Simultaneity:

A Question of Time, Space, Resources and Purpose

A Monograph

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14. ABSTRACT

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Abstract

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This study analyzes the concept of simultaneity developed by Russian military theorists, V.K. Triandafillov and M. Tukhachevskii, for application at the operational level of war with respect to non-linear full-spectrum operations. The study begins by analyzing the theoretical idea of linear simultaneity as proposed by Triandafillov and Tukhachevskii for their "Deep Battle" concept. British military theorist, Richard Simpkin's concept of leverage is also addressed. Through leveraging effects in the physical (attrition), logistical (maneuver) and cybernetic (cybershock) domains, simultaneity allows momentum and tempo to build; thus rapidly transferring the synergistic effects from the domains of action to the moral domain leading to a rapid, decisive loss of cohesion within the enemy force. The monograph groups the ideas within the following four evaluative criteria: unifying aim, correlation of means to actions, strength against vulnerability and momentum. This analysis reveals six planning imperatives for the conduct of simultaneous operations.

A critical analysis of two offensive, conventional operations bridges the gap between theory and reality, and constitutes the second part of the monograph. The case studies include the invasion of Grenada in 1983 (Operation Urgent Fury) and the invasion of Panama in 1989 (Operation Just Cause). The third section describes an operational maneuver concept, Air-Mech-Strike, proposed by David L. Grange and Huba Wass de Czege, et. al., in their book, *Air-Mech-Strike: 3-Dimensional Maneuver*. The Air-Mech-Strike concept examines the capability of airmobile, light armor, to conduct simultaneous, operational maneuver to the depth of the enemy's defenses. The relevance of this concept is examined with respect to non-linear, full-spectrum operations.

Finally, the study concludes that the concept of simultaneity allows the US Army to mass the effects of combat power (maneuver, firepower, sustainment, force protection and leadership) to achieve rapid, decisive victories. It is the author's opinion that in non-linear operations simultaneous operations offer the most efficient use of time, space, and resources while allowing for distributed actions linked in purpose to support the overarching campaign aim.

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I. INTRODUCTION

> *Future warfare between similarly equipped and trained forces will offer fewer instances of positional dislocations such as envelopments and turning movements. Rather, such force symmetrical warfare will be characterized by functional dislocation – the attempt to render the enemy's strength irrelevant through the defeat of some key capability.*[1]

There is a strong theoretical foundation for this assertion. In biology, the more advanced and complex an organism is, the more vulnerable it becomes to an ever-increasing array of threats. The diseases, injuries and other maladies that can kill a single-cell creature are infinitely fewer than the myriad that can harm a human.

The same is true in military theory. There were only a handful of ways to defeat enemy forces in the ancient world. The Macedonian Phalanx offers an analogy to the current US Army legacy heavy division structure. The ancient world regarded the Phalanx as invincible. In a typical Phalanx nearly 10,000 heavily armed soldiers stood in rows sixteen deep. Their tactic was simple and deadly. A perfectly aligned charge at a dead run against the enemy's weak point. However, when the Roman Legions adjusted their tactics and organization the Phalanx was easily defeated at Thessaly.[2] The smaller, more agile Roman Legions, 4000-5000 men, deployed in checkered board formation, could maneuver more easily and were not afraid of gaps in the line. The gaps were built in. A modern division has many more vulnerabilities than a Phalanx. It is a complex organism with physical, logistical and cybernetic weak spots far greater in number and scope than in ancient warfare.[3] For this reason, symmetrical combat in the future will center on each side's attempt to discern the critical vulnerabilities and attack them, shattering and dislocating enemy functions as a prelude to defeating enemy units. Learning adaptive enemies will develop a

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[1] Robert R. Leonhard, "Shedding Light on the Man in the Dark," *Army,* (Washington, DC: Association of the United States Army, February 1997): p. 45.
[2] Douglas A. McGregor, *Breaking the Phalanx,* (Westport, CT: Praeger Publishers, 1997): pp: 1-2.
[3] James J. Schneider, "How War Works: The Origins, Nature, and Purpose of Military Theory," (Ft. Leavenworth, KS: SAMS, US Army Command and General Staff College, 1995): p. 9.

method of war that will attempt to defeat the US Army's preoccupation with technology, precision engagement and information superiority.[4]

Today, planners at the operational level of war are faced with the challenge of building a campaign structure that links several battles into one coherent whole to reach a final decision. In doing so, the operational planner has to find a reasonable sequence of actions to bring about the objective of a campaign. "Successful planning requires an appreciation of the simultaneous nature of operations, an awareness of the total mission, anticipation of future events and application of the battlefield framework."[5] The sequence of operations is closely related to the use of resources. Thus, an inherent tension exists between simultaneous and sequential operations, which requires careful, reasoned consideration in order to balance ends, ways and means. This tension originates from the interaction of resources available (forces, time, space), ends (objectives, effects) and the enemy. An intellectually rigorous process to keep these dynamic, mutually interacting elements in balance, should assist planners in determining the best choice. The crucial choice that represents the "heart of operational art."[6]

This monograph focuses on the operational level of war and seeks to answer the question: Does the concept of simultaneity allow the US Army to mass the effects of combat power (maneuver, firepower, sustainment, force protection and leadership) to achieve rapid, decisive victory? To answer this question, the secondary questions that must be answered are: What are the advantages of simultaneous, rather than sequential engagement, of the enemy's decisive points throughout the area of operations? If there are clear advantages to simultaneity, what are the planning and organizational imperatives to successfully conduct simultaneous operations?

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[4] Robert H. Scales Jr., "Adaptive Enemies: Achieving Victory by Avoiding Defeat," *Joint Forces Quarterly*, (Washington, DC: National Defense University, March 2000): pp. 7-14.
[5] US Department of the Army, *FM 100-5: Operations*, (Washington, DC: HQ, Department of the Army, June 1993): p. 6-3.
[6] James J. Schneider, "The Loose Marble and the Origins of Operational Art," *Parameters*, (Spring 1989): p. 87.

Background

What is simultaneity? Random House's Dictionary defines simultaneity as existing, occurring or operating at the same time; concurrent; synchronous or coincident. General (Retired) Maxwell R. Thurman, describing combat operations in Panama offers perhaps the best military specific definition. Thurman writes:

> Simultaneity is the generation of simultaneous effects that combine to create overwhelming and focused power relative to the enemy center(s) of gravity in a campaign or major operation. Mass implies concentration in space (M_s); whereas, simultaneity implies dispersion in space of actions whose effects are concentrated in time to achieve a specific aim (M_t).[7]

Einstein's theory of relative simultaneity[8] in the military context is that two (or more) events can be seen as simultaneous if they occur within the decision loop of the targeted enemy commander. Three closely related sets of activities – decisive, shaping, and sustaining – characterize operations within an AO. Commanders fight throughout the depth and breadth of their AO using decisive, shaping and sustaining activities simultaneously in a way that will appear to the enemy as one continuous operation. These simultaneous operations seek to attack the enemy concurrently throughout the depth of the battlefield and to mass both effects and forces when and where necessary to accomplish the mission.

To accomplish simultaneity, the operational commander and his planners must effectively apply two interrelated forms of precision. They are physical precision (hitting the targets and maneuvering the right mix of forces in time and space to produce the desired effects) and psychological precision (changing perceptions and intentions among combatants, non-combatants and most importantly, the enemy's leadership).[9] Thus, simultaneity enables the US Army to mass the effects of combat power without having to mass forces. Field Manual (FM) 3-0 states that this

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[7] Maxwell R. Thurman [GEN, US Army (Ret)], "Simultaneity: The Panama Case," *Army*, (Washington, DC: Association of the United States Army, November 1993): p. 16.
[8] Frederick J. Bueche, *Principles of Physics*, (New York, NY: McGraw Hill Book Company, 1988): pp. 585-586.
[9] US Department of the Army, *Capstone Operational Concept (Draft)*, TRADOC Pamphlet 525-5, (Ft. Monroe, VA: HQ, TRADOC, 2000): p. IV-3.

will require information superiority and overwhelming combat power.[10] However, overwhelming combat power is relative to the local conditions at the multiple points of contact – not the global correlation of forces.

The concept of simultaneity is borrowed from Soviet military theory and doctrine. The Soviet principle of simultaneity took shape in the 1920s and 1930s through the works of Tukhachevskii and Triandifillov. Simultaneity was aimed directly at the enemy's command, control, and (C^3) systems. The idea was to attack as much of the enemy as possible, as opposed to confining operations against only those intended routes of advance. By attaining "maximum contact area," the friendly force would overtax and distract the enemy C^3 systems from the main effort.[11] From this thought, simultaneity eventually evolved into an attempt by the holding force to neutralize the entire tactical depth of the enemy in order to facilitate the breakthrough and exploitation by the mobile force. Thus, simultaneity had in view the goal of successfully passing the exploitation force into the breach toward operational and strategic depth.

Simultaneity first appeared in US Army doctrine with the 1993 edition of FM 100-5, *Operations*, which emphasized the important concepts of depth and simultaneous attacks setting the conditions for rapid, decisive victory.[12] British military theorist, Richard E. Simpkin, argues that at the operational level, the concept of simultaneity sets the commander the aim of applying pressure at the same time over the full depth with which he is concerned. This serves as a forcing function to make him think inwards (from actions on the objective(s) back to the line of departure) from the extremities and thus on a time scale of the operation as a whole.[13] The common factor here is not chronometrical time, but the time needed to complete a change and

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[10] US Department of the Army, *Operations (Student Text Edition)*, Field Manual 3-0, (Washington, DC: US Government Printing Office, October 2000): p. 5-11.
[11] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare*, (London, Brassey's Defence Publishers, 1988): pp. 37-39.
[12] US Department of the Army, *FM 100-5: Operations*, (Washington, DC: HQ, Department of the Army, June 1993): p. 6-3.
[13] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare*, (London, Brassey's Defence Publishers, 1988): p. 145.

response cycle commonly referred to as the "decision loop."[14] Simultaneity allows the US Army to collapse an enemy's decision-making process to the point of uselessness. This Soviet view of operational campaigns is vastly different from that of most western armies, who tend to view campaigns not as a whole, but in sequential stages.

US Army doctrine should provide the operational planner a structure for how to think about the simultaneity problem. This structure should assist planners in developing a "careful understanding of the relationship of means to ends."[15] Therefore, it is significant when FM 3-0 states:

> When possible, Army forces conduct simultaneous operations throughout the area of operations (AO). They seek to employ combat power against the entire enemy system. Army forces concurrently engage as many decisive points as possible. Simultaneity exploits depth and agility to overwhelm enemy forces. It threatens opponents with immediate consequences throughout the AO. The presence of multiple threats overloads enemy C^2 systems. Enemy commanders confront many decisions within a very short period of time. The chance of a serious mistake is high, and each mistake creates opportunities for friendly forces.[16]

The non-linear operational framework (area of operations, battlespace, and battlefield organization) detailed in FM 3-0 significantly contributes to achieving the simultaneity necessary for winning rapid, decisive victories. Decisive operations will require the precise integration and application of combat power and combat multipliers throughout the enemy formation in depth and in all dimensions to quickly defeat him. This concept implies striking the enemy at multiple decisive points in a specific sequence to appear as simultaneous action to the enemy. The capability to apply force simultaneously against multiple decisive points, or the center of gravity, concentrates effect over the extended battlespace in a short time span relative to the enemy's "decision loop" and allows the friendly force to gain and maintain the initiative.

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[14] William S. Lind, *The Theory and Practice of Maneuver Warfare*, (Boulder, CO: Westview Press Inc., 1985): p. 5.
[15] US Department of the Army, *FM 100-5: Operations*, (Washington, DC: HQ, Department of the Army, June 1993): p. 6-2.
[16] US Department of the Army, *Operations (Student Text Edition)*, Field Manual 3-0, (Washington, DC: US Government Printing Office, October 2000): p. 5-11.

Methodology

To determine if the doctrine contained within FM 3-0 adequately describes the considerations involved in deciding how to plan simultaneous operations, this study is structured into three main sections and a conclusion. The main sections include: a theoretical examination of simultaneity, a critical analysis of simultaneity issues using two case studies (Operation Urgent Fury and Operation Just Cause), and an assessment of Simpkin's Air-Mech-Strike concept for relevance to full spectrum, non-linear operations.[17]

The first section examines theoretical ideas related to operational simultaneity. This monograph uses four criteria in weighing the merits of the arguments presented and operations studied: unifying aim, the correlation of means to actions, momentum and strength versus vulnerability. These criteria were selected to answer the four main criticisms of simultaneity that are: (1.) lack of combined arms; (2.) piecemeal commitment of resources; (3.) immense difficulty of execution; and (4.) attacking the enemy's strength (center of gravity and decisive points) instead of his weakness or vulnerabilities.[18]

The first criteria, unifying aim, was selected to examine the **suitability** between the ways, concept of operations, and the ends, objective and purpose of an operation. Planners can consider a way suitable if the effect of simultaneous operations accomplishes the objective. Throughout the planning and execution of a campaign, planners must stay focused on the objective. A proper aim should help planners keep the objective in sight.

The second criteria, correlation of means to actions, assess the resource requirements necessary to conduct an action. If the means available are sufficient for the required action, then the action is **feasible** .

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[17] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare,* (London, Brassey's Defence Publishers, 1988): pp. 117-132.
[18] Robert R. Leonhard, *The Art of Maneuver: Maneuver Warfare Theory and Airland Battle,* (Novato, CA: Presidio Press, 1991): pp. 174-176.

The remaining two criteria, strength against vulnerability and momentum, assess whether the actions obtained, or will obtain, the objective at an **acceptable** cost. Planners should strive to accomplish the most favorable result at the least expense in limited resources. Competition for strategic lift assets will require hard decisions and careful prioritization of requirements. Future operations will require a vision of the integrated employment and support from many organizations, such as national, joint, multinational (particularly host nation) and interagency. Ultimately, planners must determine whether the cost of actions is in proportion to the desired objective and purpose.[19]

A critical analysis of two offensive, conventional operations, will bridge the gap between theory and reality, and constitutes the second section. The case studies included are: Operation Urgent Fury (the invasion of Grenada in 1983) and Operation Just Cause (the invasion of Panama in 1989). This section does not provide a detailed description of each case study. Instead, this study applies the evaluative criteria previously developed in the theoretical section to events in the case studies to illustrate the basis for either supporting or refuting theory.

The third section applies theory, doctrine and lessons learned from the previous sections to assess Simpkin's concept of Air-Mech-Strike for use in full-spectrum, non-linear, simultaneous operations. This concept recommends the US Army adopt ground forces with terrain-agile, armored fighting vehicles, sized to rapidly deploy by fixed and rotary wing aircraft. The capability to conduct three-dimensional maneuver in depth would allow the US Army to conduct simultaneous operations to achieve rapid, decisive victory.

This monograph will conclude with an analysis of simultaneity with respect to theory, lessons learned from combat operations, and doctrine.

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[19] Robert R. Leonhard, "Dialectic Strategy," (Ft. Leavenworth, KS: School of Advanced Military Studies Monograph, 1993): pp. 1-15.

II. THEORY OF SIMULTANEITY

Ordinarily we expect that two observers will agree as to whether two events occur at the same time or not. Renowned physicist, Albert Einstein, showed, however, that under certain circumstances the expected result does not correspond to reality. In physics, this theory is referred to as relative simultaneity. The basic postulates of relativity force us to conclude that events that are simultaneous in one inertial reference frame may not be simultaneous in another (Appendix 1).[20]

As an example, suppose that a man is moving past a woman at a speed, v, of .75c, where c is the speed of light. Then the square root of $1-(v/c)^2$ has a value of 0.66. This is called the relativistic factor. The inverse of the relativistic factor equals the time interval on the stationary clock; hence 1/0.66 = 1.51. Under these conditions, the women's clock will tick out 1.51 clicks during the time she knows the man's clock takes to tick out one click. Thus, the moving clock appears to tick out time more slowly than the stationary clock. A clock moving with a speed v ticks out a time of the square root of $1-(v/c)^2$ during one second on a stationary clock. This example demonstrates that any clock that is moving relative to an observer will appear to tick out time more slowly than a clock that is stationary with respect to the observer. This effect is termed **time dilation**, since time is stretched out, so to speak, for moving clocks.

Therefore we can conclude that time is not a simple quantity. Further considerations show that this situation exists only if the two (or more) events occur at different locations. FM 3-0 states that, "Massing in time applies the elements of combat power against multiple targets simultaneously."[21]

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[20] Frederick J. Bueche, *Principles of Physics*, (New York, NY: McGraw Hill Book Company, 1988): pp. 583-584. An inertial reference frame is a coordinate system in which the law of inertia applies: a body at rest remains at rest unless an unbalanced force on it causes to be accelerated.

[21] US Department of the Army, *Operations (Student Text Edition)*, Field Manual 3-0, (Washington, DC: US Government Printing Office, October 2000): p. 4-13.

The US Army can mass effects without concentrating its forces to a far greater extent than at any time in its history. For the purpose of this study, effects are defined as the ability to translate destruction in the physical, logistical and cybernetic domains into a loss of cohesion which eventually causes the collapse of will in the moral domain. The effects of rapid, decisive maneuver, supported by situational understanding, both complement the effects of firepower.[22] Commanders mass the effects of combat power against a combination of elements critical to the enemy force to shatter its coherence.

When these elements are spread throughout an AO, they are often vulnerable only to simultaneous, non-linear operations that mass in time only. However, the means must be available for simultaneous operations to be feasible. When they are not, commanders plan a combination of simultaneous and sequential operations or sequential operations alone in order to accomplish the mission.

In the military context, the theory of relative simultaneity applies to the time required for two opposing commanders to execute a complete change-and-response cycle or "decision loop." The common factor between action and the "decision loop" of the opposing commanders is the relative time required for each to complete one cycle. The Russians regard two actions as "exerting simultaneous pressure" if one follows the other within the enemy's response time at the level affected.[23] Consequently, simultaneous operations do not have to occur at the same chronometric time. They must only appear to occur simultaneously to the enemy commander (i.e. relative simultaneity). The best method to achieve this effect is to aim directly at the enemy's command, control, communications, computers, and information (C^4I) structure and capability.

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[22] US Department of the Army, *Operations (Student Text Edition),* Field Manual 3-0, (Washington, DC: US Government Printing Office, October 2000): p. 11-14. Situational understanding is the product of applying analysis and judgment to the common operational picture to determine the relationships among the factors of METT-TC.

[23] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare,* (London, Brassey's Defence Publishers, 1988): p. 148.

This not only "blinds" the enemy commander, but will also disrupt reports from subordinate echelons. This creates the "appearance" of relative simultaneity when the enemy commander attempts to discern the effects of multiple actions within the AO. His "decision loop" will lengthen due to **time dilation** and US Army forces will have gained the initiative.

Soviet Origins – Linear Simultaneity

In Soviet eyes, simultaneity is something between a practical aim and an ideal. Soviet military theorists, Marshall M.N. Tukhachevskii and V.K. Triandafillov, writing in the 1920s and early 1930s, were the first to recognize the Soviet principle of simultaneity.[24] They developed what became know as Deep Operation Theory in response to the conditions found on the western front throughout most of World War I. Tukachevskii's writings reflected the requirement to consider effects through his concept of "operational containment." Operational containment answered the dilemma engendered by the onset of broad fronts composed of resilient formations, supported by communications networks. This broad front structure enabled the enemy force to either move reserves or reinforcements to a threatened area, or withdraw forces prior to a defeat. As the results of WWI suggest, this capability to restore the continuity of the defense faster than the attack could reach operational depth led to theater-wide stalemate, attrition warfare and indecisive operations.[25]

Tukachevskii interpreted simultaneity as bringing the largest possible number of troops into contact at the same time, and thus developed the term "maximum contact area."[26] Such actions, he argued, would produce multiple effects and lead eventually to penetration by the main attack. The first effect, initiated by attacks all along the front, occurred within the physical domain

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[24] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare*, (London, Brassey's Defence Publishers, 1988): p. 37.
[25] M.N. Tukhachevskii, *New Problems in Warfare*, (Moscow, 1931, School of Advanced Military Studies reprint, Command and General Staff College, Ft. Leavenworth, KS: 1990) pp.1-5, 42-43, 111.
[26] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare*, (London, Brassey's Defence Publishers, 1988): p. 37.

through destruction of enemy forces. The second order effect was the imposition of a "block", what American military theorist, James J. Schneider terms a paralysis, in the opposing commander's cybernetic domain.[27] With multiple attacks occurring along the entire front, the decision of where or when to commit reserve forces became extremely uncertain and often impossible.[28]

Because the line of contact was linear and frontal, one had to have a sufficient density of troops over the whole front, not only to pin the enemy down, but also to achieve a favorable ratio of attrition rates, plus enough reserves to achieve decisive superiority at the critical time and place to cause a breakthrough. Then with the enemy pinned down everywhere and broken at the chosen point, you could launch your cavalry, with air and mechanized support, through the gap. Although this concept allowed for operational maneuver to achieve a decision, it owed a great deal to attrition theory.

Tiandafillov's, *The Nature of Operations of Modern Armies,* expanded upon Tukachevskii's initial work, and reflected a systematic analysis of Soviet military experience in WWI and the Russian Civil War. Triandafillov focused on the importance of the "shock army", a powerful, versatile force composed of all arms including aviation. He envisioned the development of modern armies in two stages. The first stage is still infantry centered and corresponds roughly with Tukachevskii's "broad front" concept.

In the second stage, the "shock army" remains responsible for the break-in, but is completely reshaped to contain what is now referred to as a mobile force. These maneuver tanks, in conjunction with mechanized cavalry, would operate in depth once a breakthrough is accomplished. These tank and mechanized forces became organic to Soviet corps, armies, and even divisions.

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[27] James J. Schneider, "How War Works: The Origins, Nature, and Purpose of Military Theory," (Ft. Leavenworth, KS: SAMS, US Army Command and General Staff College, 1995): pp. 8-9.
[28] M.N. Tukhachevskii, *New Problems in Warfare,* (Moscow, 1931, School of Advanced Military Studies reprint, Command and General Staff College, Ft. Leavenworth, KS: 1990) p. 7.

Trinadafillov also introduced another key concept unique to Soviet theory, the interchangeability of troops and fires. Interchangeability allowed him to turn his thoughts from the "broad front" to the "deep battle."[29]

Trinadafillov further states that a breakthrough can count on success only when a significant portion of the defense is engaged, the direction selected for breakthrough achieves an advantageous operational position, and the attacking forces branch out on routes to develop blows against both the flanks and rear of enemy forces not directly in the path of the offensive.[30]

Furthermore, a series of successive operations are necessary to inflict enough damage and achieve enough depth to allow the attacker freedom of action. This requires the attacker to use a combination of blows directed from the sides, on intersecting axes. This gives the attacker the necessary leverage to dislocate the defense so the front is destroyed versus merely bent. [31]

Throughout these pages the reader gains the impression that the physical actions themselves inflict heavy destruction, followed by a cybernetic effect, in which so many attacks and penetrations take place that the defender cannot anticipate the main attack's location until it is too late. Thus, the action in the physical domain creates a cybernetic effect, paralyzing force movement, which facilitates the main attacks to the rear and flank. A moral effect results with the enemy losing the will and cohesiveness to resist further. As this effect spreads throughout the enemy's forces, the front collapses and the attackers begin the pursuit phase of the operation.

Simpkin also describes similar requirements under the guise of a holding force and a mobile force with their actions being complementary in the overall development of leverage. The holding force acts as the containment element enabling the mobile force, or lever, to achieve a relatively higher velocity than the enemy can either in a withdrawal or reinforcement. To achieve the

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[29] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare*, (London, Brassey's Defence Publishers, 1988): p. 39.
[30] V.K. Triandafillov, *The Nature of the Operations of Modern Armies*, (Essex: Frank Cass & Co. LTD, 1994): p. 152.
[31] V.K. Triandafillov, *The Nature of the Operations of Modern Armies*, (Essex: Frank Cass & Co. LTD, 1994): pp. 153-154.

necessary effect, the mobile force must reach a depth that exerts the proper amount of pressure to collapse the stability and cohesion of the defense. The effect of this building pressure results in dislocation. Dislocation is the term Simpkin uses to describe how to achieve victory once hostilities begin.[32] There are three requirements for dislocation: (1.) the attritional action of the holding force which opens the way for the mobile force; (2.) mobile force engagements to gain freedom of action; and (3.) special force operations to cause confusion and disruption of the enemy's cybernetic system. The dislocation itself; however, results from the collapse of the defender's will, thus being an effect in the moral domain.[33]

All three theorists have clearly borrowed from the writings of Sun Tzu, who stated, "In general, in battle one engages with the orthodox and gains victory through the unorthodox."[34] Simpkin proposes an extraordinary force based on the model of the Soviet airborne/air-assault mechanized forces. Simpkin terms this force, Air-Mech- Strike, which can maneuver both on the ground and in the air, to gain a positional advantage relative to the enemy's center of gravity and still retain freedom of action. This force, with its supporting arms, would be both "heavy" enough to protect itself against an armor threat and "light" enough to allow it to conduct operational maneuver. Although this reflects out-of-the-box thinking by Simpkin, it is clearly what Triandafillov had in mind when he wrote:

> That is why modern operational art cannot abandon deep crushing blows. A correct and wise policy toward organizational development of the armed forces must insure conditions favorable for the conduct of war using this method. The form of the blow is of great significance in the conduct of operations.[35]

The Air-Mech-Strike concept will be discussed in detail in Section IV for application to full-spectrum, non-linear operations.

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[32] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare*, (London, Brassey's Defence Publishers, 1988): p. 140.
[33] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare*, (London, Brassey's Defence Publishers, 1988): pp. 92-114.
[34] Sun-Tzu, *The Art of War*, trans. Ralph D. Sawyer, (Boulder, CO: Westview Press, 1994): p. 187.
[35] V.K. Triandafillov, *The Nature of the Operations of Modern Armies*, (Essex: Frank Cass & Co. LTD, 1994): p. 151.

Theoretical Foundation

The first great exponent of military theory was the Prussian General Carl Von Clausewitz, who defined war as "an act of force to compel the enemy to do our will."[36] The accomplishment of this aim requires the creation and sustainment of a situation that is favorable to the forces under command. For a nation to impose its will on an enemy it must apply force (diplomacy, information, military, and/or economic). This force is dependent upon the available means and the national will to employ those means against an enemy. National will includes not only the desire to use the means, but the ability, purpose and direction to translate desire into action. A generally accepted formula for the ability of a nation to apply force in the pursuit of a national aim is as follows:

FORCE = MEANS x WILL

The above formula implies, that if the United States wishes to compel an enemy to its will, the United States must reduce the enemy's ability to resist (generate combat power), by attacking the enemy's means, will and/or leadership. Common sense dictates that by significantly reducing an enemy's means, or will, the US Army can more easily achieve its aims. An enemy without means must do what we demand or face destruction. An enemy without the will to use the means available must submit. Depending on the political situation, the choice of employing a particular strategy of warfare will be a conscious decision based on the strategic aims of the conflict and means available to achieve them.

Schneider states, "The selection of the aim implies the clear and complete visualization of an end-state toward which all military action is directed."[37] Since strategic goals should guide everything else, planners must ensure the campaign aim remains subordinate and in agreement with that same goal. Clausewitz wrote that the aim "would have always and solely to be to

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[36] Carl Von Clausewitz, *On War*, Edited and Translated by Michael Howard and Peter Paret, (Princeton, NJ: Princeton University Press, 1986): p. 341.
[37] James J. Schneider, "The Theory of Operational Art," Theoretical Paper No. 3, (Ft. Leavenworth, KS: SAMS, US Army Command and General Staff College, 1988): p. 17.

overcome the enemy and disarm him."[38] Throughout a well-conducted campaign, the aim serves to harmonize tactical actions with the strategic goals. In essence, the aim provides the focus for military efforts by identifying the end-state of whatever military actions are conducted – a **unifying aim**.

Clausewitz's concept for "action", which he termed a battle, developed the thought that the initial outcome transpired in the physical domain (destruction of an enemy force). This can be considered a first order effect of action. However, the destruction of an enemy force often led to a second order effect in the moral domain. Clausewitz clearly viewed the two results as inseparable, yet he understood that the physical destruction of the enemy was a precursor for the generation of moral effects. This generation of moral effects directly attacks an enemy's will to resist leading to decisive victories.[39]

The insight, that an action's relevance depends solely on the effect transferred to an enemy force, is crucial. The first order effect, within the physical domain, takes place in order to create the conditions for the second order effect. Consequently, second order effects in the moral domain represent the purpose for any action. As shown earlier in this section, Tukhachevskii, Triandafillov and Simpkin all concur with Clausewitz's assertion that the purpose behind all military actions in a campaign must converge and support the unifying aim. They also recognized that desired effects were the crucial element in determining actions.

The **correlation of means to actions** is as important as the aim for developing a campaign plan for simultaneous, sequential or a combination of actions. Schneider states, "A military end is feasible if the means available can support the attainment of that end."[40] The means, which

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[38] Carl Von Clausewitz, *On War*, Edited and Translated by Michael Howard and Peter Paret, (Princeton, NJ: Princeton University Press, 1986): p. 90.
[39] Carl Von Clausewitz, *On War*, Edited and Translated by Michael Howard and Peter Paret, (Princeton, NJ: Princeton University Press, 1986): p. 231.
[40] James J. Schneider, "The Theory of Operational Art," Theoretical Paper No. 3, (Ft. Leavenworth, KS: SAMS, US Army Command and General Staff College, 1988): p. 17.

include logistic capability, personnel, space, time and the intangible factors such as morale, bound the problem by defining what is possible.

This correlation must weigh friendly means against enemy means, with a reserve to account for friction. Often the means available do not equal the demand, placing the planner in a dilemma. Tukhachevskii described the crux of the problem as the requirement to construct actions that created a favorable correlation at the point of decision. He described two actions to create a favorable correlation. The first describes using forces in sequential manner so first one action took place, then the second, and so forth until an adequate correlation developed through the effects of attrition. The second economized forces in all but the main attack's direction. Only those operations contributing to swift attainment of the object are generally resourced. Secondary efforts receive only a minimum of resources.[41] This is the principle of economy of force.

Once the end-state is determined the operational commander selects the way or method to apply the means at hand. "Operational art is the process by which the methods are selected that determine the application and utilization of combat power (the means) to achieve a desired end."[42]

Unfortunately, as the disparity between means available and actions required increase, so to does risk. Risk includes the potential danger that an enemy will find and exploit a weakness created by the need to mass elsewhere, in space or time, for essential actions. The commander assumes risk by concentrating the available means against the objectives that will most rapidly achieve the campaign aim. Thus, creating a situation favorable to friendly forces at the point(s) of decision.

FM 3-0 states, "Ideally, the attacks are simultaneous. Simultaneity shocks enemy C^2 systems and often induces paralysis. When the means are insufficient for simultaneous action,

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[41] M.N. Tukhachevskii, *New Problems in Warfare,* (Moscow, 1931, School of Advanced Military Studies reprint, Command and General Staff College, Ft. Leavenworth, KS: 1990) pp. 55-56.
[42] James J. Schneider, "The Theory of Operational Art," Theoretical Paper No. 3, (Ft. Leavenworth, KS: SAMS, US Army Command and General Staff College, 1988): p. 18.

commanders plan sequential attacks."[43] Therefore, it is imperative for the operational planner to have a favorable correlation of means to actions prior to planning simultaneous operations.

In order to maximize scarce resources, the operational planner must have a rational method for determining where and when to concentrate effects. This method should seek to preserve limited resources while simultaneously getting the most return from available means. The enemy's center of gravity is the best place to begin. Clausewitz defined center of gravity as the "hub of all power and movement, on which everything depends."[44] The center of gravity must be a vital, tangible component of the enemy's available means. Clausewitz further implied a physical nature to the center of gravity when he stated it was "always found where the mass is concentrated the most densely."[45]

Over time, armies have evolved from a unitary mass that moved and fought as a single block, into formations using distributed maneuver and battle. While the center of gravity was discernible in Napoleonic war, it is far less obvious today. FM 3-0 states that centers of gravity "are those characteristics, capabilities, or localities from which a military force derives its freedom of action, physical strength, or will to fight.[46] Whereas Clausewitz's concept meant the actual massing of men and units, this modern interpretation relates to a potential or actual concentration of combat power not directly dependent upon battlefield concentration. The principle of mass is common to both interpretations; however, the modern idea refers to the importance of massing effects.

Although the center of gravity is likely the "best" target to action against, it is also the source of all strength to an enemy force. Any plan requiring a direct confrontation between strengths is ill advised and may prove unacceptable to the National Command Authority and the American

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[43] US Department of the Army, *Operations (Student Text Edition),* Field Manual 3-0, (Washington, DC: US Government Printing Office, October 2000): p. 5-11.
[44]Carl Von Clausewitz, *On War,* Edited and Translated by Michael Howard and Peter Paret, (Princeton, NJ: Princeton University Press, 1986): pp. 595-596.
[45] Carl Von Clausewitz, *On War,* Edited and Translated by Michael Howard and Peter Paret, (Princeton, NJ: Princeton University Press, 1986): p. 485.
[46] US Department of the Army, *Operations (Student Text Edition),* Field Manual 3-0, (Washington, DC: US Government Printing Office, October 2000): p. 5-7.

people. Although friendly action should affect the center of gravity, the best method of action may be one that avoids the enemy's source of strength. An indirect approach of attacking vulnerabilities that influence the center of gravity may be the more acceptable method. Using this indirect method (**strength against vulnerability)**, friendly forces seek to move through an enemy weakness, and then attempt to fragment or disintegrate the enemy concentration of force by attacking selected vulnerabilities.[47] Indirect or not, if the attacks do not affect the enemy's center of gravity, then the action wastes combat power for no purpose with respect to the aim.

Swiss military theorist, Baron Antoine Henri Jomini, referred to vulnerabilities as "decisive points." Decisive points are usually geographical locations, that, when retained, provide a commander with a marked advantage over his enemy. Jomini described decisive points as "…capable of exercising a marked influence either upon the result of the campaign or upon a single enterprise."[48] Seizure or control of these points would decide the outcome of actions and impose a decision upon the contending sides. He linked decisive points to the concentration of mass against selected enemy elements or locations, thus achieving relative, local force superiority over the enemy.[49]

The usefulness of this concept with respect to simultaneous operations lies in its association to the center of gravity. Decisive points are not centers of gravity; but they are keys to getting at centers of gravity. In essence, a decisive point is the shortest and most effective way to destroy or unbalance a center of gravity. The significance of decisive points becomes most pronounced when the center of gravity cannot be directly attacked. This usually occurs due to the high degree of protection afforded centers of gravity. When this happens, planners focus on seizing or

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[47] Robert R. Leonhard, *The Art of Maneuver: Maneuver Warfare Theory and Airland Battle,* (Novato, CA: Presidio Press, 1991): pp. 19-24.
[48] Antoine Henri Jomini, *Summary of the Art of War,* edited by J.D. Hittle, *Roots of Strategy, Book 2,* (Harrisburg, PA: Stackpole Books, 1987): p. 467.
[49] Antoine Henri Jomini, *Summary of the Art of War,* edited by J.D. Hittle, *Roots of Strategy, Book 2,* (Harrisburg, PA: Stackpole Books, 1987): p. 461.

destroying those objectives, referred to as decisive points, that when taken or neutralized give access to the center of gravity.[50]

As actions orient at an enemy center of gravity through the attack or seizure of decisive points, the cadence of actions must be such that the effect translates rapidly through the physical domain to the moral domain. This is the fundamental purpose of **momentum** in military operations. In physics the equation for momentum is:

Momentum = Mass x Velocity

A higher velocity (vectored speed of an object over distance traveled) allows a smaller force (less mass or combat power) to generate greater momentum (greater effects) in a shorter timeframe, comparable to a larger force (more mass or combat power) moving with less velocity. Momentum enhances the acceptability of actions since the effects are generated at reduced cost in resources. This enables a planner to stretch and conserve limited means.

Other than simply being the second component of momentum, just what is velocity? In military terms, "tempo" most nearly encompasses the meaning of velocity. Tempo describes the physical speed of a unit and its rate of actions or combinations of actions focused on achieving the aim. However, this is only a partial understanding of tempo. Tempo strikes at the heart of the time competitive change and response cycles.

The organization that has the ability to move through decision cycles more rapidly and with a qualitative edge over an opponent gains an immense edge. This advantage increases over time since an opponent's actions and reactions continually address a situation that is no longer valid. The opponent's situation progressively deteriorates to the point that they simply cannot react, or their reactions are irrelevant.[51] With this deterioration, the potential for finding the opposing side unprepared increases. Simpkin described surprise as a significant payoff from increased

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[50] Michael D. Heredia, *Building A Campaign: The Essential Elements of Operational Design*, (Ft. Leavenworth, KS: School of Advanced Military Studies Monograph, 1995): p. 7.
[51] William S. Lind, *The Theory and Practice of Maneuver Warfare*, (Boulder, CO: Westview Press Inc., 1985): p. 5.

momentum.[52] Surprise dramatically increases the acceptability of actions as resistance and cost in resources declines.

As du Picq put it, "With equal or even inferior power of destruction he will win who has the resolution to advance..."[53] This does not mean that any wandering about on the battlefield will somehow disarm the enemy. Rather the movement of mass with velocity toward the enemy's center of gravity has a psychological impact upon the opposing commander and his troops often disproportionate to the mass of the moving unit.[54]

According to Simpkin, the purpose of momentum is to generate "leverage" against the enemy.[55] Leverage acts as a pressure that disrupts enemy forces and rapidly conveys the effect of actions from the physical to the moral domain. In contemporary terms, mass consists of the combat power or useable fighting power a force possesses at a particular time. Simpkin described useable fighting power as the difference between the masses of a unit deployed for action versus that of a unit in the process of deploying. Although both units have identical composition, the disparity in effects immediately generated by the prepared unit versus the moving unit differs enormously. Considering the temporal and spatial context of deliverable effects serves to define mass in contemporary times.[56]

Regarding momentum, planners must recognize two things. First, the planner has limited influence on the actual forces allocated. The higher headquarters allocates the forces, thus establishing the available mass. Planners must work with the available forces when building momentum. By adjusting velocity the potential exists to avoid the costly head to head

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[52] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare,* (London, Brassey's Defence Publishers, 1988): pp. 111-114.
[53] Ardant du Picq, *Battle Studies: Ancient and Modern Battle,* edited by J.D. Hittle, *Roots of Strategy, Book 2,* (Harrisburg, PA: Stackpole Books, 1987): p. 150.
[54] Robert R. Leonhard, *The Art of Maneuver: Maneuver Warfare Theory and Airland Battle,* (Novato, CA: Presidio Press, 1991): pp. 19-24.
[55] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare,* (London, Brassey's Defence Publishers, 1988): p. 22.
[56] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare,* (London, Brassey's Defence Publishers, 1988): pp. 79-92.

confrontations by going through areas before resistance develops. Once through the weakness, the available forces can attack a decisive point while it remains vulnerable. Thus, manipulation of velocity provides planners a sound method of increasing momentum.[57]

In addition to the elements of operational design (Appendix 2), the operational planner is presented with six critical planning imperatives that must guide simultaneous operations: (1.) selecting the physical, cybernetic or moral vulnerabilities against which to concentrate combat power; (2.) avoiding a head to head clash with the enemy's strength; (3.) achieving the desired effects with a proportional expenditure of means; (4.) generating and maintaining momentum which allows a force to do more with less; (5.) balancing the scale of actions with available resources to minimize risk; and most importantly, (6.) conducting only those actions which advance the campaign aim linked in purpose to the strategic goal.

[57] Robert R. Leonhard, *The Art of Maneuver: Maneuver Warfare Theory and Airland Battle,* (Novato, CA: Presidio Press, 1991): pp. 57-58.

III. CASE STUDY ANALYSIS

The 1983 invasion of Grenada, Operation Urgent Fury, and the 1989 invasion of Panama, Operation Just Cause, are examined to determine applicable lessons-learned with respect to simultaneity. Each operation is discussed in two sub-sections. The first sub-section provides a brief overview of the specified operation. The second sub-section contains a critical analysis of the operation using the theoretically based criteria developed in Section II. The analysis of these two operations serves as the basis for determining each evaluative criterion's relevance to simultaneous actions. The ideas discussed for each of the criteria should provide planners a sufficient description of simultaneous operations. If they are relevant, then they should be addressed in US Army doctrine.

Operation Urgent Fury

Overview

Early in the morning of 25 October 1983, Operation Urgent Fury began with assaults on the airstrips at Point Salines and Pearls on the tiny island nation of Grenada. Over the next nine days, US forces would rescue American citizens, restore a popular native government, and eliminate a perceived threat to the stability of the Caribbean and American strategic interests there.[58]

The seeds for the eventual US invasion of Grenada were planted long before 25 October 1983. The tiny Caribbean island of Grenada experienced a peaceful socialist revolution in March 1979 whereby Maurice Bishop was installed as Prime Minister. After the revolution, the US became increasingly concerned with Grenada's close ties with both the Soviets and the Cubans. Seven months before the invasion the US State Department had warned that "the steady evolution

[58] Ronald H. Cole, *Operation Urgent Fury: Grenada,* (Washington, DC: Joint History Office, Office of the Chairman of the Joint Chiefs of Staff, 1997): p. 1.

of the (Soviet) front affiliations since 1979 suggests that Moscow hopes to use its Grenada foothold for future activities in the Caribbean."[59]

In late 1983, events in Grenada led to President Reagan's decision to conduct a military operation there. Cuba had built a runway on Grenada suitable for aircraft capable of interdicting US air and sea routes to Europe and the Middle East. Bishop's overthrow in October by militantly anti-US Marxists appeared to pose an immediate threat to the nearly 600 American medical students and 400 other foreigners living in Grenada.[60]

US State Department evacuation planning rapidly shifted to US Department of Defense planning for a much larger military operation. On 24 October, the US was formally invited by the Organization of Eastern Caribbean States (OECS) to participate in an invasion Grenada. President Reagan approved the US plan on that same day, with 25 October designated as D-Day.

Under the overall command of Vice Admiral Joseph Metcalf, Joint Task Force (JTF) 120 was established as the operational headquarters responsible for execution.[61] Preceded by special operations forces, US Army Rangers parachuted on Point Salines' airfield at approximately 0530 hours on 25 October.[62] The 82nd Airborne Division and a Marine Amphibious Unit followed the Rangers. Despite a multitude of deviations from the basic plan and several "minor" setbacks, all of the major JTF objectives were secured by 28 October. Consolidation and mopping up operations were conducted through 2 November. The redeployment and peacekeeping phase

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[59] G.F. Illingworth, "Grenada in Retrospect," *American Intervention in Grenada: The Implications of Operation Urgent Fury*, edited by Peter M. Dunn and Bruce W. Watson, (Boulder, CO: Westview Press Inc., 1985): p. 133.
[60] Ronald H. Cole, *Operation Urgent Fury: Grenada*, (Washington, DC: Joint History Office, Office of the Chairman of the Joint Chiefs of Staff, 1997): p. 1.
[61] J. Mike Simmons, *Operation Urgent Fury: Operational Art or a Strategy of Overwhelming Combat Power*, (Ft. Leavenworth, KS: School of Advanced Military Studies Monograph, 1994): p. 27.
[62] Dorothea Cypher, "Urgent Fury: The US Army in Grenada," *American Intervention in Grenada: The Implications of Operation Urgent Fury*, edited by Peter M. Dunn and Bruce W. Watson, (Boulder, CO: Westview Press Inc., 1985): p. 100.

began on 3 November. By 15 December, Operation Urgent Fury was over as the last US forces redeployed to the United States.[63]

Unifying Aim

The strategic goals for Operation Urgent Fury were made clear by President Reagan when he announced the invasion to the American people, "The United States objectives are clear – to protect our own citizens, to facilitate the evacuation of those who want to leave, and to help in the restoration of democratic institutions in Grenada."[64] Although worded for public consumption, this statement contains the primary grounds for the operation: humanitarian and strategic-political considerations. To these should be added the intense desire of the President to improve US prestige. The United States needed a military success, something to be proud of.[65] Operation Urgent Fury was conceived, planned and launched in just four days.

Initial military planning for the operation began the evening of 19 October at the US Atlantic Command (USACOM) under the leadership of Admiral Wesley McDonald. Early planning efforts focused on the evacuation of US citizens and foreign nationals from the island. By the morning of 20 October, six courses of action for an evacuation type operation had been developed (two permissive, three non-permissive, and one a show of force). McDonald's planners made three key assumptions in their planning: (1.) sufficient forces would be made available, (2.) no other hostile country (Cuba) would intervene, and (3.) that most of the evacuees were located in the vicinity of Point Salines airport.[66]

Late on 20 October, the Special Situation Group, chaired by Vice-President George Bush, recommended expanding the mission to include neutralization of the Grenadian Armed Forces

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[63] Dorothea Cypher, "Urgent Fury: The US Army in Grenada," *American Intervention in Grenada: The Implications of Operation Urgent Fury*, edited by Peter M. Dunn and Bruce W. Watson, (Boulder, CO: Westview Press Inc., 1985): pp. 106-107.
[64] Mark Adkin, *Urgent Fury: The Battle for Grenada*, (Lexington, MA: Lexington Books, 1989): p. 108.
[65] Mark Adkin, *Urgent Fury: The Battle for Grenada*, (Lexington, MA: Lexington Books, 1989): p. 108.
[66] Mark Adkin, *Urgent Fury: The Battle for Grenada*, (Lexington, MA: Lexington Books, 1989): p. 117.

and armed Cuban construction workers, and reconstruction of the Grenadian government. This expansion of the mission came largely at the urging of the Chairman, Joint Chiefs of Staff, General John Vessey.[67]

Following Presidential approval of the expanded mission, General Vessey made two far-reaching decisions. To ensure maximum operational security, he imposed special category restrictions on all planning message traffic; this limited planning information to selected members of the J2 (Intelligence) and J3 (Operations) Directorates. Despite limited intelligence and compartmentalized information, the planners at USACOM developed a concept of the operation that divided Grenada into two areas of operation. The Marines would have responsibility for objectives in the north and the US Army for those objectives in the south.[68]

Vessey then approved the course of action that specified a coup de main in which US Army Rangers, Marines and airborne troops would conduct multiple simultaneous rescue and combat operations. The plan was complicated by the requirement to include small units from Caribbean countries in a peacekeeping role. Additionally, the final plan had to incorporate the involvement of both the US State Department and the CIA.[69]

USACOM had to revise the plan to include over 20,000 soldiers, sailors, Marines and airmen together with special operations personnel. For subordinate commands, compartmentalized planning resulted in the Rangers, the 82nd Airborne and the MAU all planning to secure the same objectives: the airfields at Salines (Rangers) and Pearls (MAU). This was not sorted out until late on October 23. For planners at USACOM, the keys to operational success were surprise, simultaneous landings of the Rangers and MAU, and light resistance.[70] Objectives were terrain

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[67] Ronald H. Cole, *Operation Urgent Fury: Grenada,* (Washington, DC: Joint History Office, Office of the Chairman of the Joint Chiefs of Staff, 1997): p. 2.
[68] Ronald H. Cole, *Operation Urgent Fury: Grenada,* (Washington, DC: Joint History Office, Office of the Chairman of the Joint Chiefs of Staff, 1997): p. 3.
[69] Mark Adkin, *Urgent Fury: The Battle for Grenada,* (Lexington, MA: Lexington Books, 1989): p. 127.
[70] Mark Adkin, *Urgent Fury: The Battle for Grenada,* (Lexington, MA: Lexington Books, 1989): p. 144.

oriented to expedite the evacuation mission; unfortunately intelligence estimates failed to estimate accurately the level of resistance US forces would encounter once ashore.[71]

Correlation of Means to Actions

JTF-120 did not have a feasibility problem, given the means available for planned actions. General Vessey resourced USACOM and JTF-120 with overwhelming combat power to accomplish a successful evacuation and subdue hostile forces on the island. General Vessey had full authority from the Secretary of Defense to summon backup forces, as necessary.[72] The only restraint placed on Admiral Metcalf was the restrictive use of tactical aircraft, naval gunfire and helicopter gunships to minimize civilian casualties and property damage.

US intelligence sources estimated Cuban strength on the island at approximately 700 personnel. Grenadian forces included approximately 1,500 members of the Peoples Revolutionary Army (PRA) and 2,000 – 5,000 members of the territorial militia. US forces available totaled over 20,000 at the peak of the operation. They included two battalions of US Army Rangers, one battalion of Marines from the MAU, the 82nd Airborne Division, and various special operations units, that included Delta Force and US Navy SEALs.[73] These forces were considered the best the US military had to offer at the time of the invasion.

The primary concern of USACOM planners prior to the invasion was that US citizens or foreign nationals would be taken hostage by the PRA in the early hours of the invasion. This "worse case" scenario would be considered mission failure in the wake of the Iran Hostage Crises of few years earlier. H-Hour objectives were selected to secure US citizens and foreign nationals, and seize airfields critical to transporting them off the island. The Rangers and Marines had

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[71] Mark Adkin, *Urgent Fury: The Battle for Grenada,* (Lexington, MA: Lexington Books, 1989): pp. 129-131.
[72] Ronald H. Cole, *Operation Urgent Fury: Grenada,* (Washington, DC: Joint History Office, Office of the Chairman of the Joint Chiefs of Staff, 1997): p. 3.
[73] Dorothea Cypher, "Urgent Fury: The US Army in Grenada," *American Intervention in Grenada: The Implications of Operation Urgent Fury,* edited by Peter M. Dunn and Bruce W. Watson, (Boulder, CO: Westview Press Inc., 1985): pp. 101-102.

responsibility for these missions. The 82nd Airborne Division would then follow, expanding out across the island to subdue remaining resistance and conduct stability and support operations until the Caribbean Peacekeeping Force (CPF) was deployed.[74] The CPF would take custody of key Grenadian facilities after their capture by US forces.

Operation Urgent Fury troop selection became an object of controversy in the months after the invasion. The contention was that effective troop to task analysis had not been conducted. A critic, William Lind, and members of Congress, believed the decision to include so many different units was driven by the military's desire "to get a piece of the action."[75] General Vessey responded by stating:

> Forces used in URGENT FURY were chosen based on their capability to fulfill the mission. …The MAU was used because of its proximity to the island. …The Rangers and other Special Forces were chosen because of their unique capability to secure airfields, rescue hostages, and attack selected point targets. Based on the enemy situation…the 82nd Airborne was included to ensure an adequate combat power ratio and permit early redeployment of the Special Forces and the MAU to fulfill pending commitments.[76]

Strength Against Vulnerability

Although the missions given to the various military forces in Operation Urgent Fury changed between planning and execution, the mission statements issued nevertheless included "specific and clearly identified, achievable military objectives."[77] These objectives clearly evolved from the strategic objectives set forth by President Reagan. Since the term center of gravity was not found in US military doctrine in 1983, the USACOM planners did not specifically address them

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[74] Mark Adkin, *Urgent Fury: The Battle for Grenada,* (Lexington, MA: Lexington Books, 1989): pp. 141-145.
[75] Dorothea Cypher, "Urgent Fury: The US Army in Grenada," *American Intervention in Grenada: The Implications of Operation Urgent Fury,* edited by Peter M. Dunn and Bruce W. Watson, (Boulder, CO: Westview Press Inc., 1985): pp. 101-102.
[76] Benjamin F. Schemmer, "JCS Reply to Congressional Reform Caucus' Critique of the Grenada Rescue Operation," *Armed Forces Journal International,* (July 1984): p. 13.
[77] Clayton R. Newell, *The Framework of Operational Warfare,* (London, Routledge, 1991): p. 153.

in their plan.[78] However, they were aware of the importance of designating and sustaining a main effort, as well as, attacking enemy weaknesses to avoid the enemy's strength (indirect approach).

In hindsight, since the recently installed Marxist government derived its power from the armed forces on the island, PRA and Cuban, it is fair to assess those forces as the operational center of gravity. Logically, if these forces were defeated, then all other strategic objectives could be attained. The decisive points, or objectives, were designated and the forces resourced to allow for their seizure or destruction. Special Forces, to include the US Army Rangers, were to secure the island's major airfield (Salines), capture the lone radio station, and rescue numerous Grenadian political prisoners around the capital of St. George. The follow-on forces from the MAU and the 82nd Airborne would then rescue the US citizens and foreign nationals, defeat the PRA and Cuban forces, and establish stability on the island.[79]

Poor intelligence plagued the initial execution of Operation Urgent Fury. With the exception of the MAU at Pearls, US forces failed to seize their initial objectives before encountering the bulk of the enemy forces. For example, the 1st Ranger Battalion jumped on Point Salines airfield in order to clear it for the arrival of the lead brigade of the 82nd Airborne Division. Expecting only light resistance, the Rangers met stiff resistance from approximately 600 Cubans. In addition, a team of US Navy SEALS upon arriving at the British Governor General's house in St. George was detected and quickly surrounded by a large force of PRA including several armored cars. Surprise was quickly lost and the remaining PRA and Cuban forces deployed effectively. Fortunately, they did not take any US citizens or foreign nationals hostage, because the opportunity was there.

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[78] US Department of the Army, *FM 100-5: Operations*, (Washington, DC: HQ, Department of the Army, August 1982): pp. 2-8 to 2-9.
[79] Mark Adkin, *Urgent Fury: The Battle for Grenada*, (Lexington, MA: Lexington Books, 1989): p. 128.

Momentum

The USACOM planners broke Operation Urgent Fury into three distinct phases with resources allocated to each. The first phase, was a planned simultaneous seizure of the radio station, the Port Salines Airport, the airfield at Pearls, and the freeing of political prisoners. The second phase, called for the 82nd Airborne Division to airland, expand the lodgment (relieving the Rangers and Marines) and conduct decisive combat operations against all hostile forces. The third phase, initially called for the 82nd Airborne to conduct stability and support operations, followed by the CPF. Once handover was complete with the CPF, all remaining US forces would redeploy.[80]

The effect of the initial heavy resistance was a loss of momentum in the operation. The Rangers had to defeat the Cubans at Point Salines before rescuing the students at the True Blue Medical School. Marines from Pearls had to be dispatched to rescue the US Navy SEALs at the Governor General's house, and Rangers from Point Salines had to be airlifted by Marine helicopters to rescue the students at Grand Anse as late as 25 October.[81]

The 82nd Airborne Division's movement north from Point Salines was slow and deliberate. This was in stark contrast to the MAU in the north, who rapidly secured all of their objectives. The 82nd Airborne's deliberate pace against light resistance frustrated the desire of the JCS to complete the operation quickly.[82]

Tactical initiative overcame many of the problems; however, one of the major contributors to the slow pace of operations was the issue of joint command, control and communications. The inability for the respective services involved to communicate with each other made joint service coordination difficult and resulted in unnecessary execution delays throughout the campaign.

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[80] J. Mike Simmons, *Operation Urgent Fury: Operational Art or a Strategy of Overwhelming Combat Power*, (Ft. Leavenworth, KS: School of Advanced Military Studies Monograph, 1994): pp. 34-35.
[81] Ronald H. Cole, *Operation Urgent Fury: Grenada*, (Washington, DC: Joint History Office, Office of the Chairman of the Joint Chiefs of Staff, 1997): p. 4.
[82] Ronald H. Cole, *Operation Urgent Fury: Grenada*, (Washington, DC: Joint History Office, Office of the Chairman of the Joint Chiefs of Staff, 1997): p. 5.

Operation Just Cause

Overview

Beginning in June 1987, relations between the United States and Panama deteriorated until both sides assumed a confrontational stance. By 1989, General Manuel Noriega, leader of the Panamanian Defense Forces (PDF), had been indicted in the US on drug charges, stood accused of human rights violations against his countrymen and blatantly ignored the results of a free election in May. Approximately 15,000 US military personnel and their families were in Panama at the time spread over eighteen defense sites. The soldiers' mission was to defend the Panama Canal and to provide assistance throughout the US Southern Command (USSOUTHCOM) region. Their presence was rooted in the Torrijos-Carter Treaty of 1979 that also established a timetable to turn over the canal to the Panamanians.[83]

As relations between Noriega and the US deteriorated in 1989, harassment of US citizens and hostile incursions to US defense sites became commonplace (371 incidents occurred between May and November of 1989).[84] During May 1989 alone, coinciding with the ill-fated Panamanian Presidential elections, there were 127 incidents of harassment or incursions. On 15 December 1989, the critical event of the crisis occurred when Noriega annulled countrywide elections, declared himself the "maximum leader", and asserted that a state of war existed with the United States.

The very next day, PDF soldiers harassed a group of US officers at a roadblock, killing one as he attempted to flee the scene. At the same roadblock, the PDF arrested a naval officer and his wife who witnessed the shooting. Before being released, both were beaten and interrogated. Convinced that more of the same or possibly worse would follow, President Bush felt the time

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[83] Maxwell R. Thurman [GEN, US Army (Ret)], "Simultaneity: The Panama Case," *Army*, (Washington, DC: Association of the United States Army, November 1993): p. 17.
[84] Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause: The Storming of Panama*, (New York, NY: Lexington Books, 1991): pp. 36-51.

had come for action and ordered the Joint Chiefs of Staff (JCS) to execute Operation Just Cause on 17 December 1989.[85]

During the evening of 19 December 1989, a joint force of over 11,000 soldiers, sailors, Marines, and airmen deployed from bases across CONUS and within Panama to launch Operation Just Cause. XVIII Airborne Corps formed the nucleus of JTF-South, which conducted the operational level forcible entry operation into Panama. The JTF capitalized on the capabilities of assigned joint forces by simultaneously attacking throughout the battle space. General Carl W. Stiner, commander of Joint Task Force (JTF) - South, described the concept, "we go in at night with overwhelming combat power on multiple simultaneous objectives to force the PDF to surrender very quickly."[86]

At 0045 hours on 20 December 1989, JTF-South executed an integrated plan that directed a violent, massive assault against twenty-seven separate targets throughout central Panama. The attacks appeared nearly simultaneous to Noriega and the overwhelmed C^3 structure of the PDF. These simultaneous attacks denied the PDF the opportunity to maneuver without interference. By noon the following day, the PDF was leaderless and had ceased to exist as a cohesive organization. The "legally" elected Panamanian government was sworn in and now had the opportunity to restore democracy to the Panamanian people.[87] As the operation continued, US soldiers restored law and order and shifted operations to the remainder of Panama. By 31 January 1990, peace had returned to Panama and the JCS declared Operation Just Cause over.

Operation Just Cause was a coup de main, an operation that gained strategic, operational, and tactical objectives in a single operation. Mission orders, combined with decentralized execution

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[85] Edward M. Flanagan, *Battle for Panama: Inside Operation Just Cause*, (Washington, DC: Brassey's Inc., 1993): pp. 36, 51-53.
[86] H. Hugh Shelton and Kevin Benson, "Depth and Simultaneity: Half the Battle," *Military Review*, (Ft. Leavenworth, KS: US Command and General Staff College, December, 1993): p. 58.
[87] Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause: The Storming of Panama*, (New York, NY: Lexington Books, 1991): p. 383.

and the ingenuity of the American soldier, contributed to the success of the operation.[88] The success of Operation Just Cause offers a vision of future battles.

Unifying Aim

The strategic goals in Panama were clearly defined by the President Bush and his administration. The President established four goals: (1.) to protect the 35,000 Americans in Panama; (2.) to ensure the safety and integrity of the Panama Canal; (3.) to restore the democratically elected government to Panama; and (4.) to bring Noriega to justice in the United States.[89] These goals influenced the choice of the operation and forces. To accomplish them quickly and install the new Panamanian government, a quick, fast, overwhelming strike was the only option that would assure a rapid PDF surrender. The military goal was to have US forces isolate the PDF from Noriega, thereby severing him from his power base. Yet, political considerations influenced to some degree the conduct of combat operations. Because the Panamanian people were not the enemy, discriminate fire, constraints or prohibitions against the employment of certain weapons and the use of proportional force were emphasized in order to minimize collateral damage and make the task of reforming the government and economy of Panama less difficult.[90]

At the operational level, the planners assumed neutralization of the PDF would accomplish all four of the strategic goals in the most suitable manner. Neutralization would keep the PDF from striking; therefore, protecting American citizens and the Panama Canal. In addition, an aim focused on neutralization rather than destruction complied with the end-state of restoring the

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[88] US Department of the Army, *FM 100-5: Operations,* (Washington, DC: HQ, Department of the Army, June 1993): p. 6-4.
[89] Michael E. Seitz, "Command, Control, Communications and Intelligence Factors," *Operation Just Cause: The US Intervention of Panama,* edited by Bruce W. Watson and Peter J. Tsouras, (Boulder, Co: Westview Press Inc., 1991): p. 109. Bob Woodward, *The Commanders,* (New York, NY: Simon and Schuster, 1991): pp. 90, 128-129, 184.
[90] Lawrence A. Yates, "Political Factors: The US – Panama Crises, 1987-1990," *Combined Arms in Battle Since 1939,* edited by Roger J. Spiller, (Ft. Leavenworth, KS: US Army Command and General Staff College, 1992): p. 210.

democratically elected government. A future Panamanian government would depend upon ex-PDF members to keep the country functioning in the immediate aftermath of the invasion. Finally, the planners considered the capture of Noriega, as an element of, but not decisive to neutralizing the PDF.[91]

Operation Just Cause oriented on the cybernetic domain of the PDF. Because the leadership of the PDF was highly centralized, the rapid destruction of the PDF command and control would critically impair the PDF's ability to coordinate the actions of its dispersed forces.[92] Focusing the effort on achieving this paralyzing effect allowed JTF-South to deal with each unit individually. By disrupting the cybernetic domain of the PDF each of their units were isolated, physically and psychologically. The planners counted on this isolation to reduce the will of the subordinate commanders to resist. Thus, the planners expected the effect to strongly influence the morale of those units and further lessen any potential reactions counter to the US actions. Ultimately, the effect generated, prevented the PDF from acting in a cohesive, unified manner.[93]

Correlation of Means to Actions

"Every age had its own kind of war, its own limiting conditions and its own peculiar preconceptions."[94] The end of the Cold War in the late 1980s removed the bi-polar superpower barrier that had limited US military involvement in the post-World War II era. In addition, President Bush considered the situation in Panama a top priority and wanted quick resolution.[95]

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[91] Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause: The Storming of Panama,* (New York, NY: Lexington Books, 1991): pp. 76, 99.
[92] Richard J. Dixon, *Operational Sequencing: The Tension Between Simultaneous and Sequential Operations,* (Ft. Leavenworth, KS: School of Advanced Military Studies Monograph, 1994): p. 29-30.
[93] Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause: The Storming of Panama,* (New York, NY: Lexington Books, 1991): p. 398.
[94] Carl Von Clausewitz, *On War,* edited and translated by Michael Howard and Peter Paret, (Princeton, NJ: Princeton University Press, 1984): p. 593.
[95] Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause: The Storming of Panama,* (New York, NY: Lexington Books, 1991): pp. 97-99, 102.

As a result, the National Command Authority placed no restraints on the means available to conduct Operation Just Cause. The JCS resourced JTF-SO with overwhelming combat power in order to counter any possible contingency operation by the PDF. LTG Stiner and his planners had the luxury of being strong, first everywhere, and then at the decisive points, to achieve a rapid decision. As Clausewitz said, "The best strategy is always to be very strong, first in general, and then at the decisive point."[96]

The forces available, under LTG Stiner's control, were all highly capable units. JTF-SO controlled forces from the 82nd Airborne Division, 7th Infantry Division (L), USMC, USAF, USSOCOM, and US Army South units.[97] These units were well-trained, led and equipped, to conduct operations of this type. LTG Stiner's belief in the capabilities of his soldiers was captured in an interview shortly after XVIII Airborne Corps' return to Fort Bragg in February 1990.

> The armored, mechanized, airborne, air assault and light infantry soldiers in the Corps remain prepared to go anywhere in the world to fight and win…the American soldier is the best soldier in the world. Depth and simultaneous attack are a key part of contingency operations conducted in the post-Cold War age. The XVIII Airborne Corps, by virtue of its assigned forces, can execute campaigns and major operations that combine depth and simultaneous attacks throughout the battlespace.[98]

In terms of numbers, JTF-SO deployed a force of more than 26,000 soldiers within forty-eight hours of the initial assault. In contrast, the PDF had no more than 16,000 personnel (of which only 3,500 were rated combat capable) in the active force and did not have the capability to conduct combined arms operations. The PDF's primary function was as an internal security force

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[96] Carl Von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret, (Princeton, NJ: Princeton University Press, 1984): p. 204.
[97] Richard J. Dixon, *Operational Sequencing: The Tension Between Simultaneous and Sequential Operations*, (Ft. Leavenworth, KS: School of Advanced Military Studies Monograph, 1994): p. 30.
[98] H. Hugh Shelton and Kevin Benson, "Depth and Simultaneity: Half the Battle," *Military Review*, (Ft. Leavenworth, KS: US Command and General Staff College, December, 1993): p. 63.

to preserve Noriega's dictatorship.[99] This mismatch enabled US planners to achieve an asymmetrical confrontation in which the PDF really had no chance of surviving.

Although the JCS had not constrained the forces available for this operation, there were limitations. Airfield availability restricted the flow of forces into the theater.[100] Two actions were taken to mitigate this situation. The first took place during the pre-invasion period. Numerous units deployed under the auspice of exercise and normal unit rotations. This not only provided forces, but also special equipment such as Apache attack helicopters and Sheridan "Light" tanks. The second action was the seizure of Tocumen Airfield by Ranger forces and a brigade from the 82nd. The capture of this airfield provided a second airfield, in addition to Howard AFB.[101] This gave LTG Stiner greater flexibility and capacity to bring forces into theater by air. In the final analysis, the correlation of means to actions was more than sufficient for any rational course of action.

Strength Against Vulnerability

The desired effect of the planned actions focused specifically on isolating the constituent elements of the PDF.[102] This allowed US forces to deal with each PDF element as demoralized fragment of the whole. Targets included the locks along the length of the Panama Canal, securing family housing while striking three key PDF targets in the same area, and the *Commandancia*, headquarters of the PDF. LTG Stiner said the key was "hitting all objectives quickly to overcome the enemy's ability to effectively organize his forces."[103] The plan near simultaneously attacked

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[99] Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause: The Storming of Panama,* (New York, NY: Lexington Books, 1991): pp. 6-8, 73-75.
[100] Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause: The Storming of Panama,* (New York, NY: Lexington Books, 1991): pp. 79-80.
[101] Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause: The Storming of Panama,* (New York, NY: Lexington Books, 1991): pp. 75-77.
[102] Richard J. Dixon, *Operational Sequencing: The Tension Between Simultaneous and Sequential Operations*, (Ft. Leavenworth, KS: School of Advanced Military Studies Monograph, 1994): p. 31.
[103] H. Hugh Shelton and Kevin Benson, "Depth and Simultaneity: Half the Battle," *Military Review,* (Ft. Leavenworth, KS: US Command and General Staff College, December, 1993): p. 58.

all PDF battlefield operating systems, two key systems being C^2 and maneuver. LTG Stiner's intent was to "completely paralyze them and neutralize them – anything left would be sitting out there with no guidance, no connectivity, no instruction. We could go after them separately."[104] Though the confrontation with the PDF constituted an asymmetrical fight, with the US dominating in every area, simultaneity at H-hour enhanced the acceptability of the plan.

Defining a specific center of gravity for the PDF is a difficult task. The PDF's structure as an internal security force and the dispersal of its units did not allow planners to focus on mass or one specific capability. In Section II, this study demonstrated that a center of gravity represents a concentration from which potential or actual combat power develops. However, the Just Cause planners concentrated on three possible enemy courses of action. They were: (1.) revenge and terrorism inflicted on non-combatant US citizens and US installations; (2.) attacks against the Panama Canal; and (3.) that the PDF would head into the jungles and conduct a prolonged guerilla operation.[105] General Maxwell Thurman, Commander, USSOUTHCOM, called the first two "non-war winners that would offset any other victories and the operation would be judged a failure."[106] The third course of action troubled planners because it would prolong the campaign, lead to additional casualties and pose a real threat to the newly installed democratic government of Panama.[107] The effect of paralyzing the PDF by severing its C^2 would hopefully prevent the PDF from organizing an effective guerilla operation.

In order to neutralize the PDF, LTG Stiner directed his planners to focus combat power on three main components. The three components were: (1.) the Commandancia; (2.) those units deemed capable, loyal and willing to interfere in the invasion; and (3.) Noriega himself. These

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[104] Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause: The Storming of Panama,* (New York, NY: Lexington Books, 1991): p. 59.
[105] Lorenzo Crowell, "The Anatomy of Just Cause: The Forces Involved, the Adequacy of Intelligence, and Its Success as a Joint Operation" *Operation Just Cause: The US Intervention of Panama,* edited by Bruce W. Watson and Peter J. Tsouras, (Boulder, Co: Westview Press Inc., 1991): pp. 70-71.
[106] Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause: The Storming of Panama,* (New York, NY: Lexington Books, 1991): p. 72.
[107] Timothy D. Bloechl, *Operation Just Cause: An Application of Operational Art?"* (Ft. Leavenworth, KS: School of Advanced Military Studies Monograph, 1992): p. 24.

became the decisive points to prevent the PDF from forming a cohesive, coordinated defense against the invasion.[108] The simultaneous attack on these three components ultimately prevented the PDF from forming a center of gravity. US forces seized the initiative at H-hour by effectively paralyzing the PDF leaving them with no coherent leadership, guidance or connection to other units just as LTG Stiner intended.

Momentum

Momentum proved an essential element in structuring the simultaneous actions employed by JTF-SO to accomplish its campaign aim. As discussed earlier, LTG Stiner was not constrained by a limit on the forces available. Thus, he could add or subtract the number of units performing actions based on his commander's estimate of forces required in time and space. LTG Stiner was able to adjust JTF-SO's momentum by increasing the mass available over time and by controlling the tempo of those units once committed. The leverage developed by this high tempo of combat actions overwhelmed the PDF rapidly and decisively.

The simultaneous attack of twenty-seven targets gave the PDF no chance to react or regroup. With each of those actions oriented on the aim of neutralizing the PDF, a synergistic effect took place. One field grade PDF officer indicated the degree of leverage this momentum generated when he said, "The whole infrastructure of our forces was destroyed in the first hour."[109] An important element was the critical decision to structure JTF-SO into six subordinate commands: four ground task forces, one special operations task force, and one aviation task force.[110] This decision by LTG Stiner facilitated effective command and control and allowed the subordinate task forces to conduct high tempo combat actions that were synchronized in time to achieve simultaneous effects on the PDF.

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[108] Richard J. Dixon, *Operational Sequencing: The Tension Between Simultaneous and Sequential Operations,* (Ft. Leavenworth, KS: School of Advanced Military Studies Monograph, 1994): p. 32.
[109] Ed Magnusson, "Passing the Manhood Test," *Time,* (8 January 1990): p. 43.
[110] Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause: The Storming of Panama,* (New York, NY: Lexington Books, 1991): p. 77.

IV. CLUB SANDWICH

The changing nature of future operations not only requires a reexamination of the range of capabilities required to execute each tactical mission, it requires an equally detailed reexamination of the framework for how operations are conducted. In addition, to being joint, multinational, and interagency in execution, "the future battlespace will be multidimensional, non-contiguous, precise, distributed and simultaneous by design to dominate the future operating environment."[111]

Wherever and whenever appropriate, non-contiguous operations will allow US forces to take advantage of their superior situational awareness and agility to quickly achieve decisive results through precision fires, effects, and operational maneuver. This requires two interrelated forms of precision as discussed in Section I: physical precision and psychological precision. The combination of both physical and psychological precision enables the production of mass effects without having to mass forces.[112]

The tempo of operations will be further enhanced by the capability to conduct distributed operations. Distributed operations are conducted exactly where and when they will be decisive or contribute to the execution of decisive operations without geographic constraints.[113] In Section II, tempo was defined as the physical speed of a unit and its rate of actions or combinations of actions focused on achieving the aim of the operation or action. It was also noted that tempo strikes at the very heart of the time competitive change and response cycles. Tukhachevskii believed that tempo of execution is likewise the trigger factor of the synergistic effect of the holding (orthodox) and turning (unorthodox) forces on the enemy.[114] Perhaps the most useful

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[111] US Department of the Army, *Capstone Operational Concept (Draft)*, TRADOC Pamphlet 525-5, (Ft. Monroe, VA: HQ, TRADOC, 2000): p. IV-1.
[112] US Department of the Army, *Capstone Operational Concept (Draft)*, TRADOC Pamphlet 525-5, (Ft. Monroe, VA: HQ, TRADOC, 2000): p. IV-3.
[113] US Department of the Army, *Capstone Operational Concept (Draft)*, TRADOC Pamphlet 525-5, (Ft. Monroe, VA: HQ, TRADOC, 2000): p. IV-4. Decisive operations are those that compel the enemy to submit to our will through the destruction, defeat or containment of his land force.
[114] Richard E. Simpkin, *Deep Battle*, (London, Brassey's Defence Publishers, 1987): p. 260.

aspect of the dynamics of tempo is the development of tempo as the operation progresses. This is to some extent generated by synergy, but the key to it is "the ruthless reinforcement of success."[115]

Changing Patterns Of War

German military historian, Hans Delbruck, divided strategy into two patterns of war: the strategy of annihilation and the strategy of exhaustion. The sole aim of a strategy of annihilation is the physical destruction of the enemy's armed forces through a decisive battle. The mechanism of defeat is attrition. In the strategy of exhaustion, a decisive battle is no longer the sole aim. A strategy of exhaustion seeks the enemy's logistical collapse through a combination of battle and maneuver.[116]

Modern military theorists refer to these strategies as attrition warfare and maneuver warfare. Practitioners of attrition warfare seek to improve relative force ratios by achieving and sustaining an acceptable loss ratio over the enemy. "If the attrition warrior learns about maneuver, he sees it as a way to get into the fight."[117] In other words, *movement* used to gain a better position in order to deliver more effective fires against the enemy. By contrast, maneuver warfare attempts to defeat the enemy through preemption, that is, to disarm or neutralize the enemy before the fight occurs. The maneuver practitioner seeks decision over the enemy by dislocation (described in detail in Section II). Dislocation is the art of rendering the enemy's strength irrelevant either by attacking from an unexpected direction or by attacking through gaps / weaknesses.[118] If the enemy cannot be preempted or dislocated, the maneuver practitioner will attempt to disrupt the enemy by destroying or neutralizing his center of gravity.

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[115] Richard E. Simpkin, *Deep Battle*, (London, Brassey's Defence Publishers, 1987): p. 260.
[116] Gordon A. Craig, "Delbruck: The Military Historian," *Makers of Modern Strategy*, edited by Michael Howard and Peter Paret, (Princeton, NJ: Princeton University Press, 1986): p. 341.
[117] Robert R. Leonhard, *The Art of Maneuver: Maneuver Warfare Theory and Airland Battle*, (Novato, CA: Presidio Press, 1991): p. 19.
[118] Robert R. Leonhard, *The Art of Maneuver: Maneuver Warfare Theory and Airland Battle*, (Novato, CA: Presidio Press, 1991): p. 66.

Schneider's concept of "Cybershock" offers a third pattern of warfare. Cybershock is a pattern of warfare that causes paralysis by attacking the enemy's nervous system, its cybernetics.[119] Cybershock supplements and complements the effects of attrition and maneuver. Simpkin terms the synergistic effects of all three patterns of warfare as the "Club Sandwich" battle.[120] The massed effects within the three domains of warfare cause the enemy to disintegrate. The relationship between attrition, maneuver and cybershock can be shown the following way:

Pattern	**Effect**	**Domain of Action**	**Final Outcome**
Attrition	Annihilation	Physical	Disintegration
Maneuver	Exhaustion	Logistical	Disintegration
Cybershock	Paralysis	Cybernetic	Disintegration

With all military resources acting in synergy, the offensive battle must be founded on the near-simultaneous neutralization of all depths of the enemy's defense.[121] Such operations result in a paralyzing blow against an enemy force with near-simultaneous effects on every level of war – strategic, operational and tactical. As shown in Section II, it is more effective in time and numbers of casualties to rapidly translate effects in the physical, logistical and cybernetic domains into the moral domain. In examination of decisive battles in history, in almost all, the victor had his opponent at a psychological disadvantage before the "clash of armor" took place.[122]

Joint Vision 2020 defines dominant maneuver as "the ability of joint forces to gain positional advantage with decisive speed and overwhelming operational tempo in achievement of assigned

[119] James J. Schneider, *Cybershock: Cybernetic Paralysis as a New Form of Warfare*, (Ft. Leavenworth, KS: SAMS, US Army Command and General Staff College, 1995): p. 2.
[120] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare*, (London, Brassey's Defence Publishers, 1988): pp. 153-155.
[121] Richard E. Simpkin, *Race to the Swift: Thoughts on 21st Century Warfare*, (London, Brassey's Defence Publishers, 1988): p. 145.
[122] B.H. Liddell Hart, *Strategy*, (New York, NY: Penguin Group, 1991): p. 146.

military tasks."[123] US Army forces execute dominating maneuver when they successfully exploit technology, organization, training and leadership to attain qualitatively superior fighting power as well as dramatic positional advantage in time and space that the enemy's countermeasures cannot defeat.[124]

Air-Mech-Strike

Air-Mech-Strike (AMS) provides the operational commander a force capable of dominant maneuver to the depth of the enemy's defense. AMS provides the means to attack decisive points that are key to protected enemy centers of gravity.[125] Decisive points that are out of the operational reach of the US Army's interim or legacy forces. In effect, AMS provides the commander with a "super" unorthodox force, which complements the orthodox and unorthodox forces.

The central idea behind AMS is to design a land combat force capable of air, mechanized and dismounted maneuver in order to achieve decisive action through positional advantage. "By its very nature, lightweight AMS forces can rapidly deploy strategically, possess above average mobility and are relatively easy to sustain."[126]

> AMS forces can quickly gain positional advantage by being air-inserted from either fixed or rotary wing aircraft. Once landed, these forces can quickly transition to mechanized maneuver with light armor for protection from small arms and shrapnel, possess great lethality through lightweight high tech weapons and prevent deadly surprise meeting engagements with enemy heavy armor through digitized situational awareness.[127]

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[123] Office of the Chairman, Joint Chiefs of Staff, *Joint Vision 2020,* (Washington, DC: HQ, Department of the Army, June 2000): p. 20.
[124] Douglas A. Macgregor, *Breaking the Phalanx: A New Design for Landpower in the 21st Century,* (Westport, CT: Praeger Publishers, 1997): p. 37.
[125] David E. Grange, Huba Wass de Czege, et al., *Air-Mech-Strike: 3-Dimensional Phalanx,* (Paducah, KY: Turner Publishing Company, 2000): p. 278.
[126] David E. Grange, Huba Wass de Czege, et al., *Air-Mech-Strike: 3-Dimensional Phalanx,* (Paducah, KY: Turner Publishing Company, 2000): p. 81.
[127] David E. Grange, Huba Wass de Czege, et al., *Air-Mech-Strike: 3-Dimensional Phalanx,* (Paducah, KY: Turner Publishing Company, 2000): p. 81.

Since WWII several armies, including the US Army, have experimented with fielding armored fighting vehicles (AFVs) that could be transported by aircraft in three dimensions of battlespace. While other major armies (Russia, Britain, and Germany) have fielded Brigade and Divisional size AMS formations, the US Army has fielded one airborne armor battalion equipped with the M551 Sheridan light tank that has now inactivated.[128]

The 82nd Airborne Division and the 101st Airborne Division (AASLT) are the only units in the US Army today with a three-dimensional maneuver capability to operational depth. Thus the only units capable of conducting dominant maneuver. However, the only vehicle they possess, that is air transportable, is the lightweight HMMWV anti-tank (TOW2). This vehicle is proof against only small arms and some shrapnel. These organizations are designed to protect foot-mobile infantry Battalions and Brigades at their pace of operations (1-2 mi/hr) and are not intended for independent AMS maneuver.[129]

This is not the case in Europe where several allies and former adversaries have committed sizeable resources towards the development of AMS three-dimensional maneuver formations. These armies still rely on the dominance of the main battle tank and it's supporting arms for mechanized two-dimensional warfare, but have increased their flexibility with a creditable three-dimensional capability.

In the early 1990s, the German Army opted to incorporate AMS into its airborne forces. By the end of 1992, they had completed the fielding of some 400 tracked, three to four ton, Wiesal AFVs into their airborne brigade. The decision to go "light" made it possible to transport the Wiesal with the UH-60 and Super Puma NATO helicopter fleets. In addition, the German AMS force can be readily transported to another theater using commercial large body jets from the Civilian Reserve Aviation Fleet (CRAF). The German AMS force is used for cavalry type

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[128] David E. Grange, Huba Wass de Czege, et al., *Air-Mech-Strike: 3-Dimensional Phalanx,* (Paducah, KY: Turner Publishing Company, 2000): p. 71.
[129] David E. Grange, Huba Wass de Czege, et al., *Air-Mech-Strike: 3-Dimensional Phalanx,* (Paducah, KY: Turner Publishing Company, 2000): p. 77.

missions and operations involving reconnaissance and anti-tank missions. The Wiesal comes in recon, gun, ADA, troop carrier and C^2 variants.[130]

Lessons learned from the Kosovo air campaign proved again that to destroy an enemy's army you must put boots on the ground. Defenders, like the Serbs in Kosovo, who dispersed and went to ground in order to survive precision strike attacks, were particularly vulnerable to the type of dominant maneuver an AMS force could conduct. The AMS force could take advantage of the defenders thinly held battlespace to locate and then occupy the voids left uncovered by fire and observation.[131]

The AMS force could maneuver rapidly to place themselves astride the enemy's lines of communications. At this point, the enemy has two choices: to remain static and wither; or leave the security of his defenses to attack the force to his rear. The AMS force is now set in prepared defenses and is ready to receive the enemy counterattack posing an additional dilemma for the enemy commander. The AMS operational maneuver in depth could also be synchronized with a major ground attack putting the enemy on the horns of an even more difficult dilemma of now having to fight in two directions.

In order to realize maneuver dominance, the AMS force would not need to physically secure key terrain or directly confront enemy strongpoints. Instead, they would simply occupy uncontested terrain close enough to control and thus dominate vital areas through direct observation and the use of short-range precision weapons. A once cohesive body of enemy forces would now be divided into isolated pockets unable to communicate, sustain themselves without resupply, or be reinforced. LTG Stiner's intent for combat operations in Panama, as seen in Section III, is incorporated into the AMS concept, but with the capability to conduct full-spectrum operations (offense, defense, stability and support).

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[130] David E. Grange, Huba Wass de Czege, et al., *Air-Mech-Strike: 3-Dimensional Phalanx,* (Paducah, KY: Turner Publishing Company, 2000): p. 79.
[131] Douglas A. Macgregor, *Breaking the Phalanx: A New Design for Landpower in the 21st Century,* (Westport, CT: Praeger Publishers, 1997): p. 148.

The lesson of the last 50 years for the US Army is that air power and sea power are not strategically decisive by themselves. T.R. Fehrenbach clearly states this in his classic history of the Korean War, *This Kind of War:*

> Americans in 1950 rediscovered something that since Hiroshima they had forgotten: you may fly over a land forever, you may bomb it, atomize it, pulverize and wipe it clean of life – but if you desire to defend it, protect it and keep it for civilization, you must do this on the ground, the way the Roman legions did, by putting your young men into the mud.[132]

For efficiency in attacking, subduing, occupying, administering and pacifying hostile territory, the Roman Legion has seldom been equaled by another military organization. The same legions that routed the enemy in battle could handle disarmament control, police patrol, and general administrative supervision. For 500 years, the arrival of the Roman Legion on foreign soil was synonymous with the presence of order, stability, and civilization. This is because however fierce the urge to dominate may have been, the Roman desires for an international system embodying Roman principles of justice and order was greater.[133]

The logic of international relations that positioned Rome at the center of world affairs also compels the United States to remain engaged in the world at a time when America's economic dominance is substantially reduced from what it was just after WWII. The AMS force provides a responsive force that has the organization and capabilities to operate both in combat and stability and support operations. Commanders can increase the tempo of operations with AMS forces to expand the battlefield in space, time and the echelon of forces. The non-linearity and simultaneity provided by this capability, poses multiple dilemmas to the enemy as our forces exploit the effects of operational fires and maneuver. AMS provides the mobility to find, fix and destroy enemy units faster than they can respond to our synergistic, massing effects.[134]

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[132] T.R. Fehrenbach, *This Kind of War: The Classic Korean War History,* (Washington, DC: Brassey's Inc., 1994): p. 290.
[133] Douglas A. Macgregor, *Breaking the Phalanx: A New Design for Landpower in the 21st Century,* (Westport, CT: Praeger Publishers, 1997): p. 2.
[134] David E. Grange, Huba Wass de Czege, et al., *Air-Mech-Strike: 3-Dimensional Phalanx,* (Paducah, KY: Turner Publishing Company, 2000): p. 20.

V. CONCLUSIONS

> *Thus if I want to engage in combat, even though the enemy has high ramparts and deep moats, he cannot avoid doing battle because I attack objectives he must rescue.*[135]
>
> *Attack what they love first. Do not fix any time for battle, assess and react to the enemy in order to determine the strategy for battle.*[136]

The chances of the United States becoming involved in a limited war are greater now than in any time in our history. When the United States decides to intervene against a nominally weaker enemy, firepower will not be constrained so much by its availability as by its political control. The excessive, inappropriate use of firepower by the US military has often been more politically damaging for the United States than the military effect of that firepower has been to the enemy. The United States truly has the best military forces in the world today, but the continuing challenge is to achieve a balance of capabilities that are relevant to the nation's national security needs. The end of the Cold War turned fifty years of relatively stable military planning upside down overnight. Without a clearly defined threat, the military is faced with change: and it must change to meet the nation's needs in an uncertain future.[137]

Fortunately, recent history offers more than a warning. It offers a historical trail of practical evidence that provides a path to guide the US Army into an uncertain era. In sum, the recent past suggests the following trends:

- A battlefield dominated by precision firepower favors the defensive. Therefore the surest way to win at acceptable cost is to employ operational maneuver to the depths of the enemy's defense.
- Firepower intensive wars must be won quickly.
- The enemy must be located precisely and fixed with the smallest possible exposure of the maneuver force.

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[135] Sun-Tzu, *The Art of War*, trans. Ralph D. Sawyer, (Boulder, CO: Westview Press, 1994): p. 191.
[136] Sun-Tzu, *The Art of War*, trans. Ralph D. Sawyer, (Boulder, CO: Westview Press, 1994): p. 187.
[137] Joel G. Himsl, "Dominant Maneuver vs. Precision Engagement: Finding the Appropriate Balance Between Soldiers and Technology," (Carlisle Barracks, PA: US Army War College Monograph, 1998): p. 33.

- An adaptive enemy will most likely counter superior precision firepower capability by dispersing, hiding, and going to ground in built-up areas.
- Maneuver forces must be provided the tools to adequately support operational maneuver to the depths of the enemy's defense.

As this monograph has shown, the requirement to win quick decisive victories with minimum casualties has made operational simultaneity vital to the US Army's success in the future. Fortunately, the United States currently enjoys a tremendous advantage over the rest of the world in critical "information" technology. This makes it possible for our forces to operate in highly non-linear manner. Recent trends indicate that non-linearity will become increasingly necessary to achieve the operational simultaneity the US Army is seeking.

Planners must account for numerous complex factors when developing plans which call for simultaneous actions. As this study indicates, the planner must account for numerous considerations that the following criteria identified as relevant: unifying aim, correlation of means to actions, strength versus vulnerability, and momentum. Based on an examination of theory in Section II, this study recommends six critical planning imperatives that must guide the planning of simultaneous operations. They are as follows: (1.) selecting the physical, cybernetic or moral vulnerabilities against which to concentrate combat power; (2.) avoiding a head to head clash with the enemy's strength; (3.) achieving the desired effects with a proportional expenditure of means; (4.) generating and maintaining momentum which allows a force to do more with less; (5.) balancing the scale of actions with available resources to minimize risk; and most importantly, (6.) conducting only those actions which advance the campaign aim linked in purpose to the strategic goal.

As this study demonstrates, planners must account for the aim, the means available to actions, and ways to maximize and preserve resources in order to address the suitability, feasibility and acceptability of actions. Doctrine should enhance the planner's judgment to make clear, reasoned decisions when planning simultaneous operations when designing a campaign.

US Army operational doctrine as embodied in the 2000 edition of FM 3-0, *Operations,* captures the essence of these factors. Chapter 5, Battle Command, is the most important chapter for a planner in FM 3-0. "Battle command applies the leadership element of combat power to operations. It is principally an art that employs skills developed by professional study, constant practice and considered judgment."[138] At the heart of battle command, lies the ability of a commander to visualize, describe and direct. The critical aspects of leadership required of all commanders at all levels.

Chapter 5 introduces the "Elements of Operational Design." These are detailed in Appendix 2. These elements encompass the planning imperatives for simultaneous operations mentioned previously. Doctrine should assist a planner in recognizing those points. FM 3-0 provides the necessary operational doctrine for the development of tactics, techniques, and procedures to ensure success in future conflicts through simultaneity.

Battlefield dominance requires balanced forces that possess maneuver, protection, firepower, leadership and information. In the year 2010, small, self-contained, Air-Mech-Strike (AMS) forces, maneuvering simultaneously with the support of land, sea and air precision strikes, will generate battlefield dominance and rapidly defeat the enemy. The combination of AMS and precision strikes will place the enemy on the horns of a dilemma. Killing him with precision strikes forces if he ventures out of his defenses, and smashing him with quick moving, lethal maneuver forces that inexorably conduct continuous battle, dislocating, disrupting and preempting the enemy's ability to resist through simultaneity of action.

> Today we have in essence an armor force that is highly evolved technologically, tactically and operationally, but whose momentum can be clearly restricted by modern counter-mobility measures – in the context of future developments, a unit that can rapidly bypass these and other impediments – while retaining its combat capability – through the use of the dimension of Air-Mobility achieves a new significance.[139]

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[138] US Department of the Army, *Operations (Student Text Edition),* Field Manual 3-0, (Washington, DC: US Government Printing Office, October 2000): p. 5-1.
[139] David E. Grange, Huba Wass de Czege, et al., *Air-Mech-Strike: 3-Dimensional Phalanx,* (Paducah, KY: Turner Publishing Company, 2000): p. 64.

This monograph focuses on the operational level of war and answers the basic research question: Does the concept of simultaneity allow the US Army to mass the effects of combat power to achieve rapid, decisive victory? As demonstrated by theory, historical analysis (Operation Just Cause), evaluation criteria, and an examination of one concept for future force capability, simultaneity does allow for the massing of effects to achieve rapid, decisive victory. Non-linear, simultaneous operations pose multiple dilemmas to the enemy as our forces exploit the effects of operational fires and maneuver. Non-linear operations are now more common than ever. In non-linear operations simultaneous operations offer the most efficient use of time, space, and resources while allowing for distributed actions linked in purpose to support the overarching campaign aim. Operation Just Cause featured large-scale non-linear offensive operations. Stability operations and support operations of the past ten years have been, by nature, typically non-linear.

The key to planning and conducting successful simultaneous operations is momentum. As actions orient at an enemy center of gravity through the attack or seizure of decisive points, the cadence of actions must be such that the effect translates rapidly through the physical, logistical and cybernetic domains to the moral domain. Momentum and tempo are the trigger mechanisms that allow for the synergistic massing of effects throughout the enemy's depth and within all domains of combat action. As discussed in Section II, momentum is most closely related to tempo with respect to military operations. Commanders must complement momentum and tempo with three related concepts.

> First, operational design stresses simultaneous operations rather than a deliberate sequence of operations. Second, and operation may achieve rapid tempo by avoiding needless combat. This includes bypassing resistance that appears at times and places commanders do not consider decisive. Third, the design gives maximum latitude to independent action and initiative by subordinate commanders.[140]

[140] US Department of the Army, *Operations (Student Text Edition)*, Field Manual 3-0, (Washington, DC: US Government Printing Office, October 2000): p. 5-12.

APPENDIX 1

In 1905, Albert Einstein became convinced that the experimental data forced us to accept two facts of nature[141]:

1. The speed of light in a vacuum is always measured to be the same ($c = 2.988 \times 10^8$ m/s), no matter how fast the light source or observer may be moving.

2. Absolute speeds cannot be measured. Only speeds relative to some other object can be determined.

Einstein's line of reasoning is known as the theory of relativity and the two statements above are the basic postulate of his theory. It is not possible to prove these postulates directly. They are the consensus of all the experimental facts known.

The second postulate states:

2a. The basic laws of nature are the same in all reference frames moving with constant velocity relative to each other.

This requires some explanation. It is easy to measure the relative speeds of objects. A car's speedometer tells us at once how fast the car is moving relative to the roadway, but this is not an absolute speed. The earth is moving because of both its rotation on its axis and its motion around the sun. Since the speed of the car and the earth are both known, if required, the speed of the car relative to the sun may be calculated. However, the sun itself is moving in our galaxy, and the center of the galaxy is in motion relative to more distant stars. There seems to be no way to define a definite, absolute speed, of an object since everything appears to be moving. It is possible to state only how fast one object is moving relative to another.

2b. The basic laws of nature are the same in all inertial reference frames.

Another way to state the second postulate is in terms of reference frames. A reference frame is any coordinate system relative to which measurements are taken. For example, the position of

[141] Frederick J. Bueche, *Principles of Physics*, (New York, NY: McGraw Hill Book Company, 1988): pp. 583-584.

a sofa, table and chairs can be described relative to the walls of a room. The room is then the reference frame used.

Often using the term inertial reference frame shortens this statement. An inertial reference frame is a coordinate system in which the law of inertia applies. A body at rest remains at rest unless an unbalanced force on it causes it to be accelerated. The other laws of nature also apply in such a system. In practical terms, all reference systems moving with constant velocity relative to the distant stars are inertial frames.

APPENDIX 2

Elements of Operational Design[142]:

- End-state and military conditions: At the operational and tactical levels, the end-state is the conditions that, when achieved, accomplish the mission. At the operational level, these conditions attain the aims set for the campaign or operation.

- Center of Gravity: Those characteristics, capabilities, or localities from which a military force derives its freedom of action, physical strength, or will to fight.

- Decisive points and objectives: A decisive point is a geographic place, specific key event, or enabling system that allows commanders to gain a marked advantage over an enemy and greatly influence the outcome of an attack. Once identified and selected for action, decisive points become objectives.

- Lines of operation: Define the directional orientation of the force in time and space in relation to the enemy. They connect the force with its base of operations and its objectives. When positional reference to an enemy or adversary has little relevance, commanders may visualize the operation along logical lines.

- Culminating point: In the offense, the culminating point is that point in time and space where the attacker's effective combat power no longer exceeds the defender's or the attacker's momentum is no longer sustainable or both. The defensive culminating point marks that instant at which the defender must withdraw to preserve the force.

- Operational reach, approach, and pauses: Operational reach is the distance over which military power can be employed decisively. Operational approach is the manner in which a commander attacks the enemy center of gravity. The direct approach applies combat power directly against the enemy center of gravity or the enemy's principal strength. The indirect approach attacks the enemy center of gravity by applying combat power against a series of decisive points that avoid enemy strengths. An operational pause is a deliberate halt taken to extend operational reach or prevent culmination.

- Simultaneous and sequential operations

- Linear and nonlinear operations

- Tempo: The rate of military action. Controlling or alternating that rate is necessary to retain the initiative. Army forces generally pay a price for rapid tempo through greater fatigue and resource expenditure.

[142] US Department of the Army, *Operations (Student Text Edition),* Field Manual 3-0, (Washington, DC: US Government Printing Office, October 2000): p. 5-6.

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