

AD-A279 612



(unclassified paper)

1

NAVAL WAR COLLEGE  
Newport, R. I.

CENTER OF GRAVITY: A MOST IMPORTANT CONCEPT MOSTLY  
MISUNDERSTOOD

by

Gary C. Peterson  
Lieutenant Commander, U.S. Navy

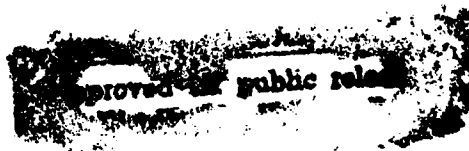
DTIC  
ELECTE  
MAY 23 1994  
S G D

A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Department of Joint Maritime Operations. The contents reflect my personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

10 January 1994

Paper directed by:  
Hiram W. Clark, Jr., Captain, U. S. Navy  
Chairman, Department of Joint Maritime Operations

Submitted to:  
Robert R. Dunne, Captain, U.S. Navy and  
Stephen T. Wesselhoff, Captain, U.S. Navy  
academic advisors



94-15259

94 5 20 057

## REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION <b>UNCLASSIFIED</b>		1b. RESTRICTIVE MARKINGS	
2a. SECURITY CLASSIFICATION AUTHORITY		3. DISTRIBUTION AVAILABILITY OF REPORT DISTRIBUTION STATEMENT A: APPROVED FOR PUBLIC RELEASE; DISTRIBUTION IS UNLIMITED.	
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE		5. MONITORING ORGANIZATION REPORT NUMBER(S)	
4. PERFORMING ORGANIZATION REPORT NUMBER(S)		5. MONITORING ORGANIZATION REPORT NUMBER(S)	
6a. NAME OF PERFORMING ORGANIZATION OPERATIONS DEPARTMENT	6b. OFFICE SYMBOL (if applicable) C	7a. NAME OF MONITORING ORGANIZATION	
6c. ADDRESS (City, State, and ZIP Code) NAVAL WAR COLLEGE NEWPORT, R.I. 02841		7b. ADDRESS (City, State, and ZIP Code)	
8a. NAME OF FUNDING/SPONSORING ORGANIZATION	8b. OFFICE SYMBOL (if applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c. ADDRESS (City, State, and ZIP Code)		10. SOURCE OF FUNDING NUMBERS	
		PROGRAM ELEMENT NO.	PROJECT NO.
		TASK NO.	WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) CENTER OF GRAVITY: A MOST IMPORTANT CONCEPT MOSTLY MISUNDERSTOOD (U)			
12. PERSONAL AUTHOR(S) LCDR GARY C. PETERSON, USN			
12a. TYPE OF REPORT FINAL	12b. TIME COVERED FROM TO	14. DATE OF REPORT (Year, Month, Day) 8 FEB 94	15. PAGE COUNT 34
16. SUPPLEMENTARY NOTATION A paper submitted to the Faculty of the Naval War College in partial satisfaction of the requirements of the Department of Operations. The contents of this paper reflect my own personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.			
17. COSATI CODES		18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)	
FIELD	GROUP	CENTER OF GRAVITY; COUNTER-POINT; JOINT WARFARE; OPERATIONAL ART	
19. ABSTRACT (Continue on reverse if necessary and identify by block number)  THE CENTER OF GRAVITY IS NOT UNIFORMLY DEFINED AND GENERALLY MISUNDERSTOOD. A NEW DEFINITION IS PRESENTED. THE NATURE OF CENTER OF GRAVITY IS DISCUSSED. CENTER OF GRAVITY IS RELATED TO JOINT WARFARE AND THE OPERATIONAL COMMANDER. THE DEFICIENCY OF DOCTRINE IS ADDRESSED WITH THE PROPOSED RE-DEFINITION OF CENTER OF GRAVITY. ALSO, DOCTRINE IS IMPROVED TO FOCUS MORE CLOSELY ON CENTER OF GRAVITY IN THE OPERATIONAL COMMANDER'S DECISIONMAKING GUIDANCE.			
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS		21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED	
22a. NAME OF RESPONSIBLE INDIVIDUAL CHAIRMAN, OPERATIONS DEPARTMENT		22b. TELEPHONE (Include Area Code) 841-3414	22c. OFFICE SYMBOL C

## TABLE OF CONTENTS

CHAPTER	PAGE
ABSTRACT .....	ii
PREFACE .....	iii
I Introduction .....	1
II Center of Gravity Defined .....	2
Background .....	2
The Dilemma .....	6
Center of Gravity Defined .....	7
III CENTER OF GRAVITY, ITS NATURE .....	12
Just One Center? .....	12
Is There a Hierarchy? .....	12
Must All Centers be Attacked? .....	15
Is the Center of Gravity Based on the Type of Conflict? .....	15
Does the Center of Gravity Change Over Time? Counter-point .....	17 18
IV JOINT WARFARE .....	20
Operational Art .....	20
Joint Warfare and Center of Gravity .....	23
V CONCLUSION AND RECOMMENDATIONS .....	25
NOTES .....	26
BIBLIOGRAPHY .....	29

Accession For	
NTIS CRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification .....	
By .....	
Distribution /	
Availability Codes	
Dist	Avail and/or Special
A-1	

## ABSTRACT

This paper takes a look at center of gravity and the military. The purpose is to determine if current understanding of the concept is correct, universally accepted and correctly applied at the operational level. The scope of the paper includes an examination of historical definitions and current understanding. Further, an original definition for center of gravity is proposed together with a framework for understanding its application during conflict. A broad review of case studies is conducted to support the definition and clarify the nature of center of gravity. The use of case studies, as evidence for conclusions, is for illustration purposes. To conduct a deep analysis of each case mentioned below would exceed the intent of the effort. Finally, the general concept is narrowed to focus on joint doctrine and the operational commander. In summary, I propose that the book shouldn't be closed with the current understanding of center of gravity. Expert military opinion is diverse. Service and joint doctrinal definitions are not consistent. While there is agreement that center of gravity is important and must be defeated to win the war, the question of "What is the center of gravity?" is open to almost limitless interpretation. Failure of the United States to understand the center of gravity was largely responsible for defeat in Vietnam. The current institutionalized misunderstanding of the concept of center of gravity could negatively impact the outcome of future conflicts. To conclude, center of gravity must be redefined in joint doctrine. Also, guidance for the operational commander must be modified to focus more closely on the center of gravity and the various options available for its defeat. Clarifying center of gravity is not only relevant but critical to the future of US joint warfare and operations.

## PREFACE

"You know you never beat us on the battlefield," said the American Colonel. The North Vietnamese Colonel pondered the remark for a moment. "That may be so," he replied, "but it is also irrelevant."

Do we really need another paper written on the center of gravity? Any Naval War College graduate worth his salt can describe the center of gravity as it relates to war. Unfortunately, I believe every description would vary significantly after the first sentence, which would begin, "(T)he hub of all power...." Is center of gravity clearly understood by the highest echelons of military decision-making? What is the appropriate definition? Where does it fit into the joint concept and operational level of war?

The quote above is a haunting reminder of a terrible chapter in America's history. US forces beat the North Vietnamese and Viet Cong senseless, delivering blow after blow, until we finally had to escape in defeat with a tattered national pride. Writers analyzing the war, even today, are polarized in disagreement regarding the reasons for defeat. All, however, will tell you it had something to do with misplaced effort and the center of gravity.

I believe that we cannot be satisfied with current doctrine. The concept of center of gravity is still not clear. On the contrary, its definition is as numerous as its authors, adapting like a chameleon to its surroundings. This paper presents a "macro" perspective for center of gravity. By that I mean a big picture, long term view and a more enduring (non-flexible) definition. There is risk. I don't have the support of a body of writing for this original definition. Those with a critical bent will have no problem finding fault. War and center of gravity are enough art that almost any counter-argument will have merit. But, I think we do need another paper written on center of gravity and those that close their minds to the concepts below run a greater risk -- another Vietnam.

# **CENTER OF GRAVITY: A MOST IMPORTANT CONCEPT MOSTLY MISUNDERSTOOD**

## **CHAPTER I**

### **INTRODUCTION**

The current understanding and application of center of gravity as it relates to war is diverse, generally inaccurate and requires clarification because of its influence on joint warfare and critical importance to the operational commander. As the preface implies, the Vietnam war was lost, largely, because the United States efforts were not focused in a direction that would win the war. The US failed to attack centers of gravity which would turn tactical success into strategic victory. The importance of considering center of gravity the focal point of war has achieved a recent renaissance among military artisans. However, the US is vulnerable to future catastrophes, such as Vietnam, because of the false, contradictory and therefore, dangerous influence center of gravity has in joint warfare. Having the wrong concept for center of gravity is as bad as having no concept at all.

The first chapter summarizes the historic and current understanding of center of gravity, the dilemma posed by the various viewpoints and a proposed definition of center of gravity that will provide the basis for further discussion.

The second chapter focuses on the nature of center of gravity, containing evidence to address conflicting concepts, identify tendencies and predict the dominant centers of gravity.

Chapter three emphasizes the utility of the concept of center of gravity to the operational commander and problems with current doctrine. Finally, center of gravity will provide the basis for insight into the role of the various components in accomplishing national military strategy and the importance of the joint concept in attaining America's political goals.

## CHAPTER II

### CENTER OF GRAVITY DEFINED

#### Background:

Carl Von Clausewitz was first to relate the term center of gravity to war. He wrote,

"One must keep the dominant characteristics of both belligerent in mind. Out of these characteristics a certain center of gravity develops, the hub of all power and movement, on which everything depends. That is the point which all our energies should be directed."<sup>2</sup>

He felt that in countries subject to civil strife, the center of gravity is usually the capital because of its position as the political and social center. In countries relying on larger nations for defense, it is the army of the protector. Among alliances, the center of gravity lies in the community interest, and during popular uprisings, it is the public opinion and the personality of the emergent leadership. Finally, no matter what the central feature of enemy power, Clausewitz thought defeat of the army would in all cases be, at least, very significant in the outcome. Generally, then, he recommended the following priority.<sup>3</sup>

1. Destroy the armed forces.
2. Seize the capital for its political and social value.
3. Attack the alliance.
4. Attack public opinion and its leadership.

Sun Tzu didn't use the term center of gravity. Writing about war long before Clausewitz, he did, however, make recommendations regarding the proper focus when attacking the enemy. His treatment of the subject was expanded to include actions other than battle, such as, diplomacy, in an attempt to defeat the enemy without armed conflict. Sun Tzu's writings were tactically less bold than Clausewitz and favored an indirect approach.

Nevertheless, Sun Tzu, like Clausewitz, felt that the aim must be to defeat enemy strengths.

He chose the following priority.<sup>4</sup>

1. Attack the enemy strategy (deter war if possible).
2. Disrupt the alliance (deter war if possible).

3. Attack the armed forces.
4. Attack the cities as a last resort.

US Army doctrine, Clausewitzian in nature, supports massing strength against the enemy source of power -- the center of gravity. But, the Army implies that over time, there has been a fundamental shift in what constitutes a center of gravity. Included in the new definition are objects, functions, capabilities, and locations. The Army describes "traditional" centers of gravity as the mass of the enemy army, battle command structure, public opinion, national will, and an alliance or coalition structure. The Army proposes the concept of "abstract" centers of gravity as national will and an alliance. Further, a center may be an indistinct army mass that has not yet formed or "concrete" strategic reserves, command and control, industrial base and lines of communication.<sup>5</sup> The purpose of understanding center of gravity, says the Army, is to assist the commander in considering friendly and enemy strength in order to properly design a campaign based on appropriate objectives.

US joint war-fighting doctrine modifies the concept of center of gravity, relating it to different levels of war, and including critical capabilities, location and vulnerabilities in the definition. Joint doctrine defines center of gravity as, "that characteristic, capability or locality from which a military force, nation, or alliance derives its freedom of action, physical strength or will to fight. It exists at the strategic, operational and tactical levels of war."<sup>6</sup> Doctrine provides examples of strategic centers of gravity as a military force, alliance, national will, public support, a set of critical capabilities or functions, or the national strategy itself. Finally, the commander should use center of gravity as a tool to analyze enemy strengths, weaknesses and vulnerabilities. Like Army doctrine, joint doctrine continues the logic of center of gravity from its foundations and contributes additional features to its definition.

US Air Force doctrine contends that the nature of the enemy defines its center of gravity and the way it will fight.<sup>7</sup> Center of gravity, the source of enemy strength, determines



the threat posed by the enemy and effects the focus of the campaign. A key ingredient in Air Force doctrine is its capability to effectively defeat strategic centers of gravity independently of supporting forces.

Colonel Robert M. Herrick, on the other hand, writes that the center of gravity in an insurgency is defined by the character of the insurgency conflict. Herrick claims the center of gravity for these conflicts is the security of the insurgents. And, the characteristics of the nation are, therefore, outweighed by the characteristics of the conflict. If the insurgents security is penetrated, all aspects of the operation will be made vulnerable.<sup>8</sup> Center of gravity's definition has subsequently progressed to include neither a strength or weakness but a state of being, derived from the situation.

Air Force Colonel John A. Warden III believes centers of gravity are vulnerabilities. In his book Air Campaign: Planning for Combat, he describes the center of gravity as the "point where the enemy is most vulnerable. Further, every level of war has a center or centers of gravity (and)...force must be applied to all if the object is to be moved." Finally, Warden states that the commander must identify and attack specific "reachable" centers of gravity if he can't act against "ultimate" centers.<sup>9</sup> This statement implies the "reachable" centers of gravity won't have a culminating effect on the conflict. Yet, paradoxically, they are centers of gravity and must be attacked because "force must be applied to all."

Warden provides a novel way to conceptualize the centers of gravity. His broad definition includes items such as, equipment, logistics process, personnel and command and control.<sup>10</sup> He groups these potential targets into concentric rings. At the center is the enemy command, second is essential production, third is transportation, fourth is the population and fifth is the military forces.<sup>11</sup> Leadership is the most important center and each ring embodies a lower priority as the decision process travels outward. Also, the strategic, operational and tactical levels contain their own, separate hierarchy, says Warden. It is interesting to note that

the importance of the armed forces as a center of gravity has evolved from the first priority (Clausewitz) to the last (Warden).

The United States Marine Corps declines to accept Clausewitz's belief that center of gravity can be found where the mass of the army is concentrated most densely. The Corps discards this strength versus strength concept and says that in modern warfare, it is more important to consider the center of gravity an enemy weakness. "By the enemy's center of gravity, we do not mean a source of strength, but rather a critical vulnerability."<sup>12</sup> USMC war-fighting doctrine is, therefore, based on striking an objective that embodies a balance of criticality to the enemy and vulnerability to the Corps.<sup>13</sup> Contained in this doctrinal statement is the implicit intent to by-pass a more critical objective to attack a target that poses less risk to the Marines.

The definition of center of gravity comes full circle when Colonel Frank Izzo writes that the center of gravity is a strength that can best be examined by asking two questions. "What is the opponent attempting to do, (and) (w)hat power will enable him to achieve his goal?" Izzo continues, "the concept of strength, weakness and vulnerability are distinctly different."<sup>14</sup> For example, a nation will possess strengths and weaknesses that may or may not be vulnerable to attack.

The center of gravity began as a source of power, dependent upon the unique characteristics of a nation, against which all efforts should be focused. It became a feature attributed to almost any influence, that should be avoided unless sufficiently vulnerable. And now we learn, again, that the center of gravity may be a strength.

The concept of center of gravity has clearly been molded to suit the users purpose. The Army is inclined to agree with Clausewitz's emphasis on the opposing army. The Air Force believes it must travel far (and high) to reach the most important center of gravity - the leader or strategic functions. The Marine Corps, because of the nature of its mission, imagines itself

in a position of numerical inferiority and seeks enemy weakness. In doing so, the Corps has redefined center of gravity as a critical vulnerability to suit that mission. Unfortunately, joint doctrine's definition is not categorically similar to any other definition. What does center of gravity mean? Are we fighting the same war?

### The Dilemma:

In the search for a consistent definition for center of gravity, one looks for some uniformity of opinion. Experts agree that the commanders accurate assessment of center of gravity is vitally important to winning the war. Allied support plays a significant role. The people, armed forces and government leaders are central figures in every definition. Finally, it is agreed that centers of gravity exist for both belligerents in a conflict. As discussed above, however, viewpoints and doctrinal statements regarding centers of gravity contain significant diversity of opinion. The following list summarizes the conceptual dilemmas that arise from conflicting viewpoints related to center of gravity. Answers to the ten questions below will be discussed throughout the paper. They will be referred by number, such as, "(dilemma 1)," etc..

1. Do centers exist at the strategic, operational and tactical levels of war?
2. Is the center of gravity an enemy vulnerability or a strength?
3. Are there traditional and more modern centers?
4. Is the list of potential centers of gravity finite, or flexible and unlimited?
5. Is center of gravity intended to describe only one source of power based on the nation's characteristics or can there exist more than one hub of power?
6. Does there exist a rigid hierarchy of importance among centers of gravity and therefore a priority for attack?
7. Must all centers of gravity be attacked to win the war?
8. Do dominant centers of gravity emerge as a result of the type of conflict instead of being based on the nation's characteristics?
9. Do centers of gravity within a nation change over time?
10. Can a center of gravity be a special capability?

In general, center of gravity has evolved to become more tactically applicable. This tacticization of center of gravity is a dangerous tendency. Imagine a future commander

recommending the failed, Vietnam type attrition strategy because the guerrillas are *vulnerable* and a specified body count is a *reachable* center enroute to the *ultimate* center -- government decision-makers. The operational level must discipline its doctrine, resisting rationalization of center of gravity to meet immediate needs.

The dilemma is to arrive at a definition of center of gravity that is universally accepted, conceptually correct, and less mystical (e.g., it doesn't put everyone into a thousand yard stare when mentioned). While making center of gravity easier to understand, one must avoid becoming too academic and distant from the purpose of center of gravity. That purpose is to provide a framework of understanding that enables the commander to plan a campaign that will win the war.

#### Center of Gravity, Defined:

The first step in defining center of gravity is to clarify the fact that it cannot exist on the tactical level (dilemma 1). The purpose of center of gravity is to focus on winning the war. The purpose of decisive points (or in USMC vernacular, "critical vulnerabilities") are to gain leverage to win the battle. Decisive points are not centers of gravity and winning the battle does not ensure victory in war.<sup>15</sup> If it did, America's tactical success in Vietnam should have won the war. US forces repeatedly defeated, what joint doctrine would describe as, tactical centers of gravity without achieving victory. The strategic/operational levels must focus on defeating the enemy center of gravity to win the war. The tactical level focuses, not on centers of gravity, but on objectives prescribed by higher authority and decisive points to win the engagement. Reference to the concept of *tactical center of gravity*, therefore, is inappropriate, an error of semantics, and tends to dilute the significance of center of gravity.

It is important to make the distinction that defeat of the center of gravity is not a step-on-the-road to victory but the key that opens the door to victory. That key may have strengths

and weaknesses. It may or may not be viewed as vulnerable. But, though it may embody these characteristics, they do not provide the definition for center of gravity. Therefore, center of gravity is not a strength, weakness or vulnerability, but a dominant characteristic(s) that will end the conflict if adequately influenced (dilemma 2).

"War is more than a true chameleon that slightly adapts its characteristics to a given case. As a total phenomenon, its dominant tendencies always make war a remarkable trinity composed of...violence,...chance and...subordination as an element of policy."<sup>16</sup>

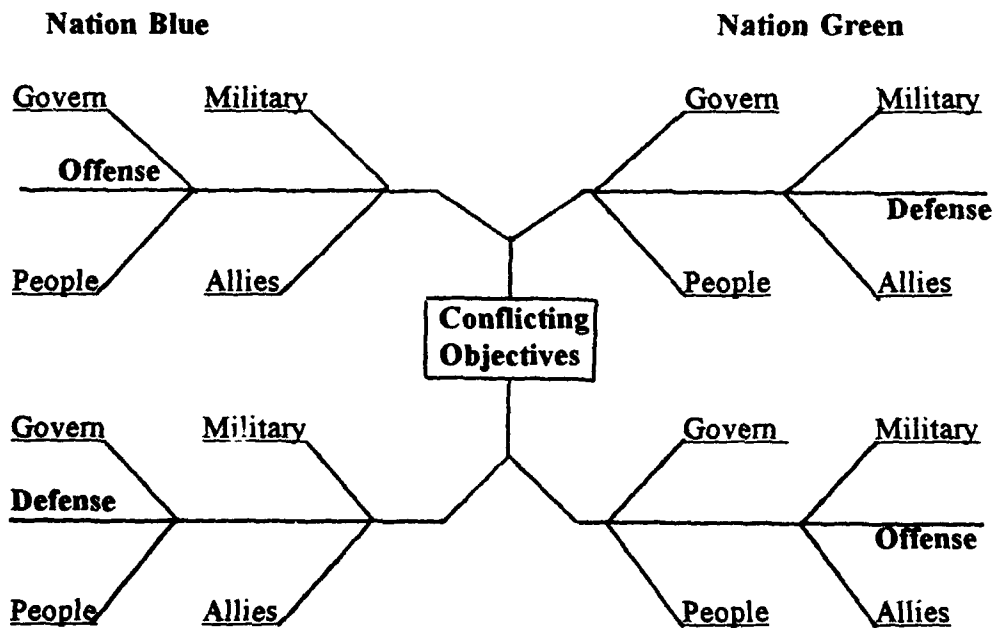
Clausewitz wrote these words explicitly stating that to understand war, one must understand the balance between this trinity. It is composed of people -- the source of will, passion and violence; military leaders and forces -- the source of military operations and risk management; and government -- the source of policy and rational analysis. The trinity composes the balance of power in the nation based on the relationship between these elements. Clausewitz, however, failed to explicitly call the trinity centers of gravity. That connection is implied in parallel but separate discussions. If the trinity dominates the tendencies of war and defines the balance of power, doesn't it also define the centers of gravity?

It does, with one exception. The existence of an alliance has proved to be an important hub of power in conflict. Its influence, has often been the key to victory and defeat. Therefore, the proposed definition for center of gravity is: **The dominant characteristic(s) emerging from the interaction between the level of power inherent in a nation's people, military force, government and alliances and upon which success or failure in war ultimately rests.**

As Clausewitz said, the relationship between these characteristics is deep rooted. To ignore these factors is to ignore the very nature of war. History from the Peloponnesian to the Vietnam war is littered with those nations failing to understand the nature of the war and these centers of gravity. To imagine that the nature of war and its outcome rests on factors other

than the trinity (which is now a square), is to ignore centuries of lessons learned. There can be no differentiation between traditional and modern centers (dilemma 3). Also, the list of potential centers of gravity is not unlimited (dilemma 4). In every conflict, the victor prevailed because it caused the enemy government to concede, the people to quit, the ally to withdraw its support and/or the military force to be rendered defenseless. Reciprocally, the vanquished failed to adequately protect its centers of gravity. The dominant center must be one or more of the square composed of people, military, government and alliance.

To fix an arbitrary relationship between the centers of gravity is as mistaken as ignoring the deep rooted effect that they have on the nature of war. Each center is composed of interactive elements that contribute to its strength and weakness, and each center will exert influence on the conflict based on the relationship between them. It should be viewed more a dynamic process, rather than a *status quo*, with each center contributing to the nation's objectives differently. Finally, the interaction of offense and defense must be considered. The diagram below illustrates the contribution of centers of gravity to the national objective and interaction with the opponent.



Nation Green and nation Blue are engaged because of conflicting objectives. The result of the engagement will be a factor of the ability of each to exploit the opponents potential centers of gravity while protecting their own. The uniformity of the diagram implies equal influence from each potential center. However, certain dominant centers will emerge, becoming the decision-makers. Nevertheless, this structure does accurately depict the sources of power, on both sides, that the commander must *consider* in his planning.

The contributions of each potential center are similar to that proposed by Clausewitz. For instance, the people are the source of national will, passion and violence. But, while the potential centers of gravity are limited to four, the characteristics associated with each are limitless. The diagram below is an example of specific characteristics of nation Blue's military force. To attack this center of gravity, the Green commander will analyze Blue's military and choose characteristics such as Blue's high cost structure and aversion to protraction as weaknesses to leverage his position. Green will then design a campaign to attack these perceived weaknesses using methods which may include informational, economic, diplomatic and military influence.<sup>17</sup> Also, pressure on other centers will have indirect influence on the military. From this sort of analysis and understanding of centers of gravity Green can design a campaign for each dominant center and provide the broad vision necessary to win the war.

**Nation Blue Military Forces Characteristics**

<u>Force diversity</u>	<u>Isolated location</u>
<u>Large force/high mobility</u>	<u>Large industrial base</u>
<u>Intelligence expertise</u>	<u>Technologically advanced</u>
<u>Strategic capability</u>	<u>Professional volunteer force</u>
<u>Long lines of communications</u>	<u>High cost structure</u>
<u>Casualty averse</u>	<u>Aversion to protracted conflict</u>
<u>Individual initiative</u>	<u>Government support</u>
<u>Populous support</u>	<u>Allied support</u>

Knowing that there are four *potential* centers of gravity for all conflicts provides a clear and unmistakable framework for the commander to analyze the enemy and himself. While it

ensures the *proper strategic* and operational focus, it is not a panacea substituting for a thorough understanding of the opponent. It is important to make the distinction, however, that the art of war is not determining the *potential* centers of gravity but determining the strengths and weaknesses of each, relative importance of each and the role they will play in the conflict. Which of the *potential* centers will be the *dominant* centers? That is the question. The true value in this concept is maintaining the perspective of how the campaign will effect certain centers of gravity and contribute to victory.

Victory in war is defined as the ability of victor to impose its will on the vanquished.<sup>18</sup> The dominant center(s) of gravity can be thought of as the ultimate decision-maker(s) which will force or allow that to happen. The strategist must determine *what must be influenced*. Also, he must decide how much pressure, from what type influence, is adequate to complete the mission. In a positive sense, military force may achieve victory. In a negative sense, influencing the opponent's people to stop supporting the conflict may preclude the opponent from achieving victory. The victorious outcome in each case, illustrates the fact that a center of gravity may enable victory or simply preclude victory. Care must be taken to exploit and protect the centers in each scenario.



## CHAPTER III

### CENTER OF GRAVITY. ITS NATURE

#### Just One Center?

Clausewitz's belief that only one center will emerge out of the nation's dominant characteristics (dilemma 5) doesn't hold up under scrutiny and is a gross oversimplification. After the attack on Pearl Harbor, US forces methodically beat the Japanese and Germans on the battlefield. However, without a passion and commitment of the people, inspired by the surprise attack, America would not have effectively mobilized to support the effort. Because of the American people, the US and her allies were able to sustain the war. Defeating either the military or the will of the people, could have been the "hub" responsible for America's defeat. More precisely, it probably would have required the defeat of both centers to defeat the United States. Attempting to narrow the balance of America's power to a single source would be inaccurate and arbitrary. Therefore, more than one dominant center may often exist.

#### Is There a Hierarchy?

Colonel Warden contends the essence of war is to apply pressure against the command structure. Attacks against any other center of gravity is useful for its direct and indirect influence on the leader, who will assess the cost of repair, post war effect, his own survival and benefits of continuing the war.<sup>19</sup> Numerous case studies support this concept. During the American Revolution, the British conceded to the much weaker colonists because the conflict was a quagmire and America's French and Spanish allies posed a real threat to British maritime trade and sea dominance. The government was the decision-maker, ending the conflict as a result of rational analysis.

Subscribing to this concept, however, poses the danger of misunderstanding the

significance of other centers. It ignores the fact that action taken may be ineffective against the leadership or even detrimental in its effect on other centers of gravity. For example, Rolling Thunder's (air war over North Vietnam begun in 1965) "slow squeeze" ineffectively attempted to signal the futility and excessive cost of the war to the unreceptive Hanoi leadership.<sup>20</sup> Also, America's heavy handed attrition strategy created a South Vietnamese refugee population in the millions, harming friendly centers of gravity as much as it hindered North Vietnam's war effort. America's one dimensional view ignored the three other centers of gravity and precluded the use of an alternate strategy that could have won the war.

Further, the prerogative of rational analysis may be stripped from governmental control. During World War I, the Russian people overruled the government's prerogative to continue the war. Germany supported an insurgency in Russia with the intent of inspiring nationalism and creating small states dependent upon Germany for survival.<sup>21</sup> Eventually the Bolsheviks took control and subsequently signed the treaty of Brest-Litovsk. Germany's minimal efforts to influence the people was more significant than any effort to sway the Tsarist government.

If the leadership is not universally dominant, perhaps there is a different hierarchy. Clausewitz believed attacking the enemy army was most important. Napoleon attained hegemony on continental Europe through near single-minded pursuit of defeating the enemy on the battlefield. However, the British eventually prevailed over Napoleon only through the nurturing of its dominant center of gravity -- coalitions. More dramatically, America lost in Vietnam in spite of possessing an overpowering force and achieving victory in every major battle. US armed forces simply did not determine the outcome of the war.

People inspired by nationalism and, in the extreme, revolutionism can become the dominant center of gravity. Clausewitz was referring to the French Revolution when he described the people and their leaders as centers of gravity during popular uprisings. The *Levee en Masse* was not only a military force but a mobilization that organized the entire

populous for war.<sup>22</sup> The commitment of the masses to armed conflict was France's dominant center of gravity.

A participatory society and democratic style of government elevates the influence of the people in the conflict as well. The American model elevates people to become a dominant center of gravity. The American people were decisive in foreclosing the effort in Vietnam and, as mentioned above, equally decisive in a positive sense during World War II. As stated earlier, a dominant center of gravity may preclude victory as well as enable victory. The loss of support for Vietnam was as decisive as the passionate commitment during World War II. In each case the people were a dominant center.

Conversely, an effective authoritarian autocracy will suppress the influence of the people during war. During World War II, the Japanese suffered grievously in the later war years with no hope of influencing the end of the conflict. Firebomb raids killed an estimated 260,000, destroyed two million buildings and left nine to 13 million homeless.<sup>23</sup> Yet, the Japanese government arrested 400 citizens for merely publicly favoring negotiation as a way to end the war in 1945. Japan's government refused to consider surrender until it became clear the Emperor could retain his throne.<sup>24</sup> When the surrender was finally announced, nearly all of the 70 million Japanese citizens quietly complied. The people were not a dominant center of gravity because their influence was suppressed by the government.

Does the alliance rest on top of the hierarchy of centers of gravity? China's alliance with North Korea was the dominant center of gravity during the Korean War. If China was removed from the scene the war would not only have been far smaller, it probably would not have occurred.<sup>25</sup> However, the alliance between Germany, Italy and Japan during World War II is a graphic example of an alliance having reduced influence on the outcome of the war. Germany and Japan conducted independent campaigns with almost no influence from the

alliance center of gravity. The dominance of an alliance, like the other centers of gravity, is variable.

#### Must All Centers be Attacked (dilemma 7)?

Colonel Warden makes a misleading generalization when he states that "force must be applied to all if the object is to be moved." During the Austro-Prussian war, Austria's dilemma was political isolation, multiple enemy fronts (Prussia and Italy) and a militarily capable Prussian opponent. Its decision to concede to Prussia's demands was due to the dynamic influence the single victory at Koniggratz had on all of its centers of gravity. The Habsburg government was fragile and its people so diverse that within a year, the empire was split into a separate Austria and Hungary. Prussia's effort to influence the Austrian military and alliance structure had an unexpected synergistic effect. In this case force applied to two centers of gravity ended the conflict.

Also, if a center of gravity is not dominant, it doesn't require influence. The US led coalition beat Iraq in Desert Storm without targeting the Iraqi public because the populous was not a decision-making power. However, a commander must *consider* all the centers, even if not *attacking* them. Choosing a strategy with a myopic point of view can lead to defeat. US efforts to signal the North Vietnamese government by bombing selected targets and attriting the insurgents beyond a hypothetical replacement capability *did not address other centers of gravity*. It was very unlikely that South Vietnam would remain free without influencing the people of South Vietnam, the stability of South Vietnam's government and North Vietnam's alliance with China.

#### Is Center of Gravity Based on the Type of Conflict (dilemma 8)?

Colonel Herrick, emphasizes the security of the insurgents is the center of gravity. He

claims that strategies aimed at the people lack sufficient orientation on the enemy to provide a basis for developing a definitive strategy for counter-insurgency.<sup>26</sup> Herrick correctly implies that the interaction between belligerents may determine the dominant center of gravity. However, requiring a focus only upon the security of the insurgents misses the mark.

The weaker adversary will rely heavily upon the alliance center of gravity. Further, during an insurgency, the strategist should view the people as a dominant center of gravity, a sort of ally to the insurgents. History has shown that during an insurrection, the opponents are competing for allegiance, or at least neutrality, from the same dominant center of gravity -- the people. Also, an external alliance is often a required, dominant center of gravity for a successful insurgency. The cases presented below are intended to illustrate that, (1) dominant centers can arise from the relationship between belligerents, (2) people and allies become dominant during an insurgency, and (3) massive effort does not compensate for poor focus.

In the early 1980's, El Salvador conducted a counter-insurgency that attacked the correct centers of gravity in a balanced manner. Insurgents relied on aid from Cuba, Nicaragua and eastern block countries for sustainment. Severe poverty in El Salvador coupled with an unresponsive government provided the catalyst for popular support of the insurgents.<sup>27</sup> The insurrection was gaining momentum until the El Salvadoran government offensively; (1) conducted a campaign to win the support of the people that included jobs, education, health reform, economic aid and protection from insurgents, (2) pursued the military center of gravity (insurgents), and (3) attacked the alliance (interdicted foreign aid). Defensively, citizens were protected to avoid civilian casualties from either insurgent or government troops. Influencing these three centers of gravity reached the root sources of power for the insurrection and converted tactical success into strategic victory.

In 1988, the Soviets withdrew from Afghanistan, admitting to almost 50,000 casualties of war. They were unable to beat the Mujahdeen insurgents, unable to counter the level of aid

from Pakistan and the US, and unable to overcome the Soviet peoples growing opposition to the war.<sup>28</sup> The Mujahdeen were seriously outgunned but were able to survive years of conflict with the support of the people (although it was tribal rather than national based support) and external allies. Soviet strategy offensively pursued only the military center of gravity (insurgents). Defensively, the Soviets protected their own military center with armor, large force movements and garrisons. Soviet troops were able to control only major towns and routes, never attempting reformation of a government that was widely viewed as a Soviet puppet and myopically ignoring the satisfaction of the Afghan majority. The one dimensional Soviet strategy was the antithesis of the balanced and focused El Salvadoran strategy. The Soviets focused primarily on the security of the insurgents, failing to effectively influence the dominant centers of gravity that emerged from the stronger/weaker relationship (the alliance) and the insurrection (the Afghan people). The tremendous Soviet effort could not overcome their inability to adequately influence the root sources of power. Further, they failed to protect a center of gravity that dominated the end of the conflict -- the Soviet people.

#### Does the Center of Gravity Change Over Time (dilemma 9)?

The dominant center of gravity does definitely change over time. The Korean war offers a graphic example. In June 1950, North Korea attacked the South. US forces entered the conflict to preserve an independent South Korea. As the North Koreans fell back under the weight of the American counter-attack, US war aims grew. The American advance approached the Yalu River, and a new dominant center of gravity became apparent when 300,000 Chinese volunteers entered the war as allies of North Korea. US war aims rached down, hoping for a negotiated peace, in response to the new relentless center of gravity. The Chinese stalled the peace talks for months until a new center of gravity dominated. Newly elected President Eisenhower threatened the use of nuclear weapons which prompted the Chinese and North

Koreans to quickly settle for peace. The new US government became dominant because it made a credible threat, showing a willingness to follow through, that provided the impetus to end the conflict.

To summarize, the centers of gravity are too complex to quantify and predict their dominance as if it were an algebraic formula. However, we have identified some tendencies worthy of review. There may be more than one dominant center of gravity. There is not a specific hierarchy, but based on the character of the nation, there may be predictable tendencies. The commander must consider all four centers of gravity but may not need to attack them all to achieve victory. Failing to recognize a dominant center of gravity and/or inadequately influencing it leads to defeat. A dominant center may emerge as a result of the type of conflict and comparative strength of the opponents. Finally, the dominant center can shift subtly or radically over time.

#### Counter-Point

It could be argued that applying only these four centers of gravity to every conflict is ignoring important factors. For instance, occupying the opponents country against their will or blockading the economy until the nation is unable to function or fight are proven roads to victory. Why aren't territory and the economy examples of centers of gravity?

War is created in the minds of men. The occupation of enemy territory or destruction of the economy will not win the war if the true centers of gravity effectively deal with the losses. In 1962, the FLN insurgents gained Algerian independence from the French without having the ability to consistently occupy any of the country. The British prevailed over the German U-boat blockade during World War II because of allied support and perseverance. Had England decided the loss of shipping was too severe to continue the war, the U-boat campaign would have been decisive -- in its influence on the government center of gravity.

The centers of gravity are the keys to victory. Destroying a supply dump, interrupting communications or taking the hilltop doesn't win the war unless it has the desired effect on the true centers of gravity. The ultimate decision rests in the minds of men.

Joint doctrine would lead one to believe that the special capability (dilemma 10) provided by nuclear weapons or American industrial capacity is a center of gravity. The nuclear weapons program made significant contributions during the Cold War and the industrial base was instrumental during World War II. However, the theme remains, that it all depends on what men do with them. The United States had a nuclear capability during the course of the Korean war, but the presence of these weapons did not spur the Chinese to pursue a peace settlement. It was only the willingness of the US government to use the weapons that conferred power to them. The weapons were a characteristic of the government center of gravity, and no more.

As a characteristic of the American people's will power, industrial capacity enabled the United States to win the *Second World War*. US industrial capacity was even greater in the 1960's, dwarfing North Vietnam's capability. However, the American people were not inclined to mobilize for a total commitment and the government was unwilling to commit the nation's capacity to an extent necessary to win the Vietnam war. United States industrial capacity did not decide the outcome in Vietnam because the centers of gravity elected not to allow it to. Industrial capacity, like nuclear weapons, is a capability, a characteristic, but not a center of gravity.



CHAPTER IV  
JOINT WARFARE

Operational Art:

The CINC is primarily responsible for achieving strategic goals through tactical success by providing his vision of the campaign and use of operational art. At the heart of operational art process are the following questions that the CINC must answer.<sup>29</sup>

- (1) What military (or related political or social) condition must be produced in the operating area to achieve the strategic goal? (ends)
- (2) What sequence of actions is most likely to produce that condition? (ways)
- (3) How should the resources of the joint force be applied to accomplish that sequence of actions? (means)
- (4) What is the likely cost or risk to the joint force in performing that sequence of actions?

Just as the operational level achieves strategic victory through tactical success, defeating the center of gravity links tactical success to strategic victory. Before the commander can answer the first question, he must have a clear and correct understanding of the centers of gravity. Joint doctrine agrees that the operational commander must determine the dominant centers of gravity but, as noted above, provides a misleading basis for understanding. Current doctrine implies a center of gravity may include a near limitless laundry list of enemy features. This misunderstanding of center of gravity is a critical flaw and the first step upon which all other decisions will be based.

The importance of center of gravity also acquires a, sort of, academic background status as doctrine discusses the actual decision-making process outlined above. Center of gravity is easily lost with a myriad of other principles, fundamentals and tenets of war that become a potentially confused body of lessons learned, each having the possibility of becoming the priority during decision-making. Attacking the center of gravity is sometimes confused with an

ill advised strength verses strength tactic. It is seen as competing with the principles of war. The accepted principles of war are objective, mass, maneuver, offensive, simplicity, surprise, security, economy of force and unity of command. The CINC and his subordinates can apply these principles. They can attack decisive points and vulnerabilities. There need not be confusion if the principles are understood to guide the CINC in the decision of *how* to fight (questions (2) and (3)). Whereas, center of gravity is concerned with *what* to influence (question (1)).

The essence of question (1) above should be to identify the dominant centers of gravity and determine what course of action, from a broad range of options available, is likely to accomplish the goal most effectively. Unfortunately, the guidance contained that question doesn't focus on centers of gravity. Further, it is skewed toward the military solution in spite of joint doctrine identifying economic, diplomatic and informational influences as options. When discussing operational art and the operational level of conflict, these additional options are not included.<sup>30</sup> Doctrine can aid the commander to a higher degree by restating the process of determining the end state as follows: **(1) To what extent must specific centers of gravity (people, government, military and alliance) be influenced utilizing diplomatic, economic, informational, or military means to attain an end state that achieves the strategic goal?**

This statement is more useful in determining the preferred and more frequent course of action -- deterrence. The value of effective military force shouldn't be discounted, but as the Weinberger doctrine states, use of military force must be America's last resort. Examining a broader range of influences while narrowing the focus upon the dominant centers of gravity is critical to addressing deterrence. The precision of the statement above lends itself to the broad range of circumstances the CINC may encounter. It also ensures that once deterrence has given way to intervention, the CINC maintains this simultaneously broad, yet, focused perspective. The following case illustrates the danger of the operational commander losing that

focus.

In December 1989, operation JUST CAUSE was launched to protect Americans in Panama, protect American rights and interests under the Panama Canal Treaty, apprehend Manuel Noriega and restore Panamanian democracy.<sup>31</sup> These policy goals were translated into the following JCS strategic objectives. "To ensure: continuing freedom of transit through the Panama Canal, freedom from Panamanian Defense Force (PDF) abuse and harassment, freedom to exercise US treaty rights and responsibilities, the removal of Noriega from power in Panama, the removal of Noriega's cronies and accomplices from office, the creation of a PDF responsive to and supporting of an emergent democratic government in Panama, and a freely elected GOP (Government of Panama) which is allowed to govern.<sup>32</sup> The CINC translated this policy and strategic guidance into the following operational objectives: (1) Destroy the combat capability of the PDF forces and seize the lines of communication over which they could be reinforced; (2) seize the facilities essential to the operation of the Panama Canal; and (3) apprehend Noriega and rescue prisoners held by him.<sup>33</sup>

Operation PROMOTE LIBERTY was a follow-on, separate campaign aimed at restoration of order and transition to a legitimate Panamanian government. This operation was poorly conceived because it didn't fall under a single command and the concept lacked the attention of the CINC. In preparing for the combined operations, General Thurman (USCINCSOUTH) gave no guidance regarding PROMOTE LIBERTY because of his preoccupation with the goals established for JUST CAUSE.<sup>34</sup>

Yes, the intervention was a success but the mission was not complete. The restoration of a democratic Panamanian government were political and strategic goals. However, it was conspicuously absent in USCINCSOUTH's operational goals. Had USCINCSOUTH examined the mission in terms of question (1) as restated above, he may have broadened his view of the centers of gravity and the tools available to him.

General Thurman failed to consider the people of Panama, the Panamanian government (post Noriega) and the non-military influences available to him. The process contained in PROMOTE LIBERTY should have been part of the concept for JUST CAUSE. Had he considered these centers of gravity, the correct questions may have been asked and the restoration of Panamanian democracy may not have been the forgotten piece to the puzzle. The eventual success of restoring order in Panama was not due to expert leadership, vision or planning. It was due to initiative and cooperation among talented subordinates as multiple organizations scrambled to pick up the pieces of JUST CAUSE.

Joint Warfare and Center of Gravity:

Research of center of gravity provides insight into the criticality of the joint concept to America's defense. As noted above, none of the service doctrines agree categorically regarding the definition of center of gravity. Joint doctrine, therefore, must be the focal point. Appropriately, the joint commander is the operational commander and, of all echelons, is most concerned with centers of gravity. Are individual services suited to defeating centers of gravity?

The Army is most suited to parallel joint doctrine. However, underpinning Army doctrine is concept that "the ultimate purpose of war is the destruction of the enemy's armed forces and the will to fight."<sup>35</sup> This a perfect concept for an army to possess, but it is too narrow for the CINC employing joint assets. It is a narrow view such as this which causes the myopia that occurred prior to operation PROMOTE LIBERTY.

The USMC definition of center of gravity as a critical vulnerability is understandable for the Corps. It also exposes the fact that USMC doctrine possesses a tactical focus. Turning attention from the true center of gravity in favor of critical vulnerabilities is turning attention from the key ingredient in the operational level of war -- center of gravity.

possesses a tactical focus. The historical dilemma regarding the ability of a navy to contribute to the strategic objectives, by reaching a center of gravity, obviously continues in today's navy. The failures of navies in the past to independently win wars has led to the current emphasis on projection of power ashore "from the sea." Whether the US Navy can tailor itself to independently influence centers of gravity with this approach, and win wars, is central to the issue of whether the navy is predominantly an enabling, tactical force or one with conventional strategic capability.

The USAF has tailored itself to have strategic influence. Their concept is that centers of gravity can be attacked directly with aircraft at less cost and more quickly than the conventional land attack approach. The Air Force points to Desert Storm as a case in point. While it does have validity, this doctrine tends to over-simplify the complex, dynamic and broad interaction that exists among centers of gravity. Without denying the success of the air war on front line Iraqi troops, there remains skepticism over the independent capability of this one asset to have effect over centers of gravity sufficient to win the war.

In summary, the joint concept is appropriately a strategic and operational concept because of its contribution as an entity which can focus primarily on the enemy centers of gravity. The synergistic effect of the utilization of the combined services with the broader focus of diplomatic, economic and informational warfare is clearly vital. The concept of center of gravity is the essence of joint warfare, operational art and the operational level of war. In this regard, the joint mission is not adequately filled by any other single organization.

## CHAPTER V

### CONCLUSION AND RECOMMENDATIONS

"The first, the supreme, the most far-reaching act of judgement that the ...commander (has) to make is to establish...what kind of war on which they are embarking; neither mistaking it for, nor trying to turn it into something that is alien to its nature."<sup>36</sup>

At the heart of the nature of war is the underlying centers of gravity. The Vietnam war illustrated that the United States is not immune to misinterpreting the nature of war and its centers of gravity. Center of gravity is important because thousands of American sons, brothers and fathers have been lost in war while misunderstanding its nature.

The contradictions and dilemmas were reviewed and a definition of center of gravity proposed. This definition attempts to contain the essence of war so that it the commander may understand its nature without a veil of parochial bias or too narrow of a military focus. Center of gravity is a concept that fits hand-in-glove with the mission of the operational commander -- the CINC. But, even today, center of gravity is widely misunderstood, even in operational level doctrine. The center of gravity has been clarified because of its importance and demonstrated inadequate underpinnings in current doctrine.

The potential center of gravity in any conflict is a nation's government, military force, people and alliance. The operational commanders job is to provide the vision to construct a campaign that exerts enough force on the appropriate centers to achieve victory. I recommend that joint doctrine redefine center of gravity and restate question (1) of the decision-making guidance as noted above. To combat the fog of war, we must clarify the problem (people, military, government or alliance) and the solutions (military force, diplomacy, economic or informational influence). Doctrine must be improved with the goal of lessening the chance of another PROMOTE LIBERTY or, in the extreme, another Vietnam.

## NOTES

1. H.G. Summers, Jr., Colonel, USA, (Ret.), On Strategy: The Vietnam War in Context (Carlisle Barracks, Pa.: Strategic Studies Institute, US Army War College, 1983), p. 1.
2. Carl von Clausewitz, On War, trans. and ed. by Michael Howard and Peter Paret, (Princeton, NJ: Princeton University Press, 1984), p. 595-596.
3. Michael I. Handel, Masters of War: SunTzu, Clausewitz, Jomini (London: Frank Cass, 1992), p. 48.
4. Ibid., p. 48.
5. US Army, Operations, FM 100-5, (Washington: 1993), p. 6-7.
6. US Joint Chiefs of Staff, Basic National Defense Doctrine (Proposed Final), Joint Pub 0-1, (Washington: 1991), p. 34.
7. US Air Force, Basic Aerospace Doctrine of the United States Air Force (Washington: 1992), p. 9.
8. Robert M. Herrick, Colonel, USA, "What is to be Done -- Counter-Insurgency," The Operational Art of War Across the Spectrum of Conflict, 1 February, 1987, p. 63.
9. John A. Warden III, Colonel, USAF, Air Campaign: Planning for Combat, (Washington: Washington National Defense University Press, 1988), p. 9-10.
10. Ibid, p. 138.
11. John A. Warden III, Colonel, USAF, "Employing Air Power in the Twenty-first Century," The Future of Air Power in the Aftermath of the Gulf War, Richard H. Schultz Jr. and Robert L. Plattzgraff Jr., ed., (Maxwell AFB, Al.: Air University Press, 1992), p. 65.
12. US Marine Corps, Warfighting, FMFM 1, (Washington: 1989), p. 85.
13. Ibid, p. 12.
14. Lawrence L. Izzo, Lieutenant Colonel, USA, "The Center of Gravity is not an Achilles Heel," Military Review, January 1988, p. 76.
15. Operations, FM 100-5, p. 6-8.
16. Carl von Clausewitz, p. 89.

17. US Joint Chiefs of Staff, Joint Warfare of the Armed Forces, Joint Pub 1, (Washington: 1991), p. 39.
18. Carl von Clausewitz, p. 75.
19. John A. Warden III, Colonel, USAF, "Employing Air Power in the Twenty-first Century," p. 65.
20. Mark Clodfelter, The Limits of Air Power (London: Collier MacMillan, 1989), p. 117.
21. Bernadotte E. Schmidt and Harold C. Vedelter, The World Crucible, 1914-1919 (New York: Harper and Row, 1984), p. 313.
22. Steven T. Ross, European Diplomatic History, 1789-1815, France Against Europe (Malabar, Fl.: Steven E. Kreiger, 1981), p. 80.
23. John Keegan, The Second World War (New York: Penguin, 1980), p. 576.
24. Ibid, p. 577.
25. Michael H. Hunt, "Beijing and the Korean Crisis, June 1950-June 1951," Political Science Quarterly, Vol. 107, No. 3, Fall 1992, p. 457.
26. Robert M. Herrick, Colonel, USA, p. 62.
27. John D. Waghelstein, Colonel, INF, El Salvador: Observations and Experiences in Counterinsurgency (Carlisle Barracks, Pa.: US Army War College, 1985), p. 32.
28. Theodore L. Eliot Jr., Gorbachev's Afghan Gambit, National Security Paper No. 9, (Washington: Institute of Foreign Policy Analysis, 1988), p. 3-4.
29. US Joint Chiefs of Staff, Doctrine for Joint Operations, Joint Pub 3-0, (Washington: 1993), p. II-4.
30. Ibid, p. GL-12.
31. Lorenzo Crowell, "The Anatomy of JUST CAUSE: The Forces Involved, the Adequacy of Intelligence, and Success as a Joint Operation," Operation Just Cause: The US Intervention in Panama, Bruce W. Watson and Peter G. Tsouras, ed., (Boulder Co., San Francisco Ca., and Oxford: Westview Press, 1991), p. 69.
32. CJCS message, DTG 182325Z Dec 89 quoted in William C. Bennett, Lieutenant Colonel, USA, "JUST CAUSE and Principles of War," Military Review, March 1991, p. 3.



33. Lorenzo Crowell, p. 69.

34. John T. Fishel, The Fog of Peace: Planning and Executing the Restoration of Panama. (Carlisle Barracks, Pa.: Strategic Studies Institute, US Army War College, 1992), p. 25.

35. Operations, FM 100-5, p. 6-8.

36. Carl von Clausewitz, p. 88.

## BIBLIOGRAPHY

- Bennett, William C., Colonel, USA. "JUST CAUSE and the Principles of War." Military Review. March 1991, pp. 2-13.
- Clausewitz, Carl von. On War. Howard, Michael and Paret, Peter, trans. and ed. Princeton, NJ: Princeton University Press, 1984.
- Clodfelter, Mark. The Limits of Air Power. London: Collier MacMillan, 1989.
- Crowell, Lorenzo. "The Anatomy of JUST CAUSE: The Forces Involved, the Adequacy of Intelligence, and Success as a Joint Operation." Operation JUST CAUSE: The US Intervention in Panama. Bruce W. Watson and Peter G. Tsouras, ed.. Boulder Co., San Francisco Ca., and Oxford: Westview Press, 1991, pp. 67-97.
- Eliot, Theodore L., Jr. Gorbachev's Afghan Gambit. National Security Paper No. 9. Washington: Institute of Foreign Policy Analysis, 1988.
- Fishel, John T. The Fog of Peace: Planning and Executing the Restoration of Panama. Carlisle Barracks, Pa.: Strategic Studies Institute, US Army War College, 1992.
- Handel, Michael I. Masters of War: Sun Tzu, Clausewitz, Jomini. London: Frank Cass, 1992.
- Herrick, Robert M., Colonel, USA. "What is to be Done -- Counter-Insurgency." The Operational Art of War Across the Spectrum of Conflict. 1 February 1987, pp. 59 -78 .
- Herring, George C. America's Longest War: The United States and Vietnam. New York: Random House, 1985.
- Hunt, Michael H. "Bejing and the Korean Crisis, June 1950-June 1951." Political Science Quarterly. Vol. 107, No. 3, Fall 1992, pp. 453-478.
- Izzo, Lawrence L., Lieutenant Colonel, USA, "The Center of Gravity is not an Achilles Heel." Military Review. January 1988, pp. 72-77.
- Keegan, John. The Second World War. New York: Penguin, 1980.
- Krepinevich, Andrew F., Jr. The Army and Vietnam. Baltimore, Md.: The Johns Hopkins University Press, 1986.
- Lacouture, Jean. De Gaulle. The Ruler 1945-1970. New York: Norton, 1990.
- MacDonald, Callum A. Korea: The War Before Vietnam. New York: The Free Press, 1987.

- Macksey, Piers. "British Strategy in the American War for Independence." The Yale Review. LII, June 1963, pp. 539-557.
- Palmer, R.R. and Colton, J.A. History of the Modern World. 5th ed. New York: Alfred A. Knopf, 1978.
- Ross, Steven T. European Diplomatic History, 1789-1815, France against Europe. Malabar, Fl.: Steven E. Kreiger, 1981.
- Schmidt, Bernadotte E. and Vedelter, Harold C. The World Crucible, 1914-1919. New York: Harper and Row, 1984.
- Summers, H.G., Jr., Colonel, USA, (Ret.). On Strategy: The Vietnam War in Context. Carlisle Barracks, Pa.: Strategic Studies Institute, US Army War College, 1983.
- Sun Tzu. The Art of War. Griffith, Samuel B., trans. Oxford: Oxford University Press, 1980.
- US Air Force. Basic Aerospace Doctrine of the United States Air Force. Washington: 1992.
- US Army. Operations. FM 100-5, Washington: 1993.
- US Joint Chiefs of Staff. Joint Warfare of the Armed Forces. Joint Pub 1, Washington 1991.
- \_\_\_\_\_. Basic National Defense Doctrine (Proposed Final). Joint Pub 0-1, Washington: 1991.
- \_\_\_\_\_. Doctrine for Joint Operations. Joint Pub 3-0, Washington: 1993.
- US Marine Corps. Warfighting. FMFM 1, Washington: 1989.
- Waghelstein, John D., Colonel, INF. El Salvador: Observations and Experiences in Counterinsurgency. Carlisle Barracks, Pa.: US Army War College, 1985.
- Warden, John A., III, Colonel, USAF. Air Campaign: Planning for Combat. Washington: Washington National Defense University Press, 1988.
- \_\_\_\_\_. "Employing Air Power in the Twenty-first Century." The Future of Air Power in the Aftermath of the Gulf War. Schultz, Richard H., Jr. and Plattzgraff, Robert L., Jr., ed. Maxwell AFB, Al.: Air University Press, 1992.
- Weigley, Russell F. The American Way of War. Bloomington, In.: Indiana University Press, 1973.