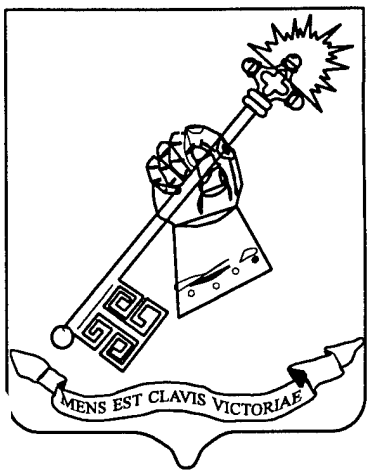
THE DECISIVE POINT: IDENTIFYING POINTS OF LEVERAGE IN TACTICAL COMBAT OPERATIONS

A Monograph
by
Major James B. Burton
Infantry



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Abstract

The Decisive Point: Identifying Points of Leverage in Tactical Combat Operations, by Major James B. Burton, USA, 44 pages.

The 1993 version of FM 100-5, Operations, formally added the theoretical term of decisive points to our professional warfighting lexicon without providing a useful methodology for their identification. This monograph undertakes a study of decisive point theory and its application to the planning and conduct of tactical combat operations. It examines the pertinent theories of Clausewitz, Jomini, Schneider, Senge and other military and civilian theorists. It couples that examination to an analysis of doctrinal warfighting tenets and principles to establish a working definition of centers of gravity, decisive points and battlefield freedom of action. It further establishes the inter-relationship of these concepts to decisive tactical actions. This study establishes the legitimate utility of considering and employing those concepts when seeking to identify points of leverage at the tactical level of war. This monograph further provides a rational methodology for identifying tactical decisive points based on discussion and analysis of the afore mentioned concepts.

The fundamental battlefield problem arises from the designs of operational and tactical planners who seek, through the coherent application of spacially and temporally distributed actions, to achieve a favorable battlefield decision. These actions are arranged to provide a necessary battlefield effect which positively contributes to the higher concept and intent. The idea of positive contribution of effects is supported by an analysis of the De Puy theory of nested concepts. These desired effects establish the purpose of the tactical action. The battlefield problem consists of two opposing forces, each of which seeks a similar, yet conflicting purpose. Both combatants seek to gain domination of the battlefield freedom of action. Domination of the freedom of action denies an opponent's ability to effectively resist the imposition of will, and therefore satisfies the requirements of the battlefield problem.

Domination of the battlefield freedom of action requires the defeat of that which opposes its attainment. The theories of Clausewitz and Jomini suggest that within any force there exists an arrangement of combat power dynamics which constitute a center of gravity, that force designed to ensure stability over time in attainment of the intended battlefield effect. Domination demands defeat of the opponent's center of gravity. That defeat is accomplished by the concentration of superior combat power effects at a decisive point and time against recognized vulnerabilities within the source of an opponent's greatest strength--his center of gravity. The effects of this concentration drive the center of gravity from a condition of stability toward and into a condition of chaos from which it cannot recover.

This study concludes that the decisive point exists as a condition of an enemy force's combat power dynamics and their relation to the physical and temporal characteristics of the battlefield. It is a window of opportunity where the application of concentrated superior combat power effects establishes the leverage necessary to defeat an opponent's center of gravity and ultimately attain the intended battlefield effect.

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THE DECISIVE POINT: IDENTIFYING POINTS OF LEVERAGE IN TACTICAL COMBAT OPERATIONS

INTRODUCTION

The 1993 version of FM 100-5, Operations, formally added the term decisive point to the Army's warfighting lexicon. Our army's keystone doctrinal manual describes decisive points as "keys to getting at an opponent's center of gravity" and offers a limited listing of possible decisive points.[1] It fails unfortunately to provide any methodology for identifying why some points may be decisive, while others may not. That problem is further compounded by the doctrinal definition of synchronization, which requires the "arranging of activities in time and space to mass at the decisive point" and "includes...the massed effects of combat power at the point of decision".[2] These doctrinal descriptions suggest that the decisive point is somehow related to the commander's ability to generate and focus the effects of maximum relative combat power at a specific time and place, and that such an arrangement should result in the desired decision. The notion of nested concepts demands that every subordinate action support the actions of the next higher headquarters. Therefore, our Army's operational tenets must have application at the tactical level. Otherwise, synchronization would be a useless concept for activities below the operational level of warfare. This does not appear to be the case.

Accepting that army operational tenets do have tactical application, and that the decisive point is the focal point of the synchronization tenet, identification of a decisive point must be a preliminary activity in any command estimate process--done well before course of action development. That point is only decisive if it provides for the necessary arrangement of combat power effects against a tactical opponent's center of gravity. Effective planning cannot begin in earnest without a methodology for identifying the decisive point since planners will have nothing on which to focus their synchronization

efforts. Jomini explained that, "great difficulty will always be to render certain the simultaneous entering into action of the numerous fractions whose efforts must combine...in the execution of the decisive maneuver"[3]. Clausewitz emphasized the link between decisive point identification prior to course of action development when he offered that, "Relative superiority, that is, the skillful concentration of superior strength at the decisive point, is much more frequently based on the correct appraisal of this decisive point, on suitable planning from the start; which leads to (an) appropriate disposition of the forces, and on the resolution needed to sacrifice nonessentials for the sake of essentials."[4] Tactical combat plans must focus the effects of superior relative combat power at a decisive point. As such, planners must identify that point prior to attempting any formal course of action development or synchronization.

Major Richard Hooker argues that the United States Army has incorporated the concepts of maneuver warfare relatively well at the operational level, but that tactical battles and engagements still resemble "traditional smash-mouth," attritionist-oriented affairs.[5] The Command and General Staff Officer's Course places no emphasis on decisive point identification, despite the many hours of instruction focused on maneuver warfare fundamentals, the command estimate and the deliberate decision making process (DDMP). The common means for focusing combat power is instead based on an arbitrary identification of objectives that fit within the higher commander's concept of the operation. This is normally done with little regard to accomplishing a decisive maneuver that satisfies a required tactical purpose, or achieves a necessary battlefield effect. The fallacies of such an approach are easily overlooked in a benign, risk-free environment, since no real decisive effect is required or measured. Such an approach leaves graduating tactical planners with a flawed methodology for arranging the dynamics of combat power at their disposal, in such a way as to achieve decisive effects at the decisive time and place.

The goal of any tactical commander will always be to seek and gain the decision as rapidly, vigorously, and economically as possible. This requires the skillful integration

and application of available combat power dynamics at the decisive place and time. Such integration and application demands that a decisive point be identified prior to any effort to synchronize and concentrate the effects of combat power. This monograph defines a practical methodology for identifying tactical decisive points by offering a mental model for analyzing a battlefield problem and establishing a generally correct orientation of available combat power toward the point of decision.

Many studies, doctrinal manuals and, published and unpublished works have addressed aspects of theory pertaining to decisive points and their utility. While these works invariably recognize the concepts of synchronization and maneuver, few offer any method for identifying a decisive point during the command estimate process.

Peter Senge and M. Mitchell Waldrop provide concepts and insight to complexity and systems thinking which are applicable to the notion that combat power exists as a complex, dynamic system within the complex, dynamic environment of combat. To analyze the decisive point theory in a linear fashion would be to exclude many of the dynamics which are directly applicable to the battlefield condition. Unfortunately, total synthesis of the battlefield condition (complete with a finite grasp of those friction-producing activities which inevitably affect any tactical maneuver) is unlikely in forty pages of text. Furthermore, any military practitioner would recognize that such a synthesis is unlikely, and an attempt to offer one would inevitably result in much skepticism. Instead this study analyzes the contributing dynamics of leadership, maneuver, firepower and protection and the potential they represent when properly arranged and focused within the neutral conditions of time, space and terrain.

This monograph offers a new construct for analyzing a tactical battlefield problem. It does not pretend to ensure perfection of maneuver or refute any recognized principles of war. Instead it offers a "how to think" methodology for arranging and orienting available combat power, in a generally correct direction, toward the point of leverage to gain a tactical decision.

Synthesis and articulation of the decisive point theory requires analysis of warfighting doctrine, theory and historical examples to establish a conceptual framework for identifying decisive points when planning and conducting combat operations at the tactical level. This synthesis draws three primary conclusions. First, that centers of gravity and decisive points exist at the tactical level of war; second, that identification of the decisive point is critical to the successful application of combat power to achieve tactical decisions; and third, that decisive point identification is accomplished through a critical analysis of competing combat power dynamics. This monograph's value lies in its ability to offer commanders and planners a practical method for identifying decisive points at the tactical level of war which enable the proper orientation of available combat power to achieve a favorable decision within the complex dynamic environment of combat.

CHAPTER 1 -- DEFINING THE TERMS OF DECISIVENESS

The United States 1995 National Military Strategy reminds us that our nation's "military forces exist--are organized, trained, and equipped -- first and foremost to fight and win America's wars."[6] The 1993 version of FM 100-5 states that winning wars is the primary purpose of the doctrine contained therein.[7] Taken in perspective, these two documents remind military professionals of their sobering responsibility "to achieve quick, decisive victory...anywhere in the world and under virtually any conditions."[8] This awareness demands that military professionals embark upon a didactic study of the environment of combat, to understand its complex-dynamic nature, and the points of leverage which exist within it which, if exploited, will enable a favorable decision.

This chapter defines the terms and concepts relevant to the decisive point theory through the analysis and synthesis of doctrinal and theoretical terms and their application. This establishes a formal lexicon to facilitate the transfer of ideas, and establish a mutual

understanding of the argument by enabling a professional dialogue between author and reader.

Three Levels of Warfare

"In war more than in any other subject we must begin by looking at the nature of the whole; for here more than elsewhere the part and the whole must always be thought of together."[9]

War "is the impact of opposing forces...a clash between major interests which is resolved by bloodshed--that is the only way in which it differs from other conflicts."[10] War is the environment for which the military professional trains. It rises from unresolved political conflicts requiring the application of military force to produce a favorable decision. The resulting clash of armed forces, each employed for opposing purposes, establishes the conditions necessary for combat.

In the broad construct of warfare, three distinct yet complimentary and interrelated levels exist. Understanding these levels, their purposes and the importance of their linkages, is tantamount to developing a construct for decisive action during combat operations at the tactical level.

The Strategic Level

The strategic level of warfare is concerned primarily "with national or, in specific cases, alliance or coalition objectives".[11] Recognizing Clausewitz's basic premise that war exists as an instrument of policy by other means, military strategy seeks to employ the means of military force to secure stated political objectives.[12] "War, therefore, is to be understood herein as any condition in which one State employs physical violence against another" and the "fundamental objective of the armed forces is, therefore, the reduction of the opposing will to resist...attained through the use of violence or threat thereof."[13]

The Operational Level

The operational level of warfare is concerned with providing the "vital link between strategic objectives and [the] tactical employment of forces. At the operational level, military forces attain strategic objectives through the design, organization, and conduct of campaigns and major operations."[14] It is this subordination to strategy which is of critical importance when understanding how, in the final analysis, tactical missions secure strategic aims through successful application of the operational art.

Operational Art

Operational art and the operational level of war are not synonymous. The operational level of war is that tier, within the framework of our warfighting doctrine, where opportunities for the application of the operational art exists. Practice of the operational art is not reserved for any particular echelon or level of command. "The (force's) intended purpose, not the level of command, determines whether...(a) unit functions at the operational level."[15]

"Operational art involves the decision (of whether) to accept or decline battle, and (of) where and when to fight" in order to meet specific strategic aims.[16] "In its simplest expression, operational art determines when, where, and for what purpose...forces will fight."[17] Dr. James Schneider characterizes operational art as the creative use of distributed operations, extended in space and time but unified by a common aim.[18] Strategic aims of imposing our nation's will upon an enemy, by reducing his will to resist, are achieved through the proper application of tactical forces by operational planners.

Operational art achieves strategic aims through the coherent application of spacially and temporally extended relational movements and distributed battles, whose purposes are to seize, retain or deny freedom of action.[19] By denying the enemy his freedom of action, we deny his ability to resist and, as such, enable our ability to impose our will upon him.

In effect, operational art attains strategic objectives through the affects of properly focused and sequenced tactical actions. This establishes the notion of nested concepts, which is addressed in detail in chapter 2.

The Tactical Level

The tactical level of war is concerned with the "ordered arrangement and maneuver of units in relation to each other and/or the enemy, in order to [maximize their potential]...It is the art and science of employing available means to win battles and engagements."[20] The tactical level of war is where operational aims are translated into action in the form of battles and engagements. FM 100-5, Operations, defines tactics as battlefield problem-solving which is usually rapid and dynamic in nature. Victories at the tactical level achieve operational and ultimately, strategic aims.

The operational art of applying extended operations for strategic aims defines the activities necessary for victory. The strategist and the operational artist seek to establish the optimal conditions for the tactician's success. Their broad vision serves to anticipate battlefield conditions and properly focus and sequence battlefield activities to achieve the strategic aim. Those activities are the basis of the tactical commander's battlefield problem. They represent situations designed to seize or retain friendly freedom of action while denying the same from the enemy. It is to that end which all tactical activities must be focused--*to control the battlefield freedom of action.* "We maintain therefore that only great tactical successes can lead to great strategic ones; or as we have already said more specifically, *tactical* successes are of *paramount importance* in war."[21]

Analysis of the three levels of war defines an inextricable linkage throughout that must not be neglected when seeking opportunities for decisive victory. It is the purpose of the tactical engagement which ultimately fulfills the strategic aim. Tactical battles and engagements must be ordered and arranged by operational and tactical planners within the framework of a coherent theater strategy to ensure that political ends are met. "The

(tactical) engagement is...in itself of no value; its significance lies in (its positive effect on) the (operational and strategic) outcome."[22]

Tactical missions which do not directly support the ultimate strategic aim are of little to no consequence. They represent a wasteful and criminal use of valuable resources and as such must be avoided. Avoidance requires a thorough knowledge of strategic aims, battlefield conditions and desired battlefield effects. It demands control of the battlefield freedom of action in the most effective and efficient means possible.

Tactical Decision Making - Battlefield Problem Solving:

Tactics is battlefield problem-solving. It seeks, through distributed engagements and battles, to achieve decisive results which positively affect the operational objectives within a theater. These distributed engagements and battles are linked inherently in their purpose to the operational and strategic aims, and if successfully executed will render the necessary contribution to higher concepts.

The contributing effects of tactical successes, unified by a common aim, have obvious effects on both operational and strategic battlespace domination. Positive control of the tactical freedom of action maintains the momentum of operational maneuver. That momentum facilitates the decisive impact of operational effects despite the distributed characteristics of the battlefields of modern war.

In Schneider's monograph, "Vulcan's Anvil" he discusses the distributed characteristics of modern war. He correctly argues that the Napoleonic maneuver paradigm of concentrating all of one's forces at a single point for the decisive battle of annihilation gave way to the effects of increased technological lethality of the industrial age. These effects caused army's to disperse over wider frontages, with greater distance between soldiers and units. The end result is the distributed characteristics of the modern theater of operations.

In the macro sense, positive results at the tactical level, enable the same decisive affects at the operational level. Instead of these effects being oriented and applied at a single point, they are distributed throughout the theater of operations. The battlefield, and the battle, is thus redefined. Once the fate of nations was determined at a single point, where the bulk of two opposing armies clashed in a decisive battle of annihilation lasting only a few hours. Today's distributed battlefield seeks the same decisive affects through the proper focus and sequencing of distributed battles and engagements.

But on what are these tactical actions focused? Schneider argues that the key to operational success lies in positive control of the battlefield freedom of action. This control is reflected in the seizure or retention of one's own freedom of action, or denial of the enemy's for the purpose of achieving a desired tactical effect. In essence this positive control is achieved by applying the effects of available combat power in such a manner that a dominating effect results. By domination we mean absolute control over both friendly and enemy freedom of action in such a manner as to eliminate effectively the enemy's ability to generate combat power such that it would threaten attainment of the intended friendly battlefield purpose. Such absolute control of the tactical freedom of action is tantamount to battlefield success and ultimately, operational and strategic victory. It is to this end that tactical combat operations derive their basic purpose--*to dominate the battlefield freedom of action.*

Freedom Of Action

"Freedom of action seeks to preserve one's own capacity to wage war."[23] Offensive operations contribute "striking power...and generally (have as their purpose) some positive gain...(which) seeks to impose some design on the enemy."[24] Offensive operations seek to seize or retain friendly freedom of action while denying the enemy's capacity to wage war. Defensive operations have a negative purpose, designed to secure friendly capacities while resisting the enemy's ability to impose his will. Such operations

are not mutually exclusive, but coexist as mutually supporting effects to the principle purpose of the operation.

While one combatant's purpose seeks retention of his own freedom of action, the other seeks to deny that freedom from him, while concurrently retaining his own. This clash of similar, yet opposing purposes establishes the fundamental battlefield problem at the tactical level. This problem creates the requirement for decisive maneuver, focused on domination of the battlefield freedom of action. Without the ability to control effectively the tactical freedom of action a commander loses his capacity to successfully impose his will upon his adversary.

The Fundamental Battlefield Problem

"The combat situation never repeats itself in...war, each [engagement requires] a unique approach and a unique solution."[25] Every tactical battlefield problem consists of three primary elements: 1) An understanding of the current and projected battlefield condition with regards to enemy forces, friendly forces, terrain, space and time enabled by the Intelligence Preparation of the Battlefield (IPB) process and combined with the experience and intuition of commanders and planners; 2) An effect to be produced which positively supports the battlefield plans of the commands two echelons higher, and the actions of friendly units at the same tactical echelon. This effect defines the purpose of a tactical action and;[26] 3) the action required to produce that tactical effect, in relation to the current and projected battlefield condition.[27] These last two elements are most often established by higher authorities and issued to the tactical commander in the form of a mission statement.

The United States Army's Tactical Decision Making Process is defined in FM 101-5 Command And Control For Commanders and Staff, as a "systematic approach to

decision-making, which fosters effective analysis by enhancing application of professional knowledge, logic, and judgment [and] consists of six broad steps:

> Step 1. Recognize and define problems.
>
> Step 2. Gather facts and make assumptions to determine the scope of and the solution to problems.
>
> Step 3. Develop possible solutions.
>
> Step 4. Analyze each solution.
>
> Step 5. Compare the outcome of each solution.
>
> Step 6. Select the best solution available."[28]

The army has evolved these six logical steps into the doctrinal estimate of the situation. The estimate consists of four steps designed to produce an optimal course of action which attains tactical mission requirements. They are: 1. Mission analysis, 2. Course of Action (COA) development, 3. COA analysis (including a comparison of COAs), and 4. gaining the decision (or making a recommendation)[29]. The United States Army's framework of METT-T (Mission, Enemy, Terrain, Troops Available, and Time Available) is a valuable tool for analyzing the critical elements of the combat situation and for establishing a formal definition of the battlefield problem.[30]

Battlefield problem solving demands a definition and articulation of the battlefield problem facing the tactical commander and his unit. This must be accomplished early in the estimate process to facilitate developing courses of action that will achieve the required battlefield effect.

The battlefield problem arises from a tactical situation involving two opposing forces. Each of those forces has as its mission, the creation of a battlefield effect which is contrary to the other's. Actions taken by either to attain their intended purpose results in the condition of combat. Each opponent seeks to achieve success by controlling the battlefield freedom of action through the application of concentrated combat power effects. *Domination of the tactical freedom of action* resolves the fundamental battlefield problem and enables the victor to impose his will by denying the defeated force's ability to resist.

Fundamentally, the greatest obstacle to attaining control of the tactical freedom of action is the enemy's center of gravity. A commander's available combat power must therefore be arranged and oriented toward the destruction, or defeat of that force..

Center Of Gravity

"That characteristic, capability, or locality from which a military force derives its freedom of action, physical strength or will to fight" is defined in FM 100-5, Operations, as the center of gravity.[31] It is "those sources of strength or balance vital...to the smooth and reliable operation of the whole (force) ..(the) loss (of which) unbalances the entire structure, producing a cascading deterioration in cohesion and effectiveness."[32] This description supports Clausewitz' theory that the center of gravity is "the hub of all power and movement, on which everything depends."[33]

Within each tactical force their exists a center of gravity, that force which is organized and oriented toward attaining control of the tactical freedom of action. As such, that force constitutes the greatest threat to an opponent's own similar, but conflicting purpose within the construct of the fundamental battlefield problem. This relationship must be understood.

Combat arises from a condition created by the clash of two forces, each with an assigned mission which provides contributory battlefield effects in support of their higher commander's plans. As such, the meeting of these forces brings two similar yet conflicting purposes to the fore. While the defender has a negative purpose of denying the attacker his freedom of action, the attacker has the positive purpose of achieving and retaining his freedom of action -- while subsequently denying the defender of the same.

Clausewitz's theoretical wanderings in his treatise On War, tend to confuse attempts at reaching a definition for center of gravity at the strategic and operational level, much less at the tactical level. Fortunately, Clausewitz returns to the idea of concentrated forces, mass and that force capable of delivering the "heaviest blow"[34] The "heaviest blow"

obviously refers to that action which presents the greatest threat to an opponent's actions.

When determining an enemy's center of gravity, a tactical commander seeks to identify that force which constitutes the greatest threat to the accomplishment of his unit's assigned mission.[35] This may not be the entire enemy force; many subordinate elements offer only contributory effects to the opponent's purpose and do not represent the significant threat. Instead the enemy's center of gravity is that force, or that portion of the greater force, which most significantly threatens attainment of the friendly commander's desired tactical effects. "Identification of enemy centers of gravity requires detailed knowledge and understanding of how (the enemy forces) organize, fight, make decisions, and their physical and psychological strengths and weaknesses."[36]

Retention of a cohesive center of gravity ensures a degree of stability in the complex environment of combat. That stability comes from the "relative assurance" that the center of gravity is properly organized and oriented on attainment of the tactical purpose. Loss or disruption of that force severely jeopardizes a commander's ability to fulfill his assigned mission, and drives the enemy force from a condition of relative stability toward a condition of chaos from which he can not recover.

In review, tactical combat exists due to the clash of two opposing forces, each in pursuit of a purpose which is in contraposition to the other. Without this meeting of conflicting purposes, combat can not exist. Each combatant must positively control the tactical freedom of action to achieve his assigned purpose. That purpose is inextricably linked from the tactical level of war and, based on the designs of the operational artist, through the operational level to the strategic level of war. Each combatant force has within it a tactical center of gravity which is organized and oriented on accomplishment of the tactical purpose. An opponent's center of gravity is recognized as that force which constitutes the greatest threat to the achievement of one's own tactical purpose. Each combatant seeks to disrupt his opponent's center of gravity, to drive that dominant, stabilizing force from a condition of relative stability toward a condition of chaos, from

which it cannot recover. Such action denies the enemy's ability to dominate, or threaten domination of the tactical freedom of action.

Combat Power

"One must keep the dominant characteristics of both belligerents in mind. Out of these characteristics a certain center of gravity develops, the hub of all power and movement..."[37] These dominant characteristics exist as complementary and interrelated dynamics within the complex system of combat power. The center of gravity exists as a complex system comprised of the dynamics of combat power. Those dynamics are organized and oriented to strike the "heaviest blow" in attainment of the unit's assigned purpose.

Combat power exists as a complex, dynamic system within any tactical force. It represents "the total means of destruction and/or disruptive force which a military unit/formation can apply against an opponent at a given time."[38] Its four dynamics--maneuver, firepower, protection, and leadership--exist in concert with one another to produce a synergistic effect and translates into an ability to fight or wage war. It is through the organization and orientation of combat power that a commander either attains or surrenders his assigned purpose.

"Combat power is always relative, never an absolute, and has meaning only in a relative sense--relative to that of the enemy--and has meaning only at the time and place where battle outcomes are determined"[39] Dynamics exist as potential only, unless organized, oriented and employed to attain a purpose against an enemy force with a competing purpose; and then only at the *time* and *place* where the combat occurs. The proper arrangement and orientation of combat power dynamics manifests into a coherent center of gravity. Superior "relative" combat power effects, "applied at the decisive place and time, decides the battle."[40]

Maneuver

Maneuver is "the dynamic element of combat...achieved by concentrating forces in critical areas to gain and to use the advantages of surprise, psychological shock, position, and momentum to leverage available combat capabilities and thereby create a decisive relative advantage.[41] Maneuver seeks a "positional advantage [from which] to deliver---or threaten delivery of--direct and indirect fires. (It) is the means of positioning forces at decisive points to achieve...massed effects and moral dominance"[42] over an opposing force.

Maneuver seeks to concentrate superior combat power effects at the decisive point and time to establish the conditions which enable destruction of an opponent's center of gravity and thus, deny his freedom of action and ability to achieve his intended purpose.. In the complex, dynamic system of combat, the effects of maneuver serve to bring the friendly center of gravity into a position of advantage from which to apply the superior effects of friendly combat power against a tactical point of leverage which unbalances the enemy center of gravity and drives it toward a condition of chaos. Maneuver further serves to enable to continuous application of concentrated combat power effects against the tactical point of leverage to deny the enemy's ability to recover and resist.

Firepower

Firepower is "essential to realizing the effects of maneuver. It is the enabling, violent, destructive force,"[43] "essential in defeating the enemy's ability and will to fight. It is (determined as) the amount of fire that may be delivered by a position, unit, or weapon system"[44] for the purpose of suppressing enemy fires and neutralizing enemy forces. Firepower achieves its purpose by killing, wounding, or paralyzing enemy soldiers and by damaging the materiel, positions and infrastructure which enable the enemy to wage war.

Firepower relies on the accuracy, volume and distribution of fires, the lethality of munitions and the flexible employment of weapons systems to achieve its affects.

Firepower and maneuver are "inseparable and complementary elements of combat. Although one might dominate a phase of the battle...the cutting edge of combat...is a combination of fire and movement, of killing and moving."[45] The destruction of enemy personnel, equipment and tactical obstacles, through the effects of firepower, all contribute positively to the friendly commander's ability to dominate the tactical freedom of action.

Protection

"Protection conserves the fighting potential of a force so that commanders can apply it at the decisive time and place."[46] It includes all actions to counter the enemy's firepower (both lethal and non-lethal) and maneuver by making friendly soldiers, systems, and units difficult to locate, strike and destroy.[47] Actions including operational security, camouflage, dispersion, fortifications, and counter-reconnaissance are just some of the actions taken to counter the enemy's firepower and maneuver.

Protection also includes those actions taken to maintain soldier's health, morale, and fighting spirit. It includes maintaining equipment, guarding equipment and supplies from loss or damage, and addressing basic health needs. Protection includes those measures taken to prevent fratricide or unnecessary exposure to debilitating battlefield conditions.[48] The effects of protective actions equate directly to the available combat power of a fighting force at the decisive time and place.

Leadership

"The most essential dynamic of combat power is *competent and confident officer and noncommissioned officer leadership.* Leaders inspire soldiers with the will to win."[49] Leadership provides the necessary purpose, direction, and motivation in combat. It is the governing force that determines how the other dynamics of combat power will be arranged

and employed against an opposing force to attain the desired battlefield effects. "In short, it is the overall effect the leader creates on the battlefield vis-a-vis the enemy through proper application of his potential maneuver, firepower, and protection capabilities which generates relative combat power."[50]

The overall effect sought by the commander, is the proper arrangement and orientation of superior relative combat power effects at the decisive time and place. This concentration of superior combat power effects is oriented on unbalancing the opponent's center of gravity and causing him to abandon his tactical purpose. Clausewitz referred to the leader's ability to "see" where, when, how and with what amount of energy to arrange these dynamics as coup d'oeil, the intellect of the commander "that even in the darkest hour retains some glimmering of the inner light which leads to the truth."[51] Jomini cautioned that a "*defective coup-d'oeil militaire* (of the commander) may interfere with the simultaneous entering into action of the different parts...in the execution of the decisive maneuver."[52]

The proper arrangement and orientation of combat power requires that tactical leaders possess a certain degree of coup d'oeil: the ability to determine where, when, how and with what amount of energy to direct the effects of maneuver, firepower and protection to gain and retain control of the battlefield freedom of action for the purpose of positively affecting the actions of superior and adjacent activities. This requires leaders to determine their enemy's center of gravity, through the identification of that force which is arranged and oriented to achieve the opposing purpose.

Our discussion thus far has revealed six critical concepts regarding decisive action at the tactical level. First, that military victories at the tactical level are oriented toward achieving operational and strategic aims; second, that the condition of combat arises from two opposing forces with similar, yet conflicting purposes. This serves to define the fundamental battlefield problem of effect desired and action required; third, that the fundamental battlefield problem is only solved through the domination of the tactical

freedom of action. Denying the enemy his freedom of action negates his ability to resist or attain his intended purpose; fourth, that within each tactical formation there exists a center of gravity. The center of gravity is that force which is arranged and oriented toward achieving the intended tactical purpose or, that force which most threatens attainment of one's own tactical purpose; fifth, that the center of gravity is composed of the four dynamics of combat power, each operating in concert with one another to enable attainment of the intended battlefield purpose; and sixth, that the effects of that combat power are enabled and enhanced by competent, professional leadership who can determine when, where and with what energy that available combat power must be focused to defeat the enemy's center of gravity.

Understanding the dynamics of combat power and, how their relative effects determine a unit's ability to achieve an intended tactical effect establishes the construct for identifying tactical decisive points. To achieve tactical victory, the commander must first identify his enemy's center of gravity and then direct his available combat power in such a manner that the resulting effects create a cascading deterioration of the enemy's effective fighting strength; unbalancing the enemy's center of gravity, and driving it from a condition of relative tactical stability into a condition of chaos from which it cannot recover.[53] To achieve this effect, the tactical commander must determine when and where the tactical point of leverage exists and then concentrate the requisite amount of combat power to achieve superior effects at that point.

The Decisive Point

The object at the tactical level then is to throw an opponent's center of gravity into a condition of chaos, thus neutralizing the effects of his available combat power and denying his ability to effectively control, or threaten control of the tactical freedom of action. This requires applying superior relative combat power effects against a tactical point of leverage.

Leverage may be understood as the effects gained from the concentration of superior combat power against an enemy force's critical vulnerability which causes the enemy force to abandon his intended battlefield purpose. Leverage applied against the enemy center of gravity provides the tactical commander with the decisive advantage and establishes the conditions for tactical battlefield success. Consider the battlefield problem from the perspective of a simple linear combat model (Figure 1).

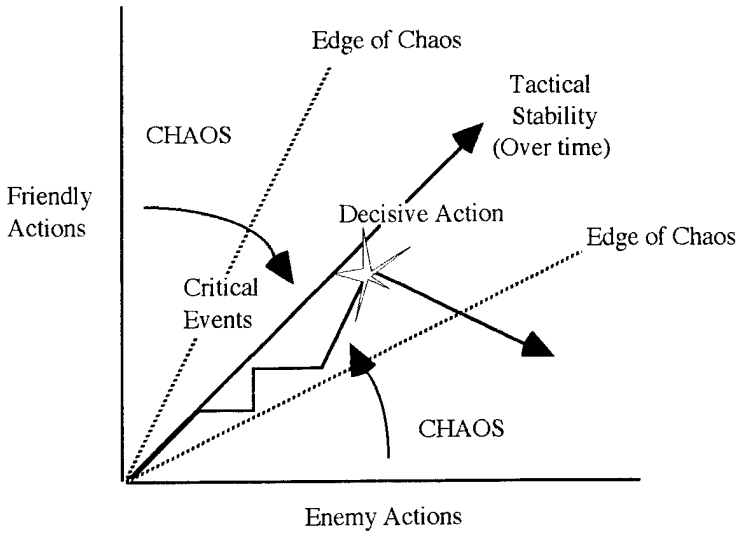

Figure 1: Linear Combat Model[54]

The enemy's center of gravity ensures stability in the tactical conflict over time. That stability is based on the assumption that available combat power is arranged and oriented to achieve control of the battlefield freedom of action and enable attainment of the tactical battlefield effect. That center of gravity is then acted upon by external agents (friendly actions) whose purpose is to drive it from a condition of stability into a condition of chaos.

Actions in combat are not "an exercise...directed at inanimate matter...or at matter which is animate but passive and unyielding.", but are instead "directed at an animate object that reacts."[55] Actions against the enemy that push him toward the edge of chaos, but

from which he recovers, are of little consequence as they do not attain control of the tactical freedom of action. Those actions do not achieve the necessary leverage and are therefore not considered decisive. Those same events may be critical however, in that while the enemy recovers, he does so only partially. This nets a deteriorated state of cohesion within the opponent's center of gravity and establishes the conditions for some future action's decisive effects.

The decisive action results in the removal of the enemy forces' ability to control the battlefield freedom of action, thus solving the fundamental battlefield problem and enabling attainment of the intended battlefield effect. Superior relative combat power effects, applied at this point of decision "puts an indisputable and definite end to (the battlefield problem)"[56] . This point of decision serves as the primary orientation for the commander's tactical actions.

What then is the decisive point? FM 100-5, Operations states that "decisive points are not centers of gravity" but rather, "they are the keys to getting at centers of gravity."[57] The decisive point is a tactical point of leverage where the application of relatively superior effects of friendly combat power establishes the conditions for the defeat of the enemy's center of gravity.

Jomini states that, "There is in every battlefield a decisive point the possession of which, more than any other, helps to secure the victory by enabling its holder to make a proper application of the principles of war. Arrangements should therefore be made for striking the decisive blow upon this point."[58] This definition leads the reader to believe that the decisive point is terrain oriented, constant in terms of time and space. Unfortunately, the dynamic environment of combat denies the notion that a fixed point will remain decisive throughout the course of the combat, despite the activities of the opposing forces.

Schneider's "Theory of the Operational Art" offers that the decisive point comes in three forms: physical, cybernetic, and moral. Physical decisive points include key terrain,

bases of operations, a formation or anything that is physically tangible and are extensions of the terrain, whether geological or manmade.[59] As does Jomini, Schneider's physical points are constant, fixed in time and space. Physical points provide only a potential for properly arranging the effects of combat power against an enemy force. Actions from these physical points, which do not unbalance the enemy's center of gravity, or seek to dominate the battlefield freedom of action, are of little consequence. Physical points may prove decisive as long as they establish the conditions necessary to defeat the enemy's center of gravity *at the time, and for the duration, that those effects are required.*

Cybernetic and moral decisive points represent enemy capabilities to fight, or the will to sustain the ability to fight. Cybernetic decisive points are manmade and consist of elements:

> Which sustain command, control, communications and the processing of information. They may include communications nodes, a boundary, a command post, a commander or a staff group...Moral decisive points sustain the force's morale--their magnitude of will. They might include the 'will' of the commander, the commander himself,... a hometown, a religious shrine, etc.[60]

They contribute to the coherence of a center of gravity by enabling direction and control. Destruction of cybernetic elements may positively affect the stability which sustains a center of gravity, and may therefore achieve the decisive effects. The moral decisive point will invariably be achieved through destruction of the enemy center of gravity at the tactical level. Once the ability of the enemy to control the battlefield freedom of action is removed, the moral decisive point is attained. However, if the morale of the enemy force, as a whole, can be defeated to the point that the enemy force chooses to resign from the combat--the center of gravity is ultimately defeated.[61]

Jomini emphasizes the importance of "maneuvering to engage fractions of the hostile (force) with the bulk of one's own forces, upon that portion of the (enemy force) which it is of the first importance to overthrow; and to so arrange (one's) forces that they shall engage at the proper time, and with ample energy."[62] This notion is important as it

does not define the decisive point as fixed in time and space, but rather that it is relative to the arrangement of both friendly and enemy combat power dynamics. This offers us insight into the true nature of the decisive point.

The decisive point exists as a condition of vulnerability within the enemy force's center of gravity, that force which is of the first importance to overthrow. As such, it may include critical units, weapons systems, tactical formations or lines of communications whose defeat would effectively render the enemy force incapable of achieving his original purpose. More importantly though, the decisive point exists relative to terrain, weather and time. The arrangement of enemy forces relative to the physical conditions of the battlefield create opportunities for decisive action against the reduced capabilities of his combat power dynamics. This notion supports Schneider's theory of the physical decisive point, as long as the arrangement of enemy forces to that point are such that their ability to generate combat power is reduced to a level of significant vulnerability. Additionally, the decisive point is of a temporal nature in that the enemy's arrangement at these physical points may not be fixed, and the decisive action is more than likely relative to the tactical effects required of the friendly force for a specific time and duration. Overthrowing the center of gravity then involves striking at the appropriate fraction of the center of gravity with superior combat power effects at the appropriate time and place. We can therefore define the characteristics of the decisive point as either physical or temporal, or a combination of both and relative to the arrangement of friendly and enemy combat power dynamics.

Because the center of gravity exists as the dominant threat to the control of the tactical freedom of action--the hub of all power and movement--it represents the aggregate potential strength of a force. FMFM1, Warfighting establishes the commonly misunderstood concept of maneuver warfare, "The goal is the application of strength against selected enemy weakness,"[63] or as Daniel Bolger exclaims in his rebuttal to the concept of maneuver, "hitting 'em where they ain't". These notions, in their purest sense, conflict with the entire concept of centers of gravity and decisive points.

Control of the tactical freedom of action is obtained or threatened by the arrangement and orientation of combat power dynamics. That arrangement exists as a force's center of gravity. The center of gravity represents the aggregate potential fighting strength of a force, and the force which must be defeated to gain control of the tactical freedom of action. Therefore, avoiding an enemy's strength cannot obtain the desired tactical purpose.

Defeat of the center of gravity requires the application of superior combat power effects, *against the enemy force's critical strength at a point of vulnerability.* The decisive point then exists as a condition of the enemy's center of gravity, characterized by the vulnerabilities of its available combat power dynamics. Application of superior relative combat power effects against a point where the majority of these vulnerabilities exist establishes the conditions for tactical success. This concept follows well the theories of B.H. Liddell Hart who professed the superiority of the indirect approach to get at the strength of the enemy formation.[64]

Analysis of friendly and enemy combat power dynamics, as they relate to each other and the battlefield conditions of time, space and terrain establishes the characteristics of the decisive point. The decisive point may be an enemy force whose ability to generate combat power is reduced to a condition of vulnerability, and whose defeat negatively affects the cohesion of the enemy's center of gravity. It may be a physical point, such as a piece of key terrain, where the application of friendly combat power effects achieve the necessary superiority to defeat the enemy's center of gravity. Such effects are normally accomplished through effective maneuver. The decisive point may exist in time relative to the friendly unit's purpose as assigned from higher headquarters, or relative to the enemy's ability to generate combat power at a given time. It may exist as a combination of all three, where each of the afore mentioned characteristics serve to define its nature.

The characteristics of the decisive point may exist at multiple locations and at varying times across a given area of operations. This gives rise to the divergent nature of

the battlefield problem. Divergent problems have no one "correct" solution.[65] There may be numerous locations where the characteristics of the decisive point appear. As such, there may be numerous correct solutions to any given battlefield problem. Understanding this enables planners to seek opportunities for decisive action by developing varying courses of action, and when designing branches and sequels to the base plan.

Essentially, the decisive point exists as a window of opportunity for decisive action which fulfills an intended tactical purpose. That opportunity arises when the arrangement of a given force's combat power dynamics is such that it results in a significant vulnerability to the stability afforded by the center of gravity. As the decisive point is not fixed, but rather relative to a force's combat power dynamics at a given time and location, the commander must determine which potential decisive point he will leverage his combat power against to attain the desired tactical effect. Analysis of the competing combat power dynamics may require that certain manipulations of the enemy force's center of gravity occur prior to the decisive engagement to ensure that the necessary superior effects are attained at the decisive point.

Critical Events

Those activities taken to manipulate an opponent's fighting strength in order to establish the conditions for success at the decisive point are critical events. These events are based on an analysis of the enemy force's fighting potential, relative to that of the friendly force.

Critical events include: Deep operations against high value targets, which serve to drive the enemy force toward the edge of chaos and permanently degrade his combat power. Sequenced application of tactical activities to position relatively superior combat power at the decisive point, such as a breach through enemy obstacles or penetration of enemy defenses. Actions taken against cybernetic activities which reduce the enemy's ability to respond to actions at the decisive point, such as the application of non-lethal fires

or the destruction of command and control facilities. These events are not decisive points, but are rather activities which establish the conditions for the successful application of combat power at the decisive point. Hart emphasizes the relation between decisive points and critical events in his discussion of dislocation and exploitation:

> The essential truth...is that, for success, two major problems must be solved--*dislocation* and *exploitation*. One precedes and one follows the actual blow--which in comparison is a simple act. You cannot hit the enemy unless you have first created the opportunity; you cannot make that effect decisive unless you exploit the second opportunity that comes before he can recover.[66]

Identification of the decisive point, and of those critical events which support actions at the decisive point, requires a detailed understanding of the current and projected battlefield conditions. It demands a thorough understanding of the tactical effect to be produced by the friendly force and the relationship of that effect to the mission of higher headquarters and to missions of adjacent units at the same tactical echelon. Without a coherent linkage in the effects desired and attained at each level of war, actions become uncoordinated and the risk of failure elevated. This linkage is enabled through the coherent application of nested concepts which serve to ensure unity of effort across the three levels of war in pursuit of the strategic aim.

CHAPTER 2 -- NESTED CONCEPTS

The cause for employment of military forces rises from unresolved political conflict, where the other instruments of national power have been unable or inappropriate to achieve national objectives or protect national interests.[67] "We maintain...that war is simply a continuation of political intercourse, with the addition of other means...We want to make it clear that war in itself does not suspend political intercourse ...that intercourse continues, irrespective of the means."[68]

Our analysis of the three levels of war in chapter 1 defines an inextricable linkage from strategy through tactics that must not be neglected when seeking opportunities for decisive victory. As such, the strategic concept provides the unifying focus for operational and tactical actions. *In its strategic context, military victory is measured in the achievement of the overall political aim...Operational and tactical victory is measured by its contribution to strategic success.* (Emphasis added)[69] Decisiveness in combat requires the application of force in such a manner that it resolves the battlefield problem quickly and with as few casualties as possible, under conditions favorable to the strategic aim. Operational planners ensure that campaigns and battles are ordered and sequenced in such a manner that the cumulative effect of the tactical actions produce the intended strategic end.

To achieve a decision commensurate with the national stategy, operational commanders must clearly understand the political endstate for which they are being employed. "No one starts a war--or rather, no one in his senses ought to do so--without first being clear in his mind what he intends to achieve by that war and how he intends to conduct it."[70] Clausewitz's maxim reflects the critical importance of establishing a clearly defined, decisive, and attainable objective prior to entering into the greatest of human dramas.[71] The National Command Authority establishes the desired endstate prior to armed forces being committed to action. This defines the conditions necessary to meet the strategic objectives, and enables a transition from the predominant use of the military instrument of national power to other instruments.[72] In effect, application of the military instrument seeks to eliminate effective enemy resistance which impedes realization of the strategic aim.

The DePuy Theory

In the days of the Napoleonic Wars, the sovereign, strategist, operational artist and tactical commander were embodied in the French Emperor. The distributed nature of the modern battlefield denies the ability of the theater commander to physically direct the

activities at the lowest tactical echelons. How does the theater commander then, influence the actions at the lowest tactical echelon to ensure they are properly arranged and oriented to achieve the decisive victory?

General William E. DePuy's theory of nested concepts is described as:

> a centralization of concepts, a decentralization of execution and a full exploitation of forces and opportunities. Cascading concepts carry the top commander's intentions to the lowest levels, and the nesting of those concepts traces the critical path of concentration and priorities...Not only is the system of nested concepts the only method by which a large force can adapt to the infinite variety of situations that arise throughout its huge area of operations, but it is also the only method by which the talent and initiative of commanders and troops at every level can be engaged and exploited.[73]

Nested concepts enable a theater commander to influence actions at the lowest tactical echelon through the formulation and dissemination of a campaign plan, based on a strategic estimate, that translates broad strategic guidance into specific operational directions which are necessary to employ forces in combat to defeat of an enemy's strategic center of gravity. The campaign plan articulates the theater commander's vision for sequencing major operations to achieve decisive leverage against an enemy's center of gravity using the combined effects of theater assets from supporting joint and combined forces. The arrangement of major operations is designed to achieve the desired end-state conditions as quickly and as economically as possible.

To defeat the opposing center of gravity the operational artist must develop an operational plan that achieves concentrated combat power effects at the appropriate time and place. This demands the coherent arrangement and application of spacially and temporally extended tactical activities, distributed in relation to the opposing force's center of gravity, to attain a common operational aim--domination of the battlefield freedom of action. The arrangement of tactical actions in time and space to achieve decisive effects and solve the operational battlefield problem, supports the idea of critical events and decisive action as depicted in figure 1.

Some of these actions reduce the enemy's ability to resist the application of superior combat power effects at a chosen decisive point. Other activities serve to achieve the necessary arrangement of friendly combat power at a decisive point. Others may seek to deny the enemy's ability to generate effective combat power. These battles are considered operational critical events. They establish the conditions necessary for some future decisive action at a selected decisive point. The action so designated to achieve defeat of the opposing force's center of gravity is carried out at the decisive point.

The operational artist's arrangement, orientation and application of tactical forces to attain this end is reflected in the purposes for which each of those tactical forces is employed. That purpose defines the intended tactical contribution to the defeat of the enemy's operational center of gravity. These activities' effects are distributed in relation to the opposing force's combat power dynamics to attain a common operational aim--control of the battlefield freedom of action and ultimately, the defeat of the enemy's ability to successfully wage war.

The Commander's Intent

The theater commander further enables tactical action within the framework of his operational vision by providing his intent for the campaign's conduct. That intent defines the campaign's purpose, a general method for attaining that purpose, the desired endstate and the degree of acceptable risk. From the concept and intent, operational planners are provided a single unifying vision which links an operation's purpose to the strategic aim. This vision, and the apportioned combat power dynamics, are the palette from which the operational artist creates a campaign plan to link the effects of distributed tactical actions to the defeat of the enemy's strategic center of gravity.

The unifying vision must survive first contact with the enemy. It is for the attainment of a specific purpose that each combatant force is employed. Each is focused in some manner, on dominating the operational freedom of action and thus, denying the

enemy's ability to resist the application of the higher commander's will. The theater commander's campaign plan is focused on defeating his opponent's center of gravity, that aggregate capability to resist the imposition of will by friendly forces. That force is composed of its own dynamics, whose cohesion must be shattered to get at the core source of stability. It is to this end that concerns of the operational artist.

United States Army doctrine demands that commanders understand the intent of their commanders two echelons higher. As the operational commander determines the best course of action to defeat his opponent's center of gravity, he orders, arranges and sequences tactical actions to create the necessary leverage against an operational decisive point. As the environment of combat exists as an interplay between two complex, dynamic systems, the opportunity for co-evolution and emergence are ever-present.[74] Actions taken against a complex system that threaten to drive it toward a condition of chaos, produce reactions that may be neither proportionate to those actions, nor predictable. The adaptive nature of complex systems demands that commander's at every echelon be aware that the initial arrangement and orientation of combat power may require adjustment based on the enemy's reactions to the application of force. A new center of gravity may emerge from this contest and with it a new decisive point.

Understanding that the enemy will react, adapt and possibly cause the emergence of a new center of gravity is paramount to battlefield success. This demands a constant monitoring of the battlefield condition to ensure that combat power is arranged, oriented and applied appropriately to secure the intended battlefield effect.

> Flexibility consists (of) the intelligent commander's ability to take timely and appropriate measures on the basis of objective conditions after 'judging the hour and sizing up the situation' (the 'situation' includes the enemy's situation, our situation and the terrain), and this flexibility is ingenuity in varying tactics.[75]

Understanding the tactical effect required, and its contribution to the higher commander's concepts, subordinate commanders are adequately armed to seize the

initiative when opportunity presents itself. Such initiative enables subordinates to operate decentralized and gain control of the battlefield freedom of action, thereby providing a positive tactical contribution. "Thus, the higher concepts are progressively tuned to local reality."[76]

Aufstragstaktik

Aufstragstaktik (mission tactics) concedes that the tactical battlefield is too confusing to command and control centrally . It recognizes that higher commanders direct subordinate actions through guidance rather than direct, centralized control. As local tactical conditions change, subordinates are expected to act in accordance with their commander's intent rather than await instructions. The commander's intent serves as the guiding light for the subordinate's actions. It fixes the vertical and horizontal purpose relationships in the mind of the subordinate leader, enabling positive action and legitimate tactical contribution even if positive control is lost.[77]

Decisiveness at the tactical level is measured against its contribution to the operational and strategic end-state. Therefore, tactical effects which do not directly support these ends are wasteful. The purpose of the tactical action becomes paramount in determining the proper orientation and application of combat power, for it is the tactical effect which is of value. Tactical actions contribute to operational success through the leverage gained from their cumulative effects when applied against the operational decisive point on the distributed battlefield. To contribute effectively, the tactical commander must understand the battlefield effects he is tasked to produce and their relationship to the effects required of his higher command, and the intended effects of adjacent units at the same tactical echelon.

This requires a vertical and horizontal analysis of purpose and includes a temporal assessment of when the intended effects must be produced, and how long those effects must be sustained to provide the necessary tactical contribution.[78] After determining the

effects to be created and their relative contribution to the overall effort, the tactical commander must determine the appropriate arrangement, orientation and application of available combat power dynamics for his unique battlefield problem.

As concepts cascade down to the lowest tactical echelons on the distributed battlefield, they create battlefield problems which are layered in purpose upon one another from higher to lower. Actions at the lowest echelons provide a direct influence on the required effects of higher echelons. These layered battlefield problems give light to the theory of *multiple centers of gravity* and *multiple decisive points*. Each echelon within the combatant chain is opposed by an enemy center of gravity with a similar, yet conflicting battlefield purpose. Each of those centers of gravity may be attacked successfully at a decisive point. This does not imply that multiple centers of gravity exist per echelon, but rather that a higher echelon commander orders and arranges the activities of his subordinate commands to apply the appropriate leverage against his opponent's center of gravity at a decisive point of his choosing.

To achieve the necessary superiority of combat power effects the commander establishes his own center of gravity, a force designed to strike to heaviest blow and achieve the intended battlefield effect, and orients that force against a chosen decisive point. The actions of all other subordinate forces are therefore contributory or supporting efforts to the actions of this main effort. Each of those supporting efforts are faced with their own contributory battlefield problem with an opposing center of gravity to be defeated by concentrated effects against a decisive point.

The following historical example demonstrates the contributory relationship of actions at the lowest tactical echelons to a campaign plan's design for defeating an enemy's strategic center of gravity. Figure 2 reflects the general arrangement of major ground offensive actions, taken during Operation Desert Storm, to achieve the strategic aim of causing the removal of the Iraqi Army from Kuwait . To prosecute this campaign, allied

forces assembled the most powerful military force since June 1944 and the D-Day invasion of Normandy.[79]

Desert Storm began on 17 January 1991. Allied air and naval forces began the destruction of Iraqi strategic, operational and tactical targets. At the end of two days, allied forces had achieved air superiority. By 21 February Iraqi air forces were no longer capable of conducting operations. These actions reduced much of the Iraqi Army's ability to affect the battlefield freedom of action and established the conditions necessary for the conduct of ground operations.[80] Within the construct of the campaign plan, the air operation's end-state was a critical event in that it effectively reduced the Iraqi's ability to generate superior combat power which would threaten the allied ability to dominate the battlefield freedom of action during the subsequent ground offensive.

The major ground offensive operations began at 0400 on 24 February. The concept of operations called for an attack across the entire Iraqi defensive front. The idea was to create so many penetrations that the Iraqis could not anticipate where the main attack was coming from until it was too late for them to react.[81] The operational main effort consisted of the US Army VII Corps. VII Corps' task was to destroy the Iraqi Republican Guard Forces Command (RGFC) and thus, eliminate the Iraqi offensive warfighting capability.[82] Supporting efforts to the east and west would attack to prevent Iraqi reinforcement against the intended decisive actions of VII Corps, thus retaining the necessary freedom of action for the employment of the friendly main effort against the Iraqi strategic center of gravity.

The actions taken by an infantry platoon within the 2d Marine Division's zone of attack during Operation Desert Storm were separated from that decisive action by more than fifty four hours and 125 kilometers. Despite this separation in time and space, that platoon's actions, guided by a common aim and enabled by nested concepts, contributed positively to the VII US Corps' defeat of the Iraqi Republican Guard and attainment of the strategic objective.

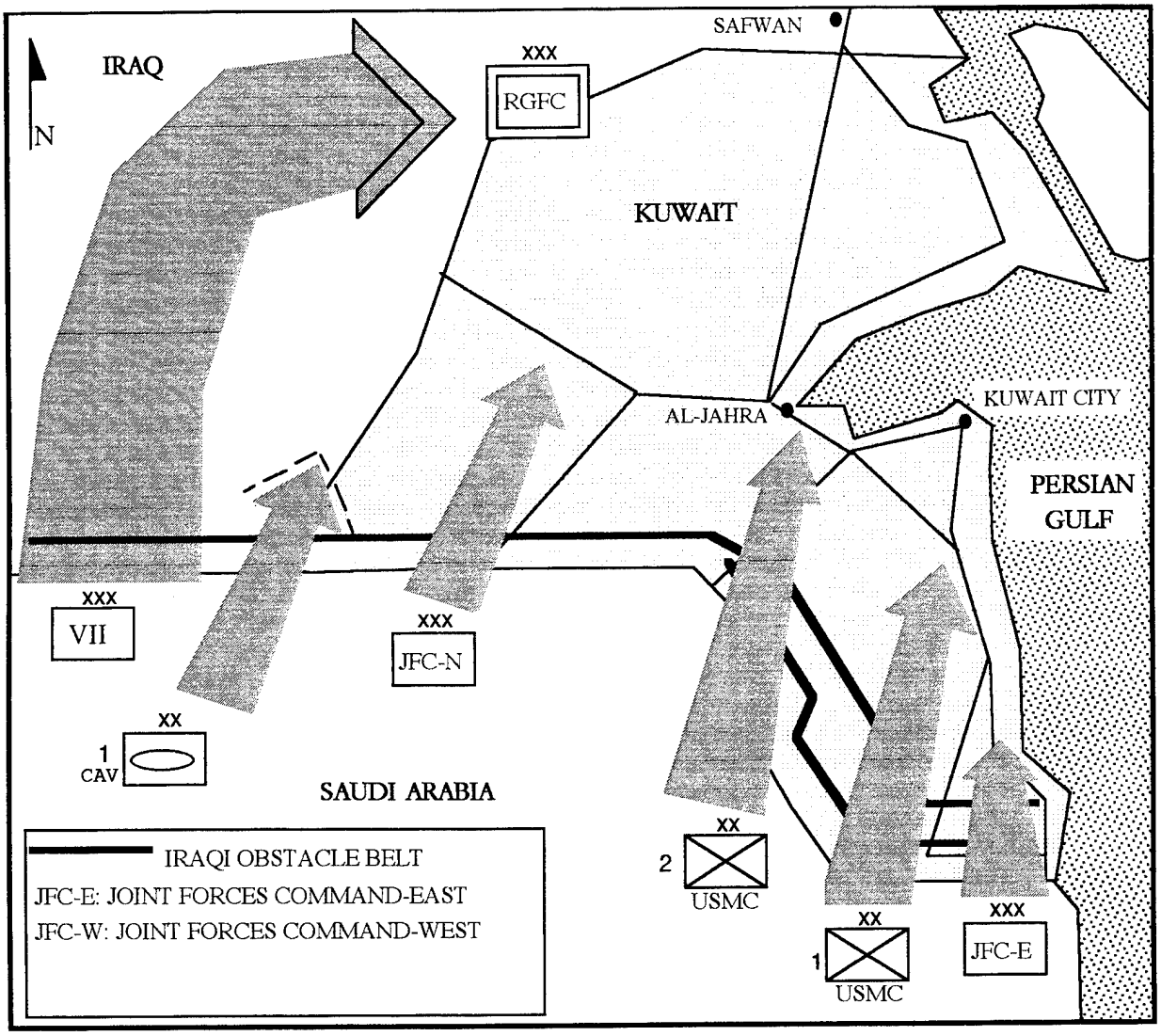

Figure 2: Concept of Operations for Desert Storm Ground Offensive Operations[83]

Historical Example

3d Platoon of A Company, 1st Battalion, 8th Marines attacks to seize a building 800 meters to the east in support A Company's mission of guarding the 1st Battalion, 8th Marines' right flank. Enemy forces within that building are capable of placing direct fire upon the battalion's right flank and interfering with its breaching operations. Removal of this direct fire threat contributes positively to the tactical purpose of A Company and enables the 1st Battalion, 8th Marines to retain control over its tactical freedom of action and achieve its assigned battlefield effect.

1st Battalion, 8th Marines conducts breaching operations in support of the 6th Marine Regiment's mission to penetrate enemy obstacles and forward Iraqi defensive positions. 1st Battalion's breach constitutes a critical event for the 6th Marine Regiment. It sustains the 6th Marines' momentum in their attack to secure the penetration of Iraqi defenses. The 6th Marine's penetration of Iraqi defenses enables the rapid commitment of the US Army's Tiger Brigade to the zone of attack.[84] The Tiger Brigade provides west flank security for the 2d Marine Division during its attack into Kuwait. As such, the 6th Marines' penetration and passage of the Tiger Brigade forward constitute a critical event for the 2d Marine Division. The 2d Marine Division attacks into Kuwait as part of the United States Marine Corps Central Command (MARCENT) to fix Iraqi combat forces and prevent their reinforcement against the US Army's VII Corps attack to the west. This action contributes positively to the required freedom of action of the VII Corps. It serves to reduce the amount of combat power available to the Iraqi forces to resist the intended decisive action by the VII Corps. Other supporting coalition actions are ordered across the theater serve to isolate the RGFC from reinforcement and cause it to orient away from the attack of the VII Corps, thus creating the conditions necessary for decisive action. The VII Corps attacks as the theater main effort to destroy the divisions of the Iraqi Republican Guard. The Republican Guard is the enemy's strategic center of gravity and represents the greatest threat to the allies' domination of the battlefield freedom of action.[85]

The arrangement of main and supporting efforts by the higher echelon commander establishes battlefield problems for his subordinate units, each with its own opposing center of gravity and decisive point. The preceding example demonstrates how the effects of subordinate actions contribute directly to the success of higher echelon plans. The distributed effects of tactical successes coalesce to provide the operational commander the superior force necessary to apply against the operational decisive point and defeat his opponent's center of gravity.

We have determined that the overall effect sought by the tactical commander is the proper arrangement and orientation of superior combat power effects at the decisive time and place. Furthermore, such arrangement and orientation is attained through the proper identification and analysis of the enemy's center of gravity as it exists in relation to friendly forces and the battlefield conditions of time, space and terrain. The determination of where and when to concentrate combat power requires the identification of a decisive point which will enable attainment of the intended battlefield effect. Relative combat power analysis is a useful technique for identifying tactical points of leverage and the actions necessary to achieve the decisive effect.

CHAPTER 3 -- RELATIVE COMBAT POWER ANALYSIS

The decisive point is a tactical point of leverage where the concentration of superior combat power effects establishes the conditions for the defeat of the enemy's center of gravity. Combat power is not absolute, it exists in relation to that of the enemy. As such, success in tactical combat demands that, "even in the absence of absolute superiority, relative superiority...that is, the skillful concentration of superior strength...is attained at the decisive point."[86] Every tactical force has within it a center of gravity, that force which is arranged and oriented toward attaining control of the tactical freedom of action in order to generate an intended battlefield effects. That effect is defined by the purpose of the combatant's mission. Actions at any selected point are only decisive if the effects of friendly actions there achieve the intended battlefield effect. "The difficulty lies in recognizing those points."[87]

Every tactical commander's fundamental battlefield problem is essentially established by the requirements of his higher headquarters. As such, determination of the point of decision most appropriately begins with an analysis of the factors of METT-T for

both friendly and enemy forces. This analysis establishes the parameters of the battlefield environment and results in factors against which combat power dynamics may be analyzed.

The primary element to be discerned from the problem's analysis is the intended contributory battlefield effect required of the tactical unit. A vertical and horizontal purpose analysis fixes the relationship of the unit's purpose to other higher and adjacent plans. The determination of the purpose and its relationship to higher intentions for establishing positive control of the freedom of action is tantamount to the idea of nested concepts. Critical to the concept of purpose is the temporal assessment of when the contributing effect must be achieved and, the duration that the effect must be sustained.

The Intelligence Preparation of the Battlefield (IPB) process enables an analysis of enemy capabilities and intentions. It provides the tactical commander with a general idea of his opponent's competing purpose and sheds light on the options available to the enemy commander for attaining that purpose. Within this analysis is the determination of the enemy force's center of gravity and an assessment of the dynamics of combat power to determine the greatest strengths and weaknesses associated with each. These strengths and weaknesses are analyzed in absence of any other battlefield conditions to determine the potential combat power available to the enemy force. For example, strengths associated with firepower effects provided by weapons systems should be analyzed based on their potential to affect the friendly force. FM 101-5 provides a useful framework for analyzing each of the contributing effects of combat power.

Once enemy potential is determined, the integration of the effects of terrain, weather and time may be integrated to determine the options available to the enemy commander to attain his purpose. Within this analysis planners can begin to determine the critical strengths and weaknesses associated with each of the dynamics of combat power. This analysis also provides insight as to the times and locations where the enemy center of gravity has the greatest potential to generate combat power, and when that ability is limited. Analysis of time also provides insight as to the effects of extended operations on combat

power potential by establishing possible culmination points. If the elimination of a tactical line of supply for a certain duration results in tactical culmination and abandonment of purpose, the point where that line of supply can be successfully blocked for the required duration may be considered decisive.

An analysis of friendly capabilities must be undertaken in the same fashion. Determination of the potential effects of each of the contributing dynamics of combat power provides insight to the friendly force's ability to generate superior effects. FM 101-5 offers as doctrine the determination of force ratios to generate conceptual possibilities. These force ratios are used in concert with historical minimum planning ratios to indicate the mathematically correct correlation of force necessary for success.

Jomini correctly cautioned against reducing war to mathematical calculations. The historical minimum planning factors cannot adequately account for the various friction causing events associated with the battlefield condition, nor can they accurately measure the capabilities and will of the opposing forces. As such, the tactical planner must use these ratios only as a basis for determining how to achieve his intended purpose in the most economical method. These force ratio analyses do provide some degree of insight as to what may or may not be feasible methods for solving the battlefield problem. They may also provide some indication of the force size necessary to achieve superior relative combat power effects at a decisive point. This is especially critical when lacking absolute numerical superiority in a given battlefield problem.

The analysis of the friendly situation results in the identification of strengths and weaknesses associated with each of the dynamics of combat power. When compared to the relative strengths and weaknesses of the enemy's dynamics, planners begin to develop insight as to the optimum methods for achieving relative superiority through the concentration of combat power effects, and the methods necessary for limiting the enemy's ability to achieve the same. It is critical that the initial analysis identifies the times and

locations, with regards to the current and projected battlefield condition, that these strengths and weaknesses exist.

This analysis of combat power dynamics results in the identification of the greatest strengths and weaknesses associated with each of the forces' ability to dominate the tactical freedom of action given the current and projected battlefield conditions. To facilitate an understanding of the analysis process refer to the Relative Combat Power Analysis Matrix at Figure 3.

	FRIENDLY FORCES	ENEMY FORCES	GENERAL FACTORS 1	GENERAL FACTORS 2	GENERAL FACTORS 3	SIGNIFICANT FACTORS
MANEUVER	Strengths:	Strengths:				
	Weakness:	Weakness:				
FIREPOWER	Strengths:	Strengths:				
	Weakness:	Weakness:				
PROTECTION	Strengths:	Strengths:				
	Weakness:	Weakness:				
LEADERSHIP	Strengths:	Strengths:				
	Weakness:	Weakness:				

Figure 3: Relative Combat Power Analysis Matrix

The initial analysis lists the greatest strengths and weaknesses of each of the opponent's dynamics of combat power. This analysis is followed by a comparison of the competing dynamics of each of the forces and results in a list of general factors affecting the battlefield problem. This comparison on the matrix is done from left to right where the

friendly values are compared to the enemy values. The results of this analysis are listed under general factors 1. These general factors are the resulting deductions from the comparison of like dynamics. They relate information pertinent to the given battlefield problem. They basically ask of each observation, "So what?" This analysis assists in identifying opportunities for exploiting enemy weaknesses or limiting enemy strengths. Additionally, it assists in identifying friendly protection requirements for the conservation of fighting strength. The final value of this analysis is that it offers an opportunity for identifying tactics, techniques and procedures necessary to take advantage of the battlefield condition.

The analysis is continued with a diagonal comparison of competing dynamics to determine additional general factors. This is repeated until each of the dynamics of one force has been compared to each of the competing dynamics of the other. The resulting deductions are listed in succeeding general factors columns. These analyses result in a list of general factors pertinent to the battlefield problem. These general factors define the actions necessary for achieving success when one dynamic is compared to another.

The next step in the analysis is to review the list of general factors. Some factors may reappear several times. These factors should be considered as significant to the success of the tactical action and are listed as significant factors. These factors are the result of a deliberate comparison of the competing combat power dynamics' significant values and, through the deductions of planners, demonstrate the conditions most likely to achieve success in the tactical action. These significant factors also define the critical vulnerabilities of the friendly force and must be compensated for in any course of action.

These conditions, as they exist in time and space and in relation to the friendly and enemy force's dynamics, define the characteristics of the decisive point and aids in defining the type actions necessary to exploit the enemy forces' vulnerabilities. Armed with this information, planners can now analyze the battlefield environment to determine when and where these conditions will occur, or what critical events must be employed to create the

necessary conditions. This final deduction is especially germane as it is based on an understanding of current and projected enemy capabilities and establishes, as a significant factor to success, that the tactical affect can not be achieved without some preliminary manipulation of the enemy center of gravity prior to the decisive action.

The complete analysis provides planners with significant factors which serve to define the characteristics of the decisive point. Those characteristics may exist at multiple locations and times across the area of operations or, they may have to be created by supporting critical events. As such, the battlefield problem may offer divergent solutions. This enables the planner to develop different courses of action, each of which may be focused on a different decisive point. The value of this concept is in understanding that whichever point is chosen, successful application of superior relative effects there should result in domination of the freedom of action and thereby, achieve the necessary contributing tactical effect. The tactics, techniques and procedures identified in earlier analyses further enable course of action development. They provide and additional ability to develop multiple concepts for attainment of the intended purpose.

This relative combat power analysis is enabled through a fundamental understanding of tactical prerequisites. These prerequisites enable the commander to quickly analyze the battlefield problem and determine his required tactical contribution. They allow him to rapidly assess the competing dynamics of combat power as they relate to the current and projected battlefield conditions, select a decisive point, and then arrange, orient and apply his available combat power in such a fashion that the resulting effects defeat the enemy's center of gravity. Therefore, this is a process that must be trained to be exploited. It must be practiced to establish an efficiency and effectiveness in military decision making that echoes of Coup d'eoil and Clausewitzean genius.

CONCLUSIONS AND IMPLICATIONS

"Theory seeks the advancement of general principles, not absolute ideas."[88] The preceding analyses and deductions serve to add value and clarity to the Army's decision to formally include such theoretically based subjects as decisive points to our professional warfighting lexicon. Centers of gravity and decisive points are not conceptual ideas restricted to the operational level of war, as suggested in FM 100-5. Instead they have legitimate value at the tactical level of war as tools for analyzing the nature of combat and for determining feasible solutions to given battlefield problems. The concepts forwarded in this study have utility for determining the necessary arrangement, orientation and energy required in the application of available combat power to attain decisive, contributing battlefield effects.

The concepts of centers of gravity and decisive points have legitimate value as planning tools at the tactical level. As theater strategies are refined into campaign plans, operational artists seek ways and means to defeat an opponent's center of gravity and achieve a desired operational and strategic end-state. They accomplish this through the coherent application of spatially and temporally extended relational movements and distributed battles, whose purposes are to seize, retain or deny the battlefield freedom of action. This domination of the battlefield freedom of action denies an opponent the ability to resist the imposition of will.

It is the attainment of the intended battlefield effect which is of importance. Tactical actions which do not positively contribute to the plans of higher commanders are of little consequence and represent a wasteful employment of valuable resources. Tactical actions derive their purpose from the effects required of them by the operational artist as he seeks to achieve operational leverage against an opponent's center of gravity. The distributed nature of the modern battlefield still demands the articulation of available force to achieve superior combat power effects at a given time and place. Tactical victories, distributed in

time and space, coelesce to produce superior effects that may be used as leverage against an operational decisive point. Thus, the idea of decisive battle is retained; it is the notion of battle and the battlefield that require a broader perspective.

The tactical effects required to contribute positively to a higher commander's concept establish the parameters of the tactical commander's fundamental battlefield problem. That problem exists within the dynamic nature of combat wherein two complex, adaptive systems clash in their persuit of similar, yet opposing purposes. Attainment of one's assigned purpose requires actions which seek domination of the tactical freedom of action at the requisite time and place, and for the required duration.

Fundamentally, the greatest obstacle to attaining domination of the tactical freedom of action is the enemy's center of gravity. Each combatant force seeks to gain and retain positive control of the battlefield freedom of action while denying the same from his adversary. To achieve this purpose combatants form centers of gravity, a force organized and oriented toward attaining the intended battlefield purpose. Success in combat requires defeat of an opponent's center of gravity thus, denying his ability to resist effectively the imposition of friendly will.

Centers of gravity provide a degree of stability over time and consist of the arrangement and orientation of available combat power dynamics to achieve an intended battlefield effect. To defeat the enemy center of gravity, a combatant must identify points of leverage that enable the application of superior combat power effects which drive the center of gravity from a condition of stability into a condition of chaos from which he cannot recover.

Decisive points are points of leverage where the application of superior relative combat power effects establishes the conditions necessary for defeat of the enemy center of gravity and attainment of the intended battlefield purpose. To achieve decisive results, combat power is concentrated at an appropriate time and location against the vulnerabilities that exist within an enemy's center of gravity. Thus, decisive points also exist as windows

of opportunity. The characteristics of a decisive point always consider the capabilities and arrangment of the competing combat power dynamics. Jomini refers to these as decisive points of maneuver. These characteristics are considered constant for it is the enemy center of gravity that must be defeated to attain domination of the freedom of action. As such, decisive points exist as either physical, temporal or a combination of both. .

Identification of decisive points requires an analysis of competing combat power dynamics with regards to the current and projected battlefield conditions. This analysis seeks to determine the characteristics of the decisive point in terms of enemy force arrangement, time and space. The characteristics of the decisive point may exist at multiple locations across the battlefield. This gives rise to the divergent nature of the battlefield problem and is a concept that must be internalized when developing courses of action, and branches and sequels to those courses of action.

Understanding the nature of the fundamental battlefield problem requires that commanders identify decisive points well prior to developing courses of action. This is the only logical method for establishing a generally correct direction for the application of available combat power. The implication is that planners identify the enemy forces' center of gravity before seeking points of leverage. Identification of the enemy's center of gravity is enabled by the IPB process and an understanding of the enemy's intended battlefield purpose, and the method by which he will most likely achieve that purpose. Identification of a decisive point, and arranging the effects of available combat power dynamics in such a fashion as to achieve superior concentrated effects there denies the enemy the ability to achieve his intended purpose. This is the method by which tactical commanders approach the requirement of quick, decisive victory at minimum cost.

The use of military theoretical terminology must be accompanied by a firm understanding of what those terms legitimately mean. Dr. James Schneider and Lieutenant Colonel Lawrence L. Izzo report that:

> Today we observe a growing tendency throughout the Army to use certain theoretical terminology in a casual fashion. This tendency

> assumes a universal understanding of the definitions of such terms. But the use of this terminology in professional discourse suggests the contrary: we are nearer mutual confusion than common understanding.[89]

The dialogue that must accompany the execution of actions within violent, dynamic environment of combat requires more than just superficial interpretation of warfighting theory and doctrinal terminology. The skillful employment of force, to attain decisive victory demands more than a cursory familiarization with some of war's most essential conceptual points. Quite simply, it demands that military practitioners undertake a deliberate examination of how war works to determine the most reliable methods for solving its lethal problems.

The purpose of this study was to penetrate warfighting theory and doctrine to define the terms associated with decisive action and to discern a methodology for identifying decisive points in tactical combat operations. The preceding analyses establish some fundamental constructs for considering the essence of warfighting and the complex environment of combat as it relates to the tactical level of war. It is hoped that this study is not interpreted as an approach to forward some dogmatic conclusions about the nature of war, but instead that it offers valuable insight to the nature of combat and the means to achieve favorable solutions to battlefield problems.

NOTES

[1] Department of the Army, FM 100-5: Operations, (Washington, DC: GPO, 1993), 6-8. (Hereafter referred to as FM 100-5)

[2] Ibid., 2-8.

[3] Jomini, Antoine Henri, The Art of War, ed. J.D. Hittle, Book 2, Roots of Strategy, (Harrisburg, PA: Stackpole Books, 1987), (Hereafter referred to as Jomini), 506-507.

4 [4] Clausewitz, Carl von, On War, trans. and ed. Michael Howard and Peter Paret, (Princeton, NJ: Princeton University Press, 1976), (Hereafter referred to as Clausewitz),197.

[5] Hooker, Richard D. JR., "The Mythology Surrounding Maneuver Warfare," Parameters, Spring 1993, 33.

[6] Chairman of the Joint Chiefs of Staff, National Military Strategy of the United States of America 1995: A Strategy of Flexible and Selective Engagement, (Hereafter referred to as NMS 1995), 1.

[7] FM 100-5, v.

[8] Ibid., iv.

[9] Clausewitz, 75.

[10] Ibid., 87, 149.

[11] FM 100-5, 1-3.

[12] Clausewitz, 85. Clausewitz states that "war springs from some political purpose, it is natural that the prime cause of its existence will remain the supreme consideration in conducting it...therefore, war is not merely an act of policy but a true political instrument, a continuation of political intercourse, carried on with other means...The political object is the goal, war is the means of reaching it, and means can never be considered in isolation of their purpose."

[13] Edward E. Johnston, Sound Military Decision, (Newport: U.S. Naval College, 1942), 8.

[14] FM 100-5, 1-3

[15] Ibid., 6-2.

[16] John F. Antal, "Thoughts About Maneuver Warfare", in Richard D. Hooker's Maneuver Warfare: An Anthology, (Novato, CA: Presidio Press, 1993), 61.

[17] FM 100-5, 6-2.

[18] James J. Schneider,"Vulcan's Anvil: The American Civil War and the Emergence of Operational Art", SAMS Monograph, 16 June 1991. (Hereafter referred to as Vulcan's Anvil). Dr. Schneider is a professor of military theory at the School of Advanced Military Studies, Command and General Staff College, Fort Leavenworth, Kansas. He holds bachelor's and master's degrees from the University of Wisconsin, Oshkosh. "Vulcan's Anvil is but one of many papers Dr. Schneider has penned on the subject of operational art and the dynamic environment of war.

[19] Ibid., 39.

[20] Department of the Army, FM 101-5-1: Operational Terms and Graphics (Final Draft), (Washington, DC: GPO, 15 July 1995), (Hereafter referred to as FM 101-5-1), 1-259.

[21] Clausewitz, 228.

[22] Ibid., 96.

[23] Vulcan's Anvil, 64.

[24] Department of the Navy, Headquarters, United States Marine Corp, Fleet Marine Force Manual (FMFM) 1, Warfighting. (Washington, DC: GPO, 1989), 24.

[25] Reznichenko, Vasiliy Gerasimovich, Ivan N. Vorobyev and Nikolay F. Miroshnichenko, Tactics. Translated by Foreign Broadcast Information Service. JPRS Report, (Hereafter referred to as Reznichenko, Tactics)1987, 26.

[26] The desired battlefield effect, or purpose, of the tactical operation is the foundation for success at the operational and strategic level.

[27] U.S. Naval War College Monograph, "Sound Military Decision", (Newport, RI: 1942), 44.

[28] Department of the Army, FM 101-5: Command and Control for Commanders and Staff (Final Draft), (Washington, DC: GPO, August 1993), (Hereafter referred to as FM 101-5), 4-1 - 4-2.

[29] Ibid., 4-2.

[30] FM 100-5, 2-4.

[31] Ibid., 6-7.

[32] Department of the Army, FM 100-5: Operations, (Washington, DC: GPO, 1986), 179. As referenced in Syllabus to AMSP Course 1: Foundation of Military Theory, School of Advanced Military Sciences, (Fort Leavenworth, KS: U.S. Army Command and General Staff College, AY 95-96), 6.

[33] Clausewitz, 595-596.

[34] Ibid., 485.

[35] FM 101-5-1, Operational Terms and Graphics, (Final Draft) 1993, defines the mission statement as, "The form of operation, task and *purpose*, which clearly indicates the action to be taken and *the reason therefore*."s (Emphasis added).

[36] Joint Pub 3-0, III-28.

[37] FM 101-5-1, 595

[38] FM 101-5-1, 1-55.

[39]Huba Wass de Czege, "Understanding and Developing Combat Power", 10 February, 1984., (Hereafter referred to as Wass de Czege), 7.

[40] Ibid.

[41] Ibid., 8.

[42] FM 100-5, 2-10.

[43] Wass de Czega, 8.

[44] Ibid.

[45] John F. Antal, "Thoughts about Maneuver Warfare", in Richard D. Hooker's Maneuver Warfare: An Anthology, (Presidio Press: Novato, CA, 1993), 65.

[46] FM 100-5, 2-11.

[47] Wass de Czege, 8.

[48] FM 100-5, 2-11.

[49] Ibid.

[50] Wass de Czege, 9.

[51] Clausewitz, 102.

[52] Jomini, Antoine Henri. The Art of War. Edited by J.D. Hittle in Roots of Strategy, Book 2. (Harrisburg, PA: Stackpole Books, 1987) (Hereafter referred to as Jomini), 507.

[53] Roger A. Beaumont, War, Chaos, and History, (Praeger: Westport, CT, 1994), xiv. Beaumont describes chaos as "an order of infinite complexity...exceeding the capacity of a single individual to understand it sufficiently to exercise control-regardless of the resources placed at his disposal."

[54] This diagram is an adaptation of Dr. Schneider's "Edge of Chaos Theory" model presented during seminar discussion on 28 June 1995.

[55] Clausewitz, 149.

[56] The Random House Dictionary of the English Language, 2d ed. Unabridged, (Random House: NY, 1987), 517.

[57] FM 100-5, 6-8.

[58] Jomini, 498.

[59] James J. Schneider, Theoretical Paper No. 3, "The Theory Of Operational Art", U. S. Army Command and General Staff College (Fort Leavenworth, KS: US Army Command and General Staff College, 1 March 1988), 28.

[60] Ibid.

[61] The defeat of the whole of the enemy's morale may be achieved through the application of psychological warfare activities. This is an option to commanders who seek to degrade the fighting spirit of their adversary and may represent critical activities in depth which contribute to the ultimate decisive action. As with the application of any form of combat power, the effects must be measured to determine their relative value.

62 Jomini, 461.

63 Department of the Navy, Headquarters, United States Marine Corp, Fleet Marine Force Manual (FMFM) 1, Warfighting. (Washington, DC: GPO, 1989), 29.

64 For additional information regarding Hart's theories see Hart, B.H. Liddell, Strategy, 2d ed. (New York: Meridian, 1991).

65 Senge, 283-284.

66 B.H. Liddell Hart, Strategy, 2d ed. (New York: Meridian, 1991), 336.

67 Joint Pub 3-0, I-2.

68 Clausewitz, 605.

69 Joint Doctrine Division, Joint Publication 3-0, Doctrine for Joint Operations, (Washington DC: JCS, 9 September, 1993)(Hereafter referred to as Joint Pub 3-0), I-11.

70 Ibid., 579.

71 FM 100-5, 2-4.

72 Joint Pub 3-0, III-3.

73 General William DePuy, "Concepts of Operation: The Heart of Command, The Tool of Doctrine", Army, (August 1988)(Hereafter referred to as Depuy), 26-32, 35-37.

74 M. Mitchell Waldrop explains emergent behavior and co-evolution as the activities of complex, adaptive systems when faced with external threats. Adaptive systems will re-arrange their basic propeties to overcome these threats. This co-evolution and emergence normally occurs within the along the edge of chaos.

75 Mao Tse-Tung, "Selected Writings of Mao Tse-Tung: On Protracted War, May 1938", Course readings for A-699: The Evolution of Military Thought, United States Army Command and General Staff College, Combat Studies Institute (Fort Leavenworth, KS), 242.

76 Depuy, 28.

77 John F. Antal "Maneuver versus Attrition: A Historical Perspective," Military Review, October 1992, 21.

78 Vertical analysis of purpose determines the relationship between the tactical unit's intended battlefield effects, and the intended effects of his higher headquarters. Horizontal analysis determines the relationship of purpose to that of adjacent units at the same tactical echelon.

79 James Blackwell, Thunder in the Desert: The Strategy and Tactics of the Persian Gulf War, (New York: Bantam, 1991) (Hereafter referred to as Blackwell), 110.

80 FM 100-5, 6-16.

81 Blackwell, 186.

[82] Richard M. Swain, "Lucky War": Third Army in Desert Storm, (Fort Leavenworth, KS: US Army Command and General Staff College Press) (Hereafter referred to as Swain, "Lucky War"), 103.

[83] This Concept of Operations MAP is a reflection of the information found in Mrocskowski; Swain, "Lucky War", 83-290; Blackwell, 183-209; Scales, "Certain Victory", 128-210; and FM 100-5, 6-16 and 6-17.

[84] The formal designation of the "Tiger Brigade" was 1st Brigade, 2nd Armored Division. This US Army unit was under tactical command of the 2d Marine Division for the conduct of Operation Desert Storm.

[85] Mroczkowski, Dennis P. "U.S. Marines in the Persian Gulf: With the 2d Marine Division, 1990-1991", Persian Gulf Conflict Monograph Series, 1992, (Hereafter referred to as Mroczkowski), 24-32.

[86] Clausewitz, 197-197.

[87] Jomini, 461.

[88] SLA Marshall, Men Against Fire, (Gloucester, MA: Peter Smith,1978), 108.

[89] James J. Schneider and Lawrence L. Izzo, "Clausewitz's Elusive Center of Gravity", Parameters (September 1987) 44.

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