in the application of effects-based operations? Can effects-based operations serve as a common conceptual denominator for the U.S. forces? Finally, what are the implications for the Army if effects-based operations become institutionalized?

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EFFECTS-BASED OPERATIONS: A NEW OPERATIONAL MODEL?

PREPARING FOR AN UNCERTAIN FUTURE

The United State's Quadrennial Defense Review Report, published on 30 September 2001 described the critical importance of adapting the national security apparatus of the United States to new challenges.[1] It also emphasized the need for U.S. military forces to maintain the ability to assure allies, dissuade adversaries, deter aggressors, and defeat any adversary, if deterrence were to fail, while modernizing the force and exploiting the revolution in military affairs.[2] The successful addressing of these challenges requires an appreciation of the environment in which U.S. military forces will operate in the twenty first century.
While there is considerable uncertainty in the emerging U.S. security environment, several trends have appeared. First, America's geographic position offers diminishing protection, as the events of 11 September 2001 demonstrated. Second, the United States is not likely to face a peer competitor in the near future. Third, regional powers increasingly have the ability to threaten the stability of regions critical to U.S. interests. Fourth, weak and failing states provide a haven in which non-state actors can operate with impunity to acquire power and military capabilities. Fifth, developing and sustaining regional security arrangements ensures the ability of the United States to operate with its allies in a manner consistent with common interests. Moreover, there is an increasing diversity in the sources and unpredictability in the locations of conflict.[3] Finally, as influential as these trends, the rapid advancement of military technologies is providing the U.S. military with new tools and capabilities.[4]

Meeting the demands of an ever changing strategic context demands that the U.S. military develop forces capable of achieving what Joint Vision 2020 describes as "Full Spectrum Dominance."[5] Achieving such dominance requires the integration of service core competencies at the operational level. The building of effective military forces for 2020 requires joint integration, intellectually, operationally, organizationally, doctrinally, and technically.[6] At present, much of the responsibility for such integration falls to the U.S. Joint Forces Command. In keeping with this charter, that command is examining the concept of effects-based operations.

Effects-based operations, as a "new" concept, emerged following the Gulf War. From their observation of the 1990-1991 Gulf War, some in the U.S. defense community argued that the war in South West Asia demanded fundamental changes in the "American way of war."[7] These advocates posit that recent conflicts in Bosnia and Kosovo have demonstrated a

maturation of this concept. According to the argument, rather than relying on old approaches of annihilation or attrition, this new way of conducting operations will focus on generating desired effects, rather than on objectives or the physical destruction of targets. Examination of this idea by J9 Joint Forces Command resulted in the publication of a White Paper on 18 October 2001 titled "Effects Based Operations." The White Paper is, according to its authors, "a result of pre-concept topic area exploration and subsequent command decision to proceed with concept development."

What is this concept called effects-based operations? Is this a new concept or is it an old idea in a new wrapper? Such questions form the basis of this study. This study begins by defining effects-based operations. Then, in an attempt to determine whether or not the idea is new, it examines the historical basis of effects-based operations, eventually comparing the concept with a component or enabling idea of the Army's AirLand Battle Doctrine, namely, target value analysis.[8]

DEFINING EFFECTS-BASED OPERATIONS

Current discussions of effects-based operations involve various definitions and descriptions of the concept. According to J9, effects-based operations are "a process for obtaining a desired strategic outcome or effect on the enemy through the synergistic and cumulative application of the full range of military and non-military capabilities at all levels of conflict." Furthermore, an "effect" is the physical, functional, or psychological outcome, event, or consequence that results from specific military or non-military actions.[9] The defining elements in the J9 description include emphasis on effects-based operations as a process, beginning with developing knowledge of the adversary, viewed as a complex adaptive system, the environment, and U.S. capabilities. Knowledge of the enemy will enable the commander to determine the effects he needs to achieve to convince or compel the enemy to change his behavior. The commander's intent plays a central, critical role, in the determination and explicit linking of tactical actions to operational objectives and desired strategic outcomes. Execution of the plan follows, the aim or task being the use of all applicable and available capabilities, including diplomatic, information, military and economic.

The purpose then is to create a coordinated and synergistic operation that will produce the desired effects. Continuous assessment must measure and evaluate the impact of the desired effects. Assessment includes, determining if military actions achieved the desired effects, produced unintended effects, the overall impact of the effort, and if tactical actions contributed to achievement of the desired outcome. Finally, continuous assessment of the

enemy, U.S. military and political actions as well as the friendly situation will enable the commander to adjust his course of action to reach his desired endstate efficiently and rapidly.[10]

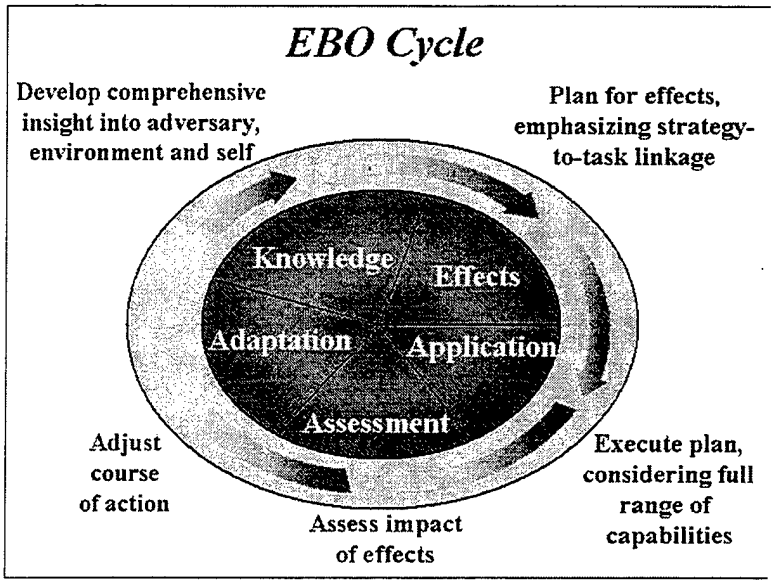

FIGURE 1 EFFECTS-BASED OPERATIONS CYCLE[11]

Effects-based operations, according to Air Force Major General David Deptula, a prominent advocate, reflect a fundamental change in the nature of warfare. He asserts that the conduct of warfare has changed from campaigns designed to achieve objectives through sequential attack, to what he describes as, parallel warfare, or simultaneous attack against all the enemy's vital systems.[12] In Deptula's concept, prosecuting parallel warfare requires precision weapons, the ability to suppress enemy air defenses, and an operational concept that focuses principally on effects rather than only on aggregate destruction to achieve military objectives.[13] The operational concept is effects-based operations. Deptula acknowledges that current doctrinal manuals include words about targeting to achieve effects. However, he argues that the present focus is on physical target destruction with little concern for the outcome. This focus on destruction comes from two traditional concepts of war, he argues, annihilation and attrition.[14]

Citing Sun Tzu and B.H. Liddell Hart, Deptula advances an alternative concept of warfare based on control—the idea that an enemy organization's ability to operate as desired is ultimately more important than destruction of its military forces. He views destruction as a means to achieve control over an enemy. Destruction then should aim at achieving effects on enemy systems, not necessarily at destroying the system, but preventing its intended use as the adversary desires.[15] From the Gulf War examples that Deptula offers, one can infer the

importance of knowing the enemy, understanding the commander's intent, and achieving the desired effects or outcomes. While he focuses more on selection and employment of means, than on defining effects-based operations, Deptula places the concept at the heart of his study. He asserts that effects-based operations will achieve desired effects through the successful application of force to gain control of systems on which the enemy relies.

A study done by the Institute for Defense Analyses offers a third interpretation of effects-based operations. It begins by arguing that effects-based operations rest on an explicit linking of actions to desired strategic outcomes. It is thus about producing desired futures. Moreover, effects-based thinking must under grid the concept by providing a focus on the entire continuum (peace, pre-conflict, conflict, and post conflict), and not just on conflict.[16] Understanding how to think in this manner enables effects-based operations. This study also emphasizes the need to understand and model an adversary as a complex, adaptive system driven by complex human interactions, rather than just collections of physical targets. Therefore, one should be able to focus operations more coherently.[17] Furthermore, effects-based operations have seven attributes: the need to focus on decision superiority, applicability in peace and war (full-spectrum operations); a focus beyond direct, immediate first-order effects; an understanding of the adversary's systems; the ability of disciplined adaptation, the application of the elements of national power; and the ability of decision-making to adapt rules and assumptions to reality.[18] This study also emphasizes that effects-based operations must use a continuous process of analyzing and understanding, planning, executing, assessing, and adapting. Of note, this study places great importance on communications between decision makers at the strategic, operational, and tactical levels and underlines the criticality of "commander's intent" for ensuring focused efforts and effects.[19] Finally, this work offers that those engaging in effects-based operations must continuously adapt plans, rules, and assumptions to existing reality, in other words, effects based-thinking and operations help the commander to fight the enemy and not the plan.

The above theories of effects-based operations share some common ground. Each starts with an emphasis on the importance of knowledge, knowledge of the enemy, viewed as a complex adaptive system, and knowledge of self. A greater understanding of the enemy enables commanders to think in terms of outcomes expressed through his intent. It allows planners and staffs to determine the tactical actions necessary to accomplish those objectives and desired outcomes. Clearly, the focus is on achieving an effect rather than target destruction. Expression and communication of the commander's intent plays a unifying, focusing and essential role in ensuring the integration and use of available capabilities to

include elements of national power other than military. Moreover, the commander's intent proves critical to the flexibility and adaptability of the plan, when the situation changes, a crucial acknowledgement of the interactive nature of war.

Finally, continuous situational assessment measures success, or failure in achieving the desired effects against the benchmark of the commander's intent. Given the predominant ideas in these theories, one might produce the following definition: effects-based operations represent the identification and engagement of an enemy's vulnerabilities and strengths in a unified, focused manner, and uses all available assets to produce specific effects consistent with the commander's intent. Potentially then, the concept of effects-based operations can serve as a common conceptual denominator, or language, for executing joint operations in a unified, holistic approach. Having provided a general definition for effects-based operations, this study will examine the historical and theoretical foundation of such operations.

Theoretical and Historical Perspective

As is the case with "new" ideas, theory and history can offer a perspective on the future usefulness and thinking about effects-based operations. Some believe that the concept of conducting effects-based operations is new. However, as this study will show, it is not. History provides many examples of theorists arguing for and commanders planning and executing military operations focused on outcomes, in essence effects-based operations. In fact, one can reach back to antiquity to see that classical theorists advocated the efficacy of combining all elements of power to compel an enemy to do one's will and achieve one's aims.

Sun Tzu, the classical Chinese theorist, emphasized the use of force as a last resort: "... those skilled in war subdue the enemy's army without battle" and "the best policy in war is to take a state intact."[20] Michael I. Handel, in "Masters of War" interprets these statements as reflecting Confucian idealism and a belief in the primacy of mental attitudes in human affairs. Thus Sun Tzu, according to Handel, possessed an idealistic preference for employing all other means short of war, be they political, diplomatic, or economic to compel an enemy to submit.[21] Clausewitz, the Prussian theorist, stated that the only way to win wars was the

> Destruction of the enemy forces is the overriding principle of war, and, so far as positive action is concerned, the principal way to achieve our object. Such destruction of forces can *usually* be accomplished only by fighting.[22] . . . We are not interested in generals who win victories without bloodshed.[23]

Certainly, Clausewitz focused on the primacy of military means and physical destruction of the opponent's forces as the best way to achieve desired ends. However, these statements reflect acknowledgement of the potential of defeating an opponent with means other than

military force. Clausewitz recognizes, more explicitly, the importance of using all the elements of power, not just military force, to create desired outcomes. In a discussion of how to disrupt the alliances of an enemy, he argued

> But there is another way. It is possible to increase the likelihood of success without defeating the enemy's forces. I refer to operations that have direct political repercussions, that are designed in the first place to disrupt the opposing alliance, or to paralyze it, that gains us new allies, favorably affect the political scene, etc. If such operations are possible it is obvious that they can greatly improve our prospects and that they can from a much shorter route to the goal than the destruction of the opposing armies.[24]

More recent theorists and advocates of effects-based operations emerged in the1920s and 30s. Among others, they include Guilio Douhet, Admiral Henry E. Eccles, who discussed the need to view then enemy as a system, and J.C. Slessor, eventually a Marshall of the Royal Air Force, who lectured at Britain's Army Staff College in the 1930s.

In 1936, Slessor published "Air Power and Armies." In this work, he argued that one must view the enemy as a system. Moreover, he emphasized the attainment of desired effects over physical destruction.

> This then is the object of attack on production, the dislocation and restriction of output from war industry, not primarily the material destruction of plant and stocks.[25] . . . The method of attack on production . . . demands a detailed and expert knowledge of the enemy's industrial system, of the communications linking the different parts of the system, and of the installation supplying it with power and light. Detailed intelligence about the enemy must be supplemented by expert technical advice from representatives of our own supply and transport services . . .[26]

Closer to home, the U.S. Army's Air Corps Tactical School gave serious thought to the concept of conducting effects-based operations during the interwar period. Established in 1926, the school functioned in no small measure as a tool for those airmen who sought to develop an independent service.[27] However, it did teach its students to think in terms of creating effects given that "interlaced social, economic, political and military divisions of a nation acquire a state of absolute interdependence during war."[28] Furthermore, without entering the debate over the efficacy or proper use of air power, the school underscored the importance of viewing the enemy as a system and creating desired effects against that system, primarily the enemy's will to fight. Its instructors argued that, "the resources of a nation for the waging of war are contained in its social, economic, political, and military systems. Pressure or the threat of

pressure, against these systems will break down the morale and cause the defeat of the nation."[29] Clearly the Air Corps Tactical School gave much thought to achieving functional, desired effects, with air power in this case, and not only to unfocused material destruction. More recently, vocal promoters of effects-based operations have included Colonel John Warden, III, a retired Air Force officer, and Air Force Major General David Deptula. Departing from the realm of theory, a cursory review of history reveals clear examples of commanders employing the concept of effects-based operations. For a familiar example, but certainly not the first, of effects-based operations, this study turns to the American Civil War.

The Union and Ulysses S. Grant conducted effects-based operations against the Confederacy beginning in 1862. While the Anaconda policy, a strategy aimed at isolating the Confederacy from external support, was in reality an effects-based strategy, in practice it proved ineffectual and too slow, given the time constraints under which the Union was operating.[30] Upon his appointment as commander in chief of all Union Armies in 1864, Grant embarked on an effects-based based campaign. By design, he chose to pursue the destruction of the main Confederate armies, force the Confederacy to disperse its limited resources as much as possible, and strike against the war resources of the south, depriving it of the economic means to maintain armies simultaneously.[31] This idea of depriving an enemy of his economic resources was not new. Sherman's march through Georgia, destroying the Confederacy's industrial war making capacity and agricultural heartland was the most obvious example of this concept. Moreover, Sherman's operation evolved another aim besides destruction of the enemy's infrastructure. Sherman also directed his effects against the minds of Southerners. "... we are not only fighting hostile armies, but a hostile people," said Sherman, "and must make old and young, rich and poor, feel the hard hand of war, as well as the organized armies."[32]

An Alabama born major on Sherman's staff provides a more insightful description of Sherman's operation.

> But, while I deplore this necessity daily and cannot bear to see the soldiers swarm as they do through fields and yards . . . nothing can end this war but some demonstration of their helplessness . . . This Union and its Government must be sustained, at any and every cost; to sustain it, we must war upon and destroy the organized rebel forces,-- must cut off their supplies, destroy their communications . . {and} produce among the people of Georgia a thorough conviction of the personal misery which attends war, and the utter helplessness and inability of their "rulers," State or Confederate, to protect them . . . If that terror and grief and even want shall help to paralyze their husbands and fathers who are fighting us . . . it is mercy in the end.[33]

Clearly, Grant and Sherman saw the enemy as a system, rather than the armies as the sole embodiment of the Confederacy. They sought to achieve combined and mutually supporting effects by attacking the enemy's armies, resources, and will.

A more modern example of the potential extent of effects-based operations lies in World War II. Early in 1941, the allies decided to focus on the defeat of European Axis powers first, concentrating against Germany. Planning efforts undertaken by the Army produced plan RAINBOW-5 and as an adjunct, the Air War Plans Division of the Army Air Forces' Staff wrote Air War Plans Document One. The basic thrust of these plans called for direct confrontation with German forces via land power, while simultaneously conducting a sustained air offensive against the Reich's industrial war making capacity and will. These plans reflected the clear strategic focus provided by President Franklin Roosevelt and Secretary of War, Henry L. Stimson. Further validating the plan and commander's intent, General George C. Marshall and Secretary Stimson approved Air War Plans Document One on 1 September 1941. While specific strategic bombing targeting priorities would change during the campaign, the focus remained on disrupting German electric power, armament production, transportation systems, and oil and petroleum infrastructure.[34] According to Albert Speer, Hitler's Minister of Armaments and Munitions, "The American attacks, which followed a definite system of assault on industrial targets, were by far the most dangerous. It was in fact these attacks which caused the breakdown of the German armaments industry." [35]

While some continue to debate the various contributions played by land and air power in World War II, what is clear is that simultaneous ground and air attacks prevented the Germans from devoting adequate resources to counter either effectively. Without the initial threat of an amphibious assault and subsequent reality, the Germans might have successfully countered the Allied bombing effort, placed their jet fighter into earlier production, and prosecuted their own bombing campaign against Britain. In turn, the diversion of the Luftwaffe to combat the allied bomber campaign contributed decisively to the successful invasion of France and final land campaign against Germany.[36] The synergistic results produced by this effects-based operation are clear in retrospect and hastened the defeat of Germany.

One final, and most recent example, serves to describe the potential efficacy of effects-based operations. Evidence of effects-based thinking and operations show up clearly in the planning and execution of the Gulf War in 1990-1991, primarily in the use of air power. General H. Norman Schwarzkopf, Commander in Chief, United States Central Command, developed a four-phased operation to achieve President George Bush's objectives. A portion of his commander's intent stated

> We will initially attack into the Iraqi homeland using air power to decapitate his leadership, command and control, and eliminate his ability to reinforce Iraqi ground forces in Kuwait and Southern Iraq. We will then gain undisputed air superiority over Kuwait so that we can subsequently and selectively attack Iraqi ground forces with air power in order to reduce his combat power and destroy reinforcing units.[37]

From this commander's intent, emerged six theater objectives: attack Iraqi political/military leadership and command and control; gain and maintain air superiority; sever Iraqi supply lines; destroy chemical, biological, and nuclear capability; destroy Republican Guard forces; and liberate Kuwait city.[38] Clearly, the commander's intent reflected a view of the enemy as a system and the effects desired against that system. According to the planners of the strategic air operation, they employed an effects-based approach towards achieving the stated objectives. Apparently, air planners continually thought through how they could best employ force against enemy systems so that every tactical strike contributed toward achieving a desired effect on the system. Constant monitoring and assessment of the engaged enemy system resulted in some targets on the list going unserviced as an attack achieved the desired effect prior to the exhaustion of the target list.[39] A good example of this approach comes from the attack of Iraqi air defense sector operations centers. Initially air planners determined that destruction of the facilities would require eight F-117s delivering four 2000 pound bombs against each of the hardened underground facilities. Resource constraints made this approach infeasible. However, planners argued that to achieve the effect desired, the facilities had only to be rendered inoperative. Therefore, complete destruction was not necessary; forcing the operators to abandon the facility and cease operations would achieve the desired effect. This approach reduced the number of required F-117s to one per sector operation center, and freed up the reminder of the aircraft to attack other targets. In this case, effects-based thinking and operations produced the most efficient and effective way to employ force, achieve the commander's intent, and increase flexibility and responsiveness, by freeing up scarce assets for use elsewhere. One can see therefore that effects-based thinking and operations are nothing new.

But why does the current debate on effects-based operations appear to center mostly on discussions of air power? Why does it seem that the leading writers and thinkers regarding effects-based operations seem to be primarily airmen? The answer is found in the Army's AirLand Battle doctrine and the most current joint operations manual Joint Publication 3.0, Doctrine for Joint Operations.

AirLand Battle doctrine evolved from the mid to late 1970s to the early 1980s. It culminated in the publication of the Army's Field Manual 100-5, Operations in 1982 and in a revised version in 1986. Experiential observations and thinking about modern combat by senior field commanders in the 1970s, including General Don Starry, moved the process of doctrine development from the central battle, to the integrated battlefield, to the extended battlefield, and, finally to AirLand Battle. General Glen Otis, just prior to the official publication of the doctrine, described AirLand Battle in Military Review:

> AirLand Battle is now the doctrine of the United States Army. It states that the battle against the second echelon forces is equal in importance to the fight with the forces at the front. Thus, the traditional concern of the ground commander with the close-in fight at the forward line of own troops (FLOT) is now inseparable from the deep attack against the enemy follow-on forces. To be able to fight these simultaneous battles, all of the armed services must work in close cooperation and harmony with each other. If we are to find, to delay, to disrupt and kill the enemy force, we will need the combined efforts of the Air-Army team.[40]

In its discussions, the 1982 version of Field Manual 100-5 Operations explains that AirLand Battle is:

> The Army's basic operational concept is called AirLand Battle doctrine. This doctrine is based upon securing or retaining the initiative and exercising it aggressively to defeat the enemy. Destruction of the opposing force is achieved by throwing the enemy off balance with powerful initial blows from unexpected directions and following up rapidly to prevent his recovery. The best results are obtained with initial blows struck against critical units and areas whose loss will degrade the coherence of enemy operations.

AirLand Battle, thus, contains the key components of effects-based thinking and operations. Further examination of the doctrine reveals a methodology that enables the idea of creating and achieving desired effects: target value analysis.

The target value analysis process is an adjunct to the Army's current military decision-making process, a single, established, and proven analytical process for solving problems. The purpose of the process is to produce an integrated, coordinated, and detailed operational plan. This process was the cornerstone methodology for the practical application of AirLand Battle and remains so, as "the estimate process" found in "Doctrine for Joint Operations" Joint Publication 3.0.[41] Joint doctrine describes targeting as the analysis of enemy situations relative to the mission, objectives, and capabilities at the commander's disposal, to identify and nominate specific vulnerabilities that, if exploited, will accomplish the commander's purpose

through delaying, disrupting, disabling, or destroying critical enemy forces or resources.[42] In turn, target value analysis offers the commander the means to identify effects criteria, prioritize the engagement of targets, and plan for contingencies based on the enemy's likely adaptations when his operation fails and enables the estimate of friendly unit capabilities.[43] Numerous planning, execution, and decision aid products result from this methodology.

As a methodology, target value analysis assists in the determination of assets critical to the enemy commander's likely strategy. Furthermore, it examines and anticipates the enemy's critical nodes and potential decision points and suggests what might happen, if the enemy commander's plan fails and what actions make up his failure options. Evaluation of the potential and likely enemy strategies results in identification of critical enemy functions and determines where and when the commander can selectively apply and maximize his combat power against the enemy to achieve desired effects. Additionally, the process seeks to identify specific enemy activities or events that confirm or deny potential enemy strategies, thereby enabling assessment of friendly desired effects and ultimately, as necessary, adaptation of friendly actions.[44] Decide, Detect, Deliver, Assess serves as familiar shorthand for this targeting and targeting value analysis process.[45]

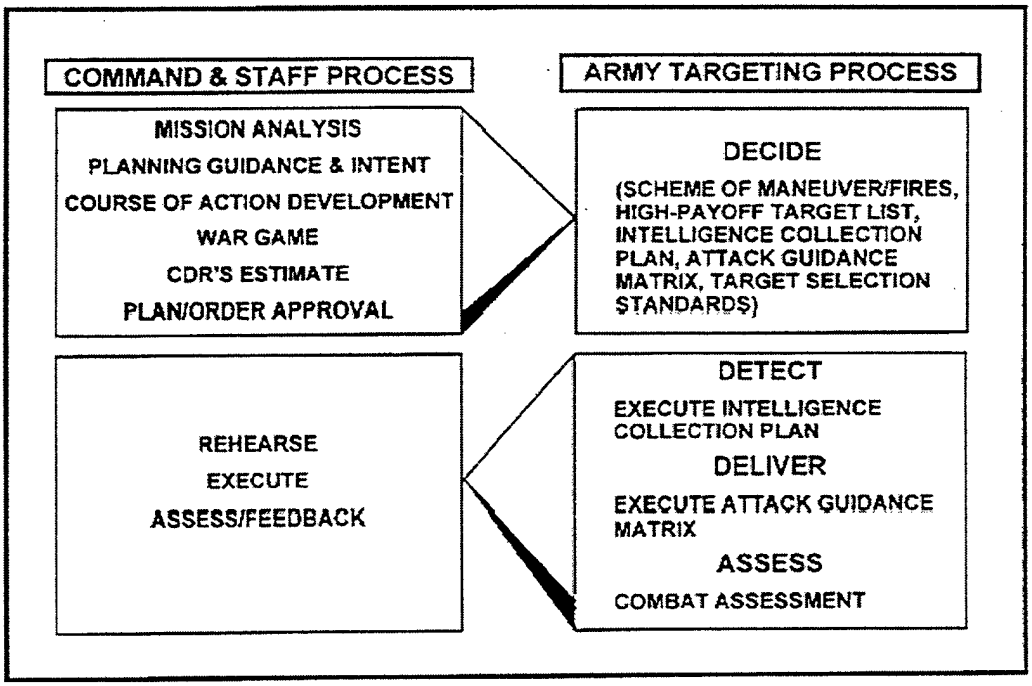

FIGURE 2 TARGETING METHODOLOGY

Current joint doctrine explains this process in much the same manner. It prescribes a six-phase process: the commander determines his objectives, guidance and intent; develops, nominates and prioritizes targets; analyzes friendly capabilities; decides on a course of action;

plans and executes the mission; and finally, assesses action taken.[46] If, as this study has proposed, effects-based operations are operations that identify and engage an enemy's vulnerabilities and strengths in a unified, focused manner, using all available assets to produce a specific effect consistent with the commander's intent, then this concept should look very familiar. Certainly it does not look new to practitioners of AirLand Battle doctrine. Because this is the case, the Army is singularly well suited to lead the debate on effects-based operations and may have a fleeting opportunity to shape the conceptual foundation for implementation of Joint Vision 2020.

CONCEPTUAL IMPLICATIONS

Most of the Army's recent conceptual work on effects-based operations originates from Training and Doctrine Command's Depth and Simultaneous Battle Lab at Ft. Sill. Technological developments and maturation of the idea of effects-based operations spurred Ft. Sill to look for ways to increase the effectiveness of fires. One of the emerging concepts, the fires and effects coordination center, focuses more on organizational changes designed to employ fires, lethal and non-lethal, to create effects efficiently and successfully. The initial brigade combat team at Ft. Lewis is testing this organizational design. Naturally, the Depth and Simultaneous Battle Lab's core competency is thinking about the employment of fires with a complimentary professional expertise in targeting and target value analysis processes. And because fire supporters have shaped the nature of the Army's discussion of effects-based operations, the result has been a narrow interpretation of the concept compared to the current analysis. Many in the joint community perceive the Army's position on effects-based operations as limited to discussions of creating effects solely with fires. Nothing however could be further from the truth. Because the Army has adopted effects-based operations and codified the concept in its AirLand Battle doctrine, the idea and current debate appear to many as the "same candy bar—different wrapper." There are however, some critical differences between effects-based operations and AirLand Battle's target value analysis methodologies.

Like AirLand Battle doctrine and the enabling methodology of target value analysis, effects-based operations causes practitioners to think in terms of desired outcomes and the importance of using all available assets. The concept of effects-based operations differ in that it places more emphasis on understanding the enemy, and determining the linkages between cause and effect. It also demands a greater capability to assess and adapt to the vagaries and unknowns of warfare. Thus, effects-based operations, as a concept, is a refining and broadening evolution of current Army doctrine. It offers the potential for improving the Army's

ability to achieve desired effects through a more holistic and systematic approach to planning, executing, and assessing results of military actions across the entire spectrum of conflict.

AirLand Battle doctrine and the Army's approach to effects-based operations focuses on the concept as the most effective way of applying lethal and non-lethal force to achieve objectives and ultimately the commander's intent. Clearly, this is an attack-based approach that views the opponent as an enemy to be defeated and perhaps destroyed, making it most useful for the upper end of the spectrum of conflict. Effects-based operations lends itself to a broader application—one that encompasses more than just military operations. It incorporates all the applicable elements of national power—diplomatic, economic, military, and information—for a given situation and is relevant across the full spectrum of operations. More so than current Army doctrine, effects-based operations require commanders and staffs to link tactical actions to operational objectives and desired strategic effects. The interrelated focus at every level of command is the achieving of a desired effect commensurate with the commander's intent.

Despite the emphasis on achieving a better understanding of the enemy there are practical limits to knowing an enemies capabilities and intentions. Assuredly, adversaries will react and adapt to actions taken against them. Therefore, commanders and staffs must recognize that uncertainty, friction, and adaptive adversaries may cause friendly actions to trigger additional effects beyond those predicted and anticipated. Rather than trying to eliminate such factors, successful commanders have always accepted them and learned to work through an ambiguous environment and adapt. The strengths of effects-based operations include predicting, controlling, and achieving desired effects and the understanding that that goal is not always achievable. Acknowledging this reality leads to the requirement for adaptation in planning and decision-making. The requirement to adapt, and seize opportunity relies on a thorough understanding of the commander's intent and leader's ability to make decisive and sound decisions that will achieve the desired effect without creating unwanted or unpredicted second and third order effects. However, it is not enough to say U.S. forces will operate in an effects-based way.

Commanders and staffs must think in an effects-based fashion, if they are to operate successfully. It may no longer suffice to tolerate a subordinate's cursory understanding of the commander's intent two levels up. Leaders everywhere along the chain of command must have a clear understanding of national security and campaign objectives and at least a basic understanding of those actions necessary to create effects that cumulatively result in the desired end-state. Moreover, commanders must develop and subordinates understand clear measures of success that explain why the operations will work (planned actions, causal

linkages, desired effects). This requirement, along with a thorough understanding of the commander's intent provides the two elements that will enable subordinates to exercise initiative and seize fleeting opportunities. Most would agree that this emphasis on adaptation is a great strength of effects-based operations. It also exposes a critical vulnerability. The viability of effects-based operations becomes questionable, if commanders fail to provide clear intent or measures of success to subordinates. Moreover, commanders must have trust and confidence in their subordinate's ability to exercise initiative and operate within the intent. If they become overly concerned with the need to control second and third order effects, the potential exists for them to "reach into the turret" and personally direct operations, negating the advantages of effects-based operations.

A key strength of effects-based operations is that it does not focus exclusively on using target destruction to achieve desired effects and outcomes. Moreover, the concept imposes discipline on operational and strategic commanders and staffs, requiring them to focus on linking effects at one level to the achievement of objectives at the next, negating the tendency to concentrate on tactical-level actions. In turn, and despite no few technologists' claims, the aim of the concept is broader than just precision engagement or targeting. Precision engagement of targets is only one tool that might achieve effects. Effects-based operations provide a powerful, unifying and holistic conceptual methodology that commanders and staffs can apply to all operations across the spectrum of conflict. It is an evolutionary refinement and broadening of current doctrine, a full dimensional concept. Furthermore, focused by the stated intent, commanders and staffs must think in an effects-based manner in order to plan, develop courses of action, analyze, execute and assess effectively, while adapting their actions in an interactive environment. Finally, there exists the underlying requirement to focus on outcomes and the critical linkage of achieved effects to accomplish objectives.

PRACTICAL CHALLENGES OF IMPLEMENTATION

The differences found in the evolution, refinement and broadening of current doctrine and the conceptual dynamics of effects-based operations will have practical implications for leader training, organizational changes, and training strategies. Implementing effects-based operations as a concept described in this study will provide challenges, all of which are surmountable. Implementing effects-based operations in the Army should prove relatively easy. However, leading the transition to effects-based operations in the joint community is likely to be problematic and will require a culture change within all the services. Perhaps the most explicit challenge will be to overcome service parochialism and the rejection of the concept due to the

"not invented here" prejudice. Changing the culture will take many years as leaders and staffs become familiar with the concept and effects-based thinking becomes inculcated in service and joint educational programs and institutions. Despite AirLand Battle's doctrinal focus on achieving effects, experience has shown that commander's and staffs often focus more on process and destruction vice achieving desired effects. One example serves to illustrate this point.

Recently, the Air Force conducted an exercise called Global Engagement IV that examined, as one goal, effects-based operations. During the exercise, evaluators found that effects-based operations were effective when decision makers and planners stayed focused on its implementation. Unfortunately, it appeared difficult for them to remain focused due primarily to their unfamiliarity with effects-based thinking and processes. This resulted in many of the players reverting to their previous operational experiences, causing them to become distracted by the details and routines of the Air Operations Center. The second difficulty was a tendency to focus on the input part of the process rather than output. Specifically, members concentrated on the mechanics of weapons systems employment almost to the exclusion of other important considerations. They placed little emphasis on the output part of the process, which was aimed at achieving the desired effects. In particular, the functional, systemic, and psychological effects, which were considered critical and key to success during the planning process, were largely ignored during the execution phase of the war game.[47]

This Air Force experience and example is not unique. The Army's Battle Command Training Program, the Training and Doctrine Command's organization responsible for training division, corps, and selective joint commanders and staffs offers similar observations. After action reviews and observations provide a compilation of perceptions common to most Army commanders and staffs. Most exercise observations include the admonition to commanders and staffs to "fight the enemy and not the plan," and for the need to "keep the staff and subordinate commanders focused during the preparation, synchronization, and execution of a plan." Here again one sees the tendency to focus on inputs instead of desired effects and outcomes. Importantly, these same perceptions and observations point out the successes that result when commanders and staffs focus on outcomes and achieving desired effects. The criticality of and benefits from a clear and unifying commander's intent provides the framework and touchstone for the maintenance of focus.[48]

The evident utility but inconsistent application of effects-based operations points out the potential power of the concept. To explain fully the promise inherent in effects-based operations will require modifying both Army and joint doctrine. While this chapter proposed a definition of

the concept, it is apparent that an agreed upon definition, incorporated into service and joint doctrine, is necessary before the methodology can be of use. The definition offered in this chapter is one of only many extant in the current debate. The crucial point is that the further development of effects-based operations as a joint concept cannot productively proceed without a formally codified definition.

Almost as important as agreeing on a definition is the need to establish a commonly accepted language. The Army has an extensive but not always well-understood language to define effects. A familiar example involves the use of the terms disrupt, delay, limit, and destroy which are so nebulous as to be of little use.[49] These terms have primarily served to describe effects associated with the kinetic attack of a specific target. Moreover, there intended use is to provide guidance to those involved with providing fire support to operations. In this context, effects-based operations take on a narrow definition of the effects of fires in support of maneuver. This limited viewpoint fails to address other areas where effects are important, such as the effects created by maneuver. On the other hand, the view that associates effects-based operations as achieving effects without fires or maneuver fails to address the concept in the holistic manner in which its value is found. There are many interpretations of the concept, employing unique descriptions and terms of references. Clearly defining effects-based terminology can go far in framing the debate and creating a mutual understanding of the concept. A key step in implementing any effects-based concept, then, would be to get all the services and the joint community to agree on usage of the relevant terms. Having demonstrated the need for a common joint definition and language, this chapter can move on to the development of organizations and training of individuals necessary to apply effectively the concept.

The application of any concept demands the certain knowledge and expertise of those charged with its implementation. The holistic nature of effects-based operations with its comprehensive reliance on the commander's intent and linkage of action to desired effects requires leaders at all levels, not just commanders, who can think in effects-based terms and remain focused on the broad perspectives. Of most importance is the need to field organizations with a physical makeup that enables commanders and their staffs to cooperate in dynamic and orchestrated ways. Instead of having linked, but separate centers for intelligence, operations, logistics, and information operations among others, what is needed is a combination of generalist operators, functional area specialists, including intelligence analysts, and technical equipment operators. Maintenance of functional area awareness wrapped in a comprehensive understanding of operations will facilitate achievement of the desired effects and ensure rapidity

of decisions necessary to successful adaptation. This team of experts, with an awareness of the desired effects, linkages between objectives, and commander's intent, will be able to understand the why of changes in policy goals, which inevitably occur during operations. More importantly, they will be able to adapt to the new realities, given the shared knowledge and cooperation derived from the proposed organizational design. In this instance, the Army is well on its way toward the proposed command and control organizational redesign.

Having experimented with command and control issues connected to digitization and Force XXI, the Army has moved forward in innovative and varied ways, including conducting tests with effects coordination centers and deep operation coordination centers. Supporting these organizational initiatives are those system programs involving the Army's Battle Command System, which provides digital communications among strategic, operational and tactical headquarters, down to the individual soldier/weapon system level. This point is critical to the successful use of effects-based operations, because of the cyclic, nested nature of the concept. Determining correct organizational design by itself is a necessary condition for enabling effects-based operations and so too is the requirement to develop leaders with the broad background needed to apply the concept.

For reasons other than developing proficiency in effects-based operations, the Army has initiated a new way of conducting initial entry officer training, the basic officer leadership course at Ft. Benning, Georgia. Designed to expose every Army officer to basic war fighting fundamentals this training ground could provide an institutional starting point for developing effects-based operations as a common conceptual denominator, a way of thinking, for the Army's future leaders. The holistic, nested, and integrated nature of effects-based operations places a premium on leaders who understand the big picture and the potential impact their decisions may have on achieving desired effects guided by the commander's intent. Coupled with the increased emphasis on rapid adaptation, leaders of the future will have to think in new ways that are more comprehensive. They will have to have the confidence to deal with uncertainty, the willingness to bridge gaps with thinking, the desire to take insightful – calculated risks, and the ability to visualize an abstract battlespace and think in non-linear dynamic ways, incorporating multiple perspectives no small challenge.

The conceptual thinking skills required by practitioners of effects-based operations will change the way the Army must develop and train leaders. The Army's current approach to leader training focuses too much on process to the detriment of outcome. Battle drills, situation lane training, rote teaching of the military decision making process, all contribute to the development of leaders who are able to apply proven, but limited responses to battlefield

realities. Faced with complex challenges, leaders often resort to executing conditioned, practiced battle drills with little regard to current realities. This technique offers predictability of response, an important component for success at the tactical level, but one that is increasingly less useful as in operational and strategic level decision-making. Incorporating an effects-based approach to operations calls into question the future utility of this approach even at the tactical level of decision making.

Effects-based operations demands that the Army develop leaders capable of conceptual thinking. They must be able to admit what they do not know, recognize patterns, spend more time in problem identification and determination, and ultimately be adaptable. Educating leaders with these skills will require a shift in training emphasis from process to outcome. Leaders of tomorrow, employing effects-based operations must train in environments that center on the student, not the instructor, in situations where complexity is maintained, not removed; checklists and process will remain important but the focus must be on outcomes instead of getting the procedures right.

Of course, there is no substitute for leaders having a complete knowledge of the art and science of military operations. Implementation of effects-based operations will expand the requirement for leaders to develop and maintain, if not expertise, then a minimum competency in areas previously deemed outside the prevue of military leaders. For example, proficiency in politics, domestic and international, culture, diplomacy and economics will prove critical to successful application of effects-based operations. Leaders will rightly focus on being experts in the realm of military art and science while developing the depth of knowledge in other elements of power to effectively employ them to achieve desired effects. Developing future leaders with the right specific and general skills to use effects-based operations will begin from the moment they enter the service. The broader education requirements demanded by this concept are achievable if instilled in leaders beginning with their initial entry into service. Effects-based operations demand that the Army produce leaders able to think and execute conceptually, leaders who focus on outcomes vice process and are able to integrate all elements of national power to achieve desired effects.

RECOMMENDATIONS

So, finally we must ask is effects-based operations something new and better than the current approach? If so, what does it promise? Clearly, effects-based operations are not new. However, only a select few successfully employed the concept in the past. The renewed interest in the idea provides an opportunity to expand effects-based operations to the joint

community. Most importantly, effects-based operations require a focus on outcomes helping to enforce a discipline in planning and execution of determining the endstate and objectives before initiating action. It asks, what is the task and purpose, what effects do U.S. forces want to achieve? It can improve the application of military power and can serve as a common conceptual denominator for the coordinated, synergistic application of that power.

Successful leaders and commanders have always focused on achieving effects and not only destruction for destruction's sake. The Army's development of AirLand Battle doctrine and its associated enabling methodology of targeting and target value analysis reflect the recognition of the value of focusing on effects, commensurate with the commander's intent. The concept of effects-based operations therefore is not new. Rather, effects-based operations amounts to an evolutionary refinement and broadening of previous doctrine. Importantly, there are conceptual differences that offer clear advantages for not only the employment of military power but the extension of the concept that offers the potential to achieve a comprehensive, synergistic application of all elements of national power.

The Army has an unparalleled familiarity with and understanding of effects-based operations. It is best suited to "show the way" in the development of the concept as a joint common conceptual denominator. This will require moving forward on two fronts simultaneously, one service specific and the other, joint. First, the joint community and the services must agree on a common definition of effects-based operations. Realizing the potential of the concept will require the Army to expand its current "fires centric" notion of effects to a more comprehensive definition such as the one suggested in this chapter. This should be a relatively simple task, given the Army's desire to focus on creating effects with all means available. At the same time an agreed upon definition will require the concurrence of the joint community and subsequent adoption into joint doctrine. Agreeing upon a joint definition will enable the development of joint terms of reference or the language to be used in expanding the concept.

Hampering the debate over effects-based operations is the ambiguity of the language in the many varied descriptions of the concept, each employing unique descriptions and terms of reference. Before going forward, the services must reach consensus in defining effects-based terminology. There is no small amount of danger inherent in this requirement. Without a clear understanding provided by jointly codified terms of reference, development of the concept may deteriorate into service-centric views, ultimately negating the unifying potential of effects-based operations. Toward that end, this paper proposed that effects-based operations are, the identification and engagement of an enemy's vulnerabilities and strengths in a unified, focused

manner, and uses all available assets to produce specific effects consistent with the commander's intent. This description provides a start point for the determination of definitions and language that will provide the means to expand and begin the institutionalization of effects-based operations.

Effects-based operations places a premium on leaders with specific expertise in military art and science and a working knowledge of the characteristics of the other elements of national power. Necessarily, practitioners of the methodology will use conceptual thinking, focused by internalized and well-understood guidance in the form of the commander's intent. Institutionalizing the training and education of leaders must begin at the outset of their careers and continue for the duration. The same must be true for each service. For the Army, the basic officer leadership course is the place to start. However, service specific training and education alone will not suffice. If the concept is to serve as common to the joint community is must also be taught as part of Joint Professional Military Education.

These leaders, educated to employ effects-based operations, must have facilities and communications networks that enable their skills. Here too, each service must develop and field organizations designed to take advantage of the inherent potential of the concept. The Army's fires and effects coordination center is a step in the right direction. While currently narrow in focus, the idea brings together operators, intelligence analysts, as well as system technicians to employ more efficiently and successfully lethal and non-lethal fires. Easily expandable, this idea provides a start point for the creation of a more all-inclusive organization designed to orchestrate all effects, not just fires. The bi-lateral command and control relationship of Battlefield Coordination Detachments that the Army resources in cooperation with the Air Force could serve as a start point to expand the concept to Joint Task Force organizational design. This proven command and control tool, designed to synchronize and integrate fires, air power and ground maneuver-effects is expansible. And, given the evident interests shown by both services in effects-based operations, could serve as a platform for the joint development of the concept as well as needed experimentation.

As with any concept, testing and proving the theory through experimentation, practice and limited application is a perquisite to specific service and joint adoption. The United States Joint Forces Command has already begun experimentation that includes looking at effects-based operations. The command will do so again in August 2002 at an exercise named Millennium Challenge 2002.[50] Beyond this initiative, separate service experimentation must occur. In the Army's case numerous venues and organizations exist that could conduct experiments with effects-based operations. Training and Doctrine Command should task a specific battle lab with

the lead. While the Depth and Simultaneous Attack Battle lab is most familiar with the issue, it may not be the right organization to lead the Army's effort. As this study has discussed, effects-based operations represent more than effects created by lethal and non-lethal fires. Experimentation must examine the process, or the how, of effect-based operations implementation, determination of correct organizational design, and leader skills necessary to successfully execute. The process of target value analysis and the organizational design of the fires and effects coordination center provide a useful departure point.

The Army is uniquely suited to take the lead in the further development of the concept of effects-based operations through a collaborative effort involving all services. The evolutionary, refined, and broadened concept of effects-based operations has large potential to improve our way of employing Army forces and using military power. Finally, it may provide the enabling idea needed to achieve the goals of joint intellectual, operational, organizational, doctrinal and technical integration set out in Joint Vision 2020.

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