

①

AN OPTIMUM METHOD OF WARGAMING A
TACTICAL AND OPERATIONAL COURSE OF ACTION
AS AN INTEGRAL PART OF A CORPS COMMANDER'S
AND G3's ESTIMATE OF THE SITUATION IN A
TIME-COMPRESSED ENVIRONMENT

A thesis presented to the faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE

by
W. Edward Shirron, MAJ, USA
B.A., Henderson State University, 1969

DTIC
ELECTE
NOV 25 1985
S D
B

Fort Leavenworth, Kansas
1984

Approved for public release; distribution is unlimited.
Requests for this document must be referred to U.S. Army
Command and General Staff College, ATTN: ATZL-SWD-GD,
Fort Leavenworth, Kansas 66027

85-3249

AD-A161 624

DTIC FILE COPY

AN OPTIMUM METHOD OF WARGAMING A
TACTICAL AND OPERATIONAL COURSE OF ACTION
AS AN INTEGRAL PART OF A CORPS COMMANDER'S
AND G3'S ESTIMATE OF THE SITUATION IN A
TIME-COMPRESSED ENVIRONMENT

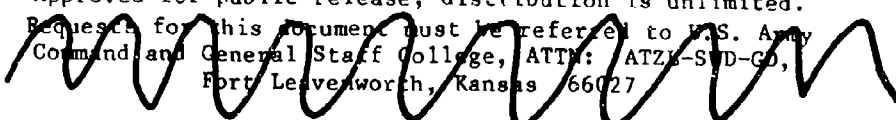
A thesis presented to the faculty of the U.S. Army
Command and General Staff College in partial
fulfillment of the requirements for the
degree

MASTER OF MILITARY ART AND SCIENCE

by
W. Edward Shirron, MAJ, USA
B.A , Henderson State University, 1969

Fort Leavenworth, Kansas
1984

Approved for public release; distribution is unlimited.
Requests for this document must be referred to U.S. Army
Command and General Staff College, ATTN: ATZL-SWD-GO,
Fort Leavenworth, Kansas 66027



MASTER OF MILITARY ART AND SCIENCE

THESIS APPROVAL PAGE

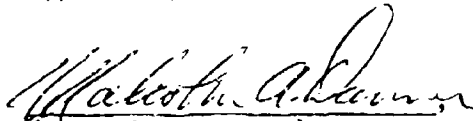
Name of candidate

W. Edward Shirron, Major, USA

Title of thesis:

An optimum method of wargaming a tactical and operational course of action as an integral part of a corps commander's and G3's estimate of the situation in a time-compressed environment.

Approved by:


(COL Mal Danner, MA)

Thesis Committee Chairman


(COL Huba Wass de Czege, MPA)

Member, Graduate Faculty


(LTC Hal Winton, Ph.D)

Member, Graduate Faculty

Accepted this 9th day of October 1984 by Philip J. Brookes,
Director, Graduate Degree Programs

The opinions and conclusions expressed herein are those of the student author and do not necessarily represent the views of the U.S. Army Command and General Staff College or any other governmental agency. (References to this study should include the foregoing statement.)

ABSTRACT

An optimum method of wargaming a tactical and operational course of action as an integral part of a corps commander's and G3's estimate of the situation in a time-compressed environment, by Major W. Edward Shirron, USA, 101 pages.

This study establishes a base analysis for the determination of a method for wargaming both tactical and operational level courses of action. It orients on situations involving a compression of available time in which to decide on and execute the course of action.

The study establishes the US Army estimate process as a base method for review and comparison. A review of the historical development of decisionmaking is included, as well as a look at the process used within other armies. The author studies the AirLand Battle doctrine, and the Corps' role as a part of the doctrine. This includes a review of the three levels of war--Strategic, Operational, and Tactical.

After describing the estimate process itself, and analyzing the "wargaming paragraphs" of the process, the author then presents other methods of wargaming. Studied and analyzed are models available to the decisionmaker that reflect varying degrees of comprehensiveness and force orientation. To provide a "picture" of wargaming a corps fight on tomorrow's battlefield, a notional corps in a fictitious battle scenario is presented, with a discussion of how the corps organizes for and fights the battle from the corps commander's perspective. The METT-T method is used as a descriptive vehicle.

By comparing all of the discussed models against six criteria for wargaming, an analysis is made of each method. Criteria used are: staff integration; mental visualization; timeliness; use of significant combat factors; constant and continuous process; and continuing application.

The analysis reveals that although no set method of wargaming can be prescribed, a corps level decisionmaker has certain factors of Mission, Enemy, Terrain, Troops Available, and Time (METT-T) that will be considered.

iii

Delete the referral part of Statement A per Ms. Marilyn Harre, Army Command and General Staff College, Dir. of Grad. Degree Program

Approved	
NCS	
PDC	
Uncl	
Just	
By	
Dist	
Avail	
Avail	
Dist	Special
A-1	

QUALITY
CHECKED

TABLE OF CONTENTS

	Page
Thesis Approval Page.....	ii
Abstract.....	iii
Table of Contents.....	iv
 Chapter	
1. INTRODUCTION.....	1
Introduction.....	1
Statement of the Problem.....	2
Background--Where are we now?.....	2
Where do we want to go?.....	5
How are we going to get there?.....	7
2. MILITARY DECISIONMAKING.....	11
Introduction.....	11
The U.S. Army and Military Decisionmaking--	
A History.....	12
The Military Decisionmaking Process.....	15
The Estimate of the Situation.....	18
Great Britain--An Appreciation.....	21
The Federal Republic of Germany--Command and	
Control System.....	25
The Russian View.....	27
Summary.....	30
3. DECISIONMAKING IN PRACTICE.....	34
Introduction.....	34
Doctrine - Teachings.....	34
A New Model.....	47
The Corps in the Field Today.....	54
Summary.....	57
4. THE REQUIREMENTS OF TOMORROW'S BATTLEFIELD.....	59
Introduction.....	59
The Corps.....	59
The Threat.....	62
The Battle.....	63

The Scenario.....	65
The Plan.....	65
A Tactical/Operational Decision.....	73
Summary.....	77
5. AN ANALYSIS.....	79
Introduction.....	79
Criteria.....	80
The US Army Estimate of the Situation.....	82
The British Appreciation.....	83
The German System.....	83
The Russian System.....	84
The Wass de Czege Combat Power Model.....	85
METT-T.....	85
A Corps War Gaming Model.....	87
Summary.....	90
6. CONCLUSIONS AND RECOMMENDATIONS.....	91
Introduction.....	91
Review.....	91
Conclusions.....	95
Recommendations.....	96
BIBLIOGRAPHY.....	98
INITIAL DISTRIBUTION LIST.....	101

CHAPTER 1

INTRODUCTION

1. INTRODUCTION.

Commanders and staff officers on today's battlefield are faced with an extremely complex environment. The ever-changing technologies of weapon systems; surveillance and reconnaissance methods; command, control, and communications systems; and armament lethalties all serve to make every thought, action, decision, and reaction of each individual and unit vital. The unit that is led and served by the best commanders and staff officers has an advantage from the outset. When the realities of the battlefield are simultaneously forged against relatively equal opponents, the side that thinks and acts quickly and decisively, however, supposes distinct capabilities on the part of staffs and commanders. Decisive thought and action require information, assessment, analysis, and comparison. War gaming is simply thinking systematically about the chain of events set off by various courses of action. What is necessary is a guide for systematic thinking. The staff and commander have to be able to gather the pertinent information, formulate different ways of responding to the situation, analyze the various methods of response, and then act on the recommendation or decision.

Many variables influence the individual commander's and staff officer's capabilities. Time, the stress of battle, fatigue, the enemy situation, weather--all of these factors and many more have varying degrees of impact on the decisionmaker. All serve to enhance the criticality of the decision on the units involved. The more that can be done, both before combat and during the battle, to give the decisionmaker an edge, the better. This is especially true for those involved in making recommendations and decisions for larger units, such as a corps. The mass of combat power, the criticality of the use of that combat power on the overall battle or campaign, and the significance of the decisions made all demand a precision and exactness of the decisionmaker that is unparalleled. The payoff is too big for anything less.

That is the reason for this thesis. It is not enough to develop new weapon systems, doctrine, and leadership techniques to win in battle. They are worthless if the recommendations and decisions made are not based on sound decisionmaking principles and methods.

2. STATEMENT OF THE PROBLEM.

To determine the optimum method of wargaming a tactical and operational course of action as an integral part of a corps commander's and G3's estimate of the situation in a time-compressed environment.

3. BACKGROUND--WHERE ARE WE NOW?

The AirLand Battle doctrine envisions the application of the tactical and operational theory and art of war. The US Army's battle

corps are the primary units of employment of the combination of these two levels of warfighting. As a system for determining how the commander's and staff's of these corps, as well as other units, will plan for and conduct this warfighting, the US Army currently endorses a standardized military decisionmaking process. Promulgated in Field Manual (FM) 101-5, and taught in the service educational system and institutes, this military decision cycle is an excellent vehicle for the unit's receipt of a mission, the gathering of information, and situational analysis that lead to relatively good recommendations and decisions for actions to be taken. The estimate of the situation, a procedural step of the military decisionmaking process, is a key factor in the decisionmaker's cycle. The estimate of the situation is normally performed by the staff officers and the commander of the unit.

The estimate of the situation, while applicable for use at all unit levels, is mostly suitable for higher organizational headquarters. It is most often found in use at division and corps levels. This is due, mainly, to the planning time available and the functions of the units on the battlefield. The estimate of the situation is normally found in a written format, with each staff officer providing his own estimate of the situation as it applies to his staff area of responsibility. The commander's estimate is the same as the G3's, except the commander's estimate results in a decision instead of a recommendation.

The estimate process includes steps that analyze and compare various feasible courses of action. Each course of action is individually wargamed to assist in determining which course of action best supports the situation. This wargaming process is critical. Wargaming is the evaluation of alternatives, or courses of action, that will accomplish the mission. The decisionmaker imagines how the course of action will actually progress, how it could develop, how it can best be carried out by his unit. This process includes risk analysis, comparing the combat power of both sides in imaginary battle. Other factors are also considered. These include any factors the decisionmaker believes might significantly affect the success of the friendly course of action. Each factor would be wargamed against each alternative. This wargame fights each course of action from start to finish, and, by identifying critical decision factors, and significant risks, helps the decisionmaker arrive at a "best" tactical solution.

Wargaming is an art rather than a set procedural outline. The wargaming art, however, is so important to the decision cycle that a requirement exists for a defined system of wargaming, one that, when followed, will lead to a sound tactical decision. Some wargaming variations currently exist. They include METT-T (Mission, Enemy, Terrain and Weather, Troops Available, and Time), Matrix Comparison and Evaluation, Box Method, Sketch Notes Method, and Justification Method. None of these variations is standard, and the methods are not

defined procedurally, but rather exist as guides for individual adaptation and usage. In some cases, these "methodologies" are actually only statements of criteria for the evaluation of a course of action, and fall somewhat short of being pure methods or systems for wargaming.

With the development of the AirLand Battle doctrine, the planning and conduct of the corps fight has become even more critical. The corps commander and his staff must integrate on the battlefield a wide variety of factors to succeed. The wargaming of courses of action is a vital step in this integration. However, at the corps level, the current wargaming process is the most elusive. Since the departure from teaching corps tactics at the Command and General Staff College in 1974, the doctrine governing the tactical decisionmaking process at corps has become vague and elusive. Little is known about how and why a corps fights the way it does. What does a corps commander or G3 use as significant factors? What mental process does he use?

4. WHERE DO WE WANT TO GO?

Why is a good wargaming procedure needed? The military decisionmaking process, to include the estimate of the situation, appears to be generally valid. The problem is a lack of knowledge in how the wargaming can best be done to lead to better tactical decisions. Just as the troop leading steps are part of a quick,

easily remembered process that serves lower-unit leaders, the estimate of the situation should do the same for more advanced units. It does not.

While a cookie-cutter approach is certainly not wanted, a detailed, comprehensive mental wargaming process is. Much more importantly, it is needed.

So where do we want to go? We want to establish a wargaming concept that can be used by corps commanders and G3's, using the estimate of the situation and the decisionmaking cycle as a foundation. The resulting system will be a mental process, not a written war game, that is applicable to all types of corps missions--offensive and defensive/tactical and operational. The wargame process will not define the operational art or theory of war, and will not determine the doctrine of either. It is rather intended for use in combat when decisions have to be made in relatively short time-frames. It is not intended to support the long-range, deliberate planning process. It is also not a wargame as a game of exercise, but a concept, a visualization. The amount of time available, in a compressed environment, is different for a tactical decision as compared to an operational decision. This thesis will define compressed-time for a tactical decision to be 24 hours or less for decisionmaking, and 72 hours or less for an operational decision. While the system within this thesis is aimed at the corps commander and G3, it undoubtedly will have application to other unit levels and staff areas.

5. HOW ARE WE GOING TO GET THERE?

a. Assumptions. Several basic assumptions are required. First, it is assumed that there will be a continued requirement for wargaming, and second, that any method or system is adaptable to evolution. While technology and changes will certainly influence the decisionmaking cycle, there will always be a need for wargaming. Additionally, because technology continues to allow the decision cycle to progress at greater speeds with more comprehensive and timely information, the wargaming method must be evolutionary. This supports the requirement that it be a mental process. Third, while wargaming games and exercises do exist that effectively support plans evaluation and concept testing, this wargame method applies solely to the thought process as it is related to the estimate of the situation. Some correlation can be assumed, but the objectives and purposes are different. Fourth, it is assumed that the time available to the decisionmaker will fit the method, in an expanded or compressed frame. Lastly, it is assumed that the system to be designed is teachable and adaptable to US Army doctrine and practice.

b. Methodology. The methodology for this thesis follows the logic of the estimate of the situation process itself.

Chapter 2 will be a review of the background of the military decisionmaking process, as well as a review of the estimate of the situation. This will provide a historical trace of the evolution of tactical decisionmaking and the application of military judgment to

support a tactical situation. Descriptions of the tactical decisionmaking systems used by the armies of other countries, to include a review of the Soviet decision cycle and wargaming method will be included. The purpose of chapter 2 is to establish the facts, to lay the historical framework, supplemented by other armies' methods, for a look at how the US Army decides and wargames today, and provide a foundation for how to do it tomorrow.

Chapter 3, using the historical groundings as a foundation, reviews the decision process and wargaming procedures of today. Discussed will be the various methods and systems practiced and taught. The basis for this chapter will center around the wargaming procedures that are written down and organized, as well as the results of interviews and discussions with former and serving corps commanders and staff officers, military scholars, and doctrinal writers.

Chapter 4 will provide a discussion about the requirements for the US Army, and its battle corps, for the future. The wargaming method has to suit the battlefield parameters of today and tomorrow. This is a METT-T for the Army, and its effect on wargaming.

Chapter 5 then takes these procedures the methods studied, and analyzes them. This chapter is the most critical chapter of the thesis. The analysis will discuss the methods against the criteria that defines the making of a good, sound tactical decision. The wargaming criteria and standards of judgment used will be:

- o Staff integration.
- o Mental visualization--fight the battle.

- o Timeliness--wargaming and application.
- o Use of significant combat factors.
- o Constant and continuous process.
- o Continuing application--evolution.

Staff integration will measure the input and analysis provided by staff officers, commanders, and agencies exclusive of the corps commander and G3. The method visualization measurement will look at the method's capability to allow the decisionmaker to "fight the battle." Timeliness is solely a determination of how a method adapts itself to the time-compressed scenario, either tactical or operational, and then how is it transferred to timely execution. In measuring the use of significant combat factors, no effort will be made to define a standard list, but to ensure that each method is tested against the inclusion of the step itself in the analysis process. The criterion of measuring a constant and continuous process is to determine the adaptability and flexibility of a method--using it properly and effectively at any point in the battle. The last criterion, continuing application, is a test to determine the worth of the method's application in the future. The chapter will contain a synthesis of the current "how to's" of chapter 3, and then, based on the synthesis analyzed against the criteria, establish a system for wargaming. This system will be based on the background and requirements established, and supported by the application of the criteria.

Chapter 6, Conclusions and Recommendations, will present the optimal method of wargaming, discuss the significance of the findings, and make any relevant recommendations. Recommendations will be considered for corps application and implementation of the system, educational use, applications to the military decisionmaking process and the estimate of the situation, and finally, any recommendations for possible informal or formal adoption by the US Army.

The end result--a system that answers the problem statement.

CHAPTER 2

MILITARY DECISIONMAKING

1. INTRODUCTION.

The proper solution to a military problem, tactical, operational, or otherwise, requires the reaching of a sound decision. The soundness of the decision reflects, to a large degree, upon the effectiveness of the resulting action. This is especially true in combat. Both the decision and the action are highly dependent on a fundamental base of professional judgment, fortified by knowledge. These fundamentals of professional judgment and knowledge are balanced against experience. Only when all of these things blend together can the military decisionmaker arrive at what he thinks is the best possible solution to the problem. Even then, the unknown variables of any situation can create entirely new and unexpected results. To a corps commander and G3, faced with a decision in a combat environment, the importance of correctly combining their different levels of professional knowledge, judgment, and experience then balancing their decision against the unknowns of the resulting actions, can mean the difference between success and failure on the battlefield. This chapter will set the stage for a process that will assist the decisionmakers at the corps level, by reviewing the historical

evolution of the military decisionmaking process and that employed by selected foreign armies. The primary review will center around the system used by the US Army--its history, development, and application. The chapter will also look at the process for military decisionmaking used by commanders and staff officers of three other armies--Great Britain, Germany, and Russia. The four different systems will help to establish a comparative analysis that leads to a wargaming model for use at the corps level.

2. THE US ARMY AND MILITARY DECISIONMAKING--A HISTORY.

The method of problemsolving used currently in the US Army has been in general use for over half a century. It was first included in the Army's educational system as a method of military instruction, and, at least originally, did not have direct application for field use. In its initial form, it was a borrowed method. Called the "Applicatory System," it had originated in the German Army, and had been copied by other European services prior to the time it crossed the Atlantic.¹ The system was used by the Germans for everything from map exercises to very large field maneuvers. The aim of the system was to produce wartime battle problems as realistically as possible from peacetime training. It attempted to bridge the gap between theory and war. Upon adoption by the US Army, a subsidiary objective was added that called for standardizing the way staffs functioned.

These expected products of the applicatory system--experience, an understanding of the principles of war, and standardized doctrine--were desired in order to produce better tactical commanders and staff officers. Since it was to success in battle that the system was directed, it was almost exclusively to battles (in various tactical situations) that it was devoted.²

This new, "borrowed" system, however, did not in any way offer guidance to the student, only practice. It did not standardize orders, staff actions, or methods of arriving at decisions.

In order to remedy this deficiency, a very small group of instructors at the Army's Infantry and Cavalry School and Staff College began to graft onto the applicatory system standardized methods of accomplishing various steps in the decision action sequence. They completed a procedural doctrine to accompany the applicatory system by moving backwards in time from the commander's supervision step. They started this reverse procedure with the content and form of the commander's orders, then moved to the process by which he should reach the decision upon which his orders were based. When they were finished, they had created "the first complete system of procedures in recorded military history."³

Shortly after the adoption of the five-paragraph field order in 1906, the officer students at Fort Leavenworth began to be required to introduce, along with their oral hypothetical field orders, an explanation of the decision reached that caused the order to be as

presented. The student had to explain how and why he had arrived at the decision, and support his decision in oral debate. Totally unlike the applicatory system in general, and even the order format which standardized one of the major steps within the system, this step to require explanation on the part of students to explain and justify the process by which they had reached their decision was a wholly American innovation. The necessity for a clear decision had often been discussed by the services of other nations, but notably prior to this time they had directed their attention specifically to the factors which supported the decisionmakers decision.

From practice in the Fort Leavenworth section room it was a simple step to the written doctrine. This doctrine first appeared in print with the 1909 publication of Captain Roger S. Fitch's Estimating Tactical Situations and Publishing Field Orders. The key to reaching a sound tactical decision, Fitch wrote, was for the commander to ". . . decide upon the one plan of action which promises the best opportunity of enabling him to accomplish his true mission."⁴ It was felt that the mission of a unit ought to be the single most important factor in determining which course of action a commander selected.

Fitch's estimate of the situation was incorporated without change in the Army's Field Service Regulations for 1910. This marked the final step in the development of a complete procedural doctrine to accompany the applicatory system. The doctrine outlined a procedure

that started with a receipt of a mission by a commander, his systematic consideration of all relevant factors, and the selection of the best course of action available to accomplish the mission. This course of action, the decision, was then translated into orders which followed a standardized format.

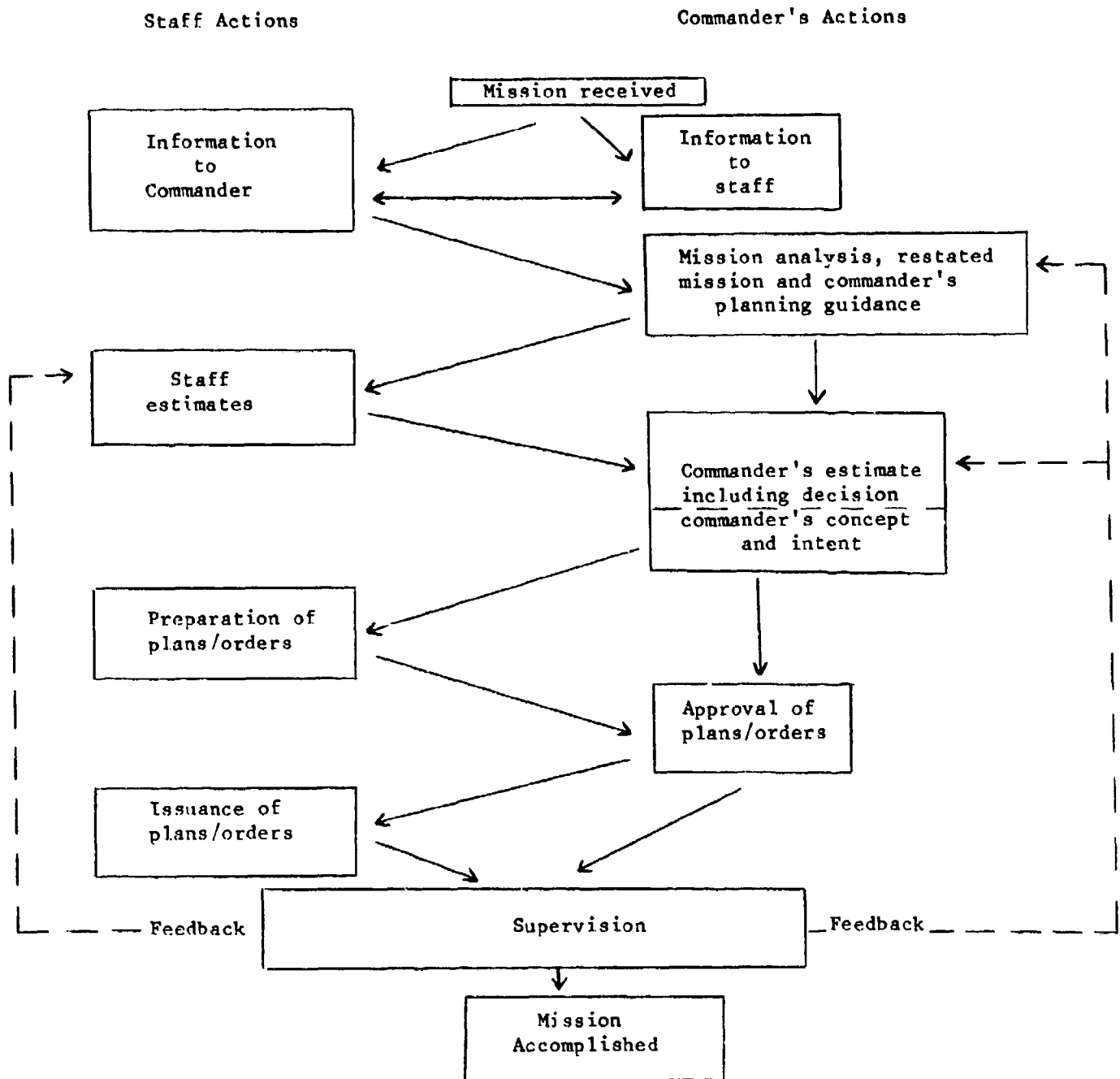
The system developed was designed to enable future tactical commanders to reach sound decisions in battle by giving them guided practice in the process of (1) mission receipt/analysis to (2) courses of action consideration to (3) decision to (4) orders. This estimate of the situation, and the broader doctrinal system it begat, became the keystone for military decisionmakers in the US Army. The Fort Leavenworth start-point was adopted by the Army War College in 1907 and the Naval War College in 1910 as the logical guide to decisionmaking in tactics and other situations.

3. THE MILITARY DECISIONMAKING PROCESS

The military decisionmaking process currently prescribed by the US Army is set down in Field Manual 101-5, Staff Organization and Operations. The process is intended to be the basic doctrine for staffs and commanders to be used in arriving at and executing tactical decisions. The process is a continuous one, with some actions taking place sequentially, while others occur concurrently. Many factors affect the process--time available, the situation itself, availability of information, staff and commander location, and judgment. Time is normally the most critical factor of all; and, when time is short, the

commander or staff officer has to adjust the process in order to reach timely decisions. The process is depicted in the accompanying diagram. Although the process normally begins with the receipt of a mission, the process may begin with any step. Additionally, situations will sometimes occur which do not allow for the inclusion of all steps in the process. Neither is it necessary that each step be done in sequence.

MILITARY DECISIONMAKING PROCESS⁵



4. THE ESTIMATE OF THE SITUATION.

While each staff officer as well as the commander conducts his own estimate of the situation as part of the military decisionmaking process, the estimate by the G3 and the commander are of particular importance to this thesis. It is important to remember, however, that the G3/commander often require significant input from other members of the staff, as well as other sources. The commander's estimate and the G3's estimate follow the same format. The commander's estimate ends with a decision, though, where the G3's ends with a recommendation. The steps of the G3/commander's estimate of the situation are outlined below.

Commanders (Operation) Estimate of the Situation⁶

1. Restated Mission.
2. Situation and Courses of Action.
 - a. Considerations.
 - (1) Characteristics of area of operations.
 - (a) Weather.
 - (b) Terrain.
 1. Area of operations.
 2. Area of interest.
 3. OCOKA.
 4. Effects on movement.
 5. Effects on use of NBC weapons.

- 6. Effects on commo/EW.
 - 7. Effects on enemy courses of action.
 - 8. Effects on friendly courses of action.
 - (c) Other pertinent factors.
- (2) Enemy situation.
 - (a) Disposition.
 - (b) Composition.
 - (c) Strength.
 - 1. Committed forces.
 - 2. Reinforcements.
 - 3. Artillery.
 - 4. Air, NBC.
 - 5. Other considerations.
 - (d) Recent and present significant activities.
 - (e) Peculiarities and weaknesses.
- (3) Own situation.
 - (a) Disposition.
 - (b) Strength.
 - 1. Committed forces.
 - 2. Reinforcements.
 - 3. Artillery.
 - 4. Air, nuclear.
 - 5. Other considerations.
 - (c) Recent and present significant activities.

(d) Peculiarities and weaknesses.

1. Personnel.
2. Intelligence.
3. Operations.
4. Logistics.
5. Civil-military operations.

(4) Relative combat power.

- b. Enemy capabilities.
- c. Own courses of action.

3. Analysis of Courses of Action.

- a. Wargame each course of action.
- b. Identify critical events and actions.
- c. Identify advantages and disadvantages.

4. Comparison of Courses of Action.

- a. Weigh the significant factors.
- b. Compare the courses of action.
- c. Risk analysis and selection of best courses of action.

5. Decision (Recommendation).

The essence of the estimate of the situation is in paragraphs 3 and 4, with particular importance in the steps outlined in paragraph 3, The Analysis of Courses of Action. This paragraph is the target of this thesis, for here is where the corps commander/G3 must mentally

wargame the courses of action and set the stage for the decision/recommendation. This paragraph, or wargame, is the "meat and potatoes" of the entire estimate process. Unfortunately, no wargaming doctrine, or standardized format, exists; not only for the corps level, but for any level! FM 101-5's general guidance for this action states:

The commander determines the probable effect of each significant difficulty on the success of each course of action. He may accomplish this in two steps:

- o Selecting those significant difficulties that oppose the friendly courses of action formulated and stated in paragraph 2c of the estimate.

- o Analyzing each course of action stated in paragraph 2c of the estimate against each selected difficulty. He determines the probable outcome of each course of action, including critical incidents, areas, times, and significant difficulties. He applies these factors to his analysis by considering the impact of enemy capabilities and significant difficulties on the possible success of each course of action.⁷

Even the guidance given for paragraph 4 is sketchy, merely telling the commander to "compare the courses of action to determine which course of action promises to be most successful in accomplishing the mission."⁸ Although some discussion is provided for the analysis and comparison paragraphs, the guidance is vague and nonconclusive, often calling for factors for analysis and risk considerations, without identifying what factors or risks should be analyzed and considered. A wargaming methodology is not included.

5. GREAT BRITAIN--AN APPRECIATION.

The estimate of the situation process used by the British Army, as well as the other British services, is called an appreciation. With the foundation that every military problem derives from a situation, the appreciation system, mental, oral, or written, is a logical sequence of reasoning leading to the best solution to the problem. The solution involves an examination of the situation usually requiring the selection of a course of action. The appreciation begins this situational examination, followed by a decision upon the specific result required--the aim. From this basis it is possible to start a process of reasoning that leads logically to a course of action. In short, an appreciation is a procedure for deciding what has to be done and how to do it.⁹

The method of appreciation used by the British Army has five distinct steps. The first two steps analyze what must be done by "(1) studying the existing situation and (2) specifying the aim to be attained."¹⁰ The next three steps choose how the aim should be attained by "(3) examining and reasoning out all relevant factors, (4) considering all practicable courses, and (5) deciding on the best course of action to attain the aim."¹¹ This methodical sequence prevents the writer from leaping ahead of himself and arriving at a solution without considering all of the factors logically.

The first step, the study of the existing situation, is a written or mental review of the situation, to include missions, guidance from higher headquarters, and any assumptions made.

The second step, specifying the aim to be attained, is considered to be the crux of the appreciation. Unless the aim is right, the whole appreciation may be worthless. While several things may need to be done at the same time, there never must be more than one aim. At times, the aim may be predetermined, or self-evident and needing no selection. If, however, the commander has some doubt as to what his aim should be, then he must consider the factors affecting the selection of the aim. Some factors which might logically be considered include friendly situation and disposition and probable enemy threat. The aim must be kept in mind throughout the appreciation process, and all reasoning must be related to its attainment. It should never be qualified by limitations.

Step three, examining and reasoning out all relevant factors, is normally in three subparts--factors, enemy courses, and enemy's most probable course. The first subpart, factors, is the beginning of the main argument. A factor may be described as "a circumstance, fact or influence contributing to a result."¹² Some factors considered might include, but not be limited to: time and space, weather, surprise, comparison of forces, ground (US--terrain), logistics, communications, and morale. Each factor must be discussed in relation to the aim, leading to logical deductions that compare to the attainment of the aim. Enemy courses, the second subpart, considers the courses open to the enemy that might affect the selection of a course of action. These enemy courses of action are considered from

his point of view, with some deductions made as to the likelihood of the enemy adopting the course and any effect the adoption might have on the attainment of the aim. The last subpart, the enemy's most probable course of action, simply identifies the most dangerous or immediate threat.

Step four, considering all practicable courses, is the identification and consideration of own courses of action. All possible courses that will achieve the aim, and are within the capability of the friendly forces to conduct, must be considered. Combination courses and complementary courses may also be considered. Each course is examined separately, with no comparison of one course against the other in this step. Each course is considered by determining the advantages and disadvantages, and the choice each course has of attaining or contributing to the aim.

The last step of the appreciation is the decision on or selection of the best course. It is the administration of the whole argument. This is the step that weighs each course of action against all others. Often the appreciation includes in this step the plan to execute the decision.

This, then, is the appreciation. As in the US Army's estimate of the situation, the step in the sequence that considers own courses of action calls for an analysis, but provides no wargaming methodology. The British system is very similar to the U.S. system. They both follow the same general logic plan, but with differing areas of emphasis.

6. THE FEDERAL REPUBLIC OF GERMANY--COMMAND AND CONTROL SYSTEM.

The German Army's command and control system is organized into three parts: command and control organization, the decisionmaking process, and command and control means. The decisionmaking process is organized into four separate phases--situation analysis, planning, issuance of orders, and supervision. The estimate of the situation, the decision, and the operation plan are parts of the planning phase. The decisionmaking process is defined as a goal-oriented, continuous and self-contained process of reasoning and action conducted in all areas and at all command levels.¹³

The estimate of the situation is a continuous and recurring process. It initiates planning and starts the decisionmaking process, which terminates with the decision. The estimate of the situation includes:

- o Analysis of the mission.
- o Estimate of the friendly and the enemy situation.
- o Evaluation of environmental conditions.
- o Comparison of forces.
- o Formulation of own courses of action.
- o Comparison of each course of action.

In the analysis of the mission step, the important tasks required are identified, any conditions to be placed on own courses of actions stated, and any changes in the fundamental situation determined.

The estimate of the friendly situation includes the determination of combat power and the estimate of combat effectiveness. Combat power is determined by estimates of personnel and materiel strengths, condition of equipment, degree of mobility, supply status (special ammunition), and capabilities of command and control means. In addition to these factors, consideration is given to the combat morale of units, capabilities of commanders, level of training, and physical conditions of soldiers. The details of the individual factors represent the basis for the determination of the combat effectiveness, or "the qualification of forces for a certain mission."¹⁴ Combat effectiveness is clear if the combat power factors are evaluated and rated in relation to mission, enemy, availability of troops in space and time, terrain, weather, time, and situation and attitude of the population. As a result of the estimate, the combat effectiveness is evaluated as high, medium, or low.

The estimate of the enemy situation is conducted with consideration given to the possible enemy courses of action and an estimate of the situation from the enemy point of view. From this results the expected intentions of the enemy.

The estimate of the environmental conditions is often included in the estimate of own and/or enemy situations. The analysis is a study of the terrain so it applies to friendly and enemy operations, and the terrain is evaluated as favorable, conditionally favorable, or unfavorable.

In the first step of comparison of forces, the factors determining combat effectiveness of friendly forces are compared with those of the enemy. In the second step, possible changes in relative strength are studied which may emerge from different considerations of time and space. Finally, in terms of balance, friendly courses of action are compared against chances of success. Solutions which are not suitable and have no chance of success are thrown out.

The estimate of the situation is terminated by determining and considering own courses of action. The different courses of action are rated against advantages and disadvantages, then compared against each other. The course of action considered to have the greatest chance of success is then chosen.

7. THE RUSSIAN VIEW.

The combat experience of past years and the practice of postwar training indicate convincingly that the successful fulfillment of the requirements imposed on a combat decision, especially its substantiation and timeliness of making the decision, depends primarily on the depth of knowledge, experience, and will of the commander.¹⁵

A study of the decisionmaking process within the Soviet Army starts with their principle of one-man command and centralization of control. Because the Russian system places such a heavy burden on the commander to gather information, analyze it, and make decisions without much help from staff officers, time is the most determining factor in their system. The degree of centralization of control and decision formulation is directly commensurate with the capabilities of the commander to process information.

As the one-man commander, the decisionmaker uses a "basic set of procedures and methods of creative thought based on objective laws and principles."¹⁶ He is guided by a procedure that requires correspondence to the theory of logic and knowledge, the laws of armed combat, and the principles of military science. He is encouraged to base his decision on such sciences as psychology and mathematics. Consequently, the most important factors used in situations of the normal missions of a unit requiring decisions are set down ahead of time, giving the commander a base guide to check against the factors of the situation. The purpose of the procedure is to arm the commander with scientific methods of thought and the most efficient methods of organization of his work. This then frees him to be creative and thoughtful.

This procedure requires a commander who possesses comprehensive knowledge and a solid mastery of the entire arsenal of logical, mathematical methods of thought. In addition, during "combat decisionmaking" an important role belongs to "the subjective qualities of the commander, especially those such as skill in predicting the course of the forthcoming combat, the development of intuition, strong will, courage and decisiveness, cleverness, skill in deceiving the enemy, independence, the capacity for creative thought under a high psychological load, readiness to enter into a reasonable risk and take responsibility for the outcome of the combat operation."¹⁷

The Soviet commander's decision is influenced by the mission received, instructions from the senior commander, the developed conditions of the situation, time, and the personal qualities of the commander and his subordinates. The commander's thought process during decisionmaking is divided into three steps: a study of the problem, evaluation of the situation, and the decision. The most important step is the evaluation of the situation, which is the estimation of various elements, or factors, that have a direct bearing on mission accomplishment. This step in the process is, in essence, an analysis of various friendly courses of action, and a comparison of them--but from a more analytical, scientific approach than any previously studied.

"The characteristics of the thought process of the commander when making the combat decision would be incomplete if he did not employ the so-called inductive heuristic methods."¹⁸ These methods are based on the ability of the commander to "see" the decision--to draw a fast, developed, mental conclusion. These methods are most clearly exhibited, according to Soviet writings, when time is short. These are special qualities a commander might possess--those of deep knowledge of the objective laws of armed combat, the principles of military science, a solid mastery of the dialectic methods of thought and great practical experience. These methods do not contradict the logical method, but supplement and extend them.

The Soviet commander may also decide using mathematical methods. Soviet doctrine indicates that with new technologies, integrated warfare, and complex situations, mathematical methods of decisionmaking are a necessity. They supplement the ordinary calculations and "estimation by sight." Examples of mathematical methods are linear and dynamic programming, probability theory, differential equations, systems analysis, operations research, and PERT planning. Specific calculations might include combat capabilities of the combat arms of both sides, calculations of troop losses, and troop movement calculations.

The end result for the Soviet commander is a decisionmaking procedure that gives him a logical method, a mathematical method, and an inductive method. By applying one or a combination of these three during the evaluation of the situation, he wargames his various courses of action. Even though some factors for almost every situation are given, no specified wargame exists, in and of itself. Rather, the commander, according to the situation and the time available, determines how each course of action compares against one another, and against the accomplishment of the mission.

8. SUMMARY.

Through a review of the historical evolution of the military decisionmaking process, to include a look at the methods used by three foreign armies, a foundation has been set for the following chapters. Including the US Army's process, four different, yet similar, systems

are now available for analysis. Each has its own distinct variations and guidelines, with significant features that make each one a system in and of itself, but still all aim for the same target--a sound decision based on logical analysis of a situation.

The US Army process is strong in outline and form, with significant detail and description. It follows a logical procedure, and begs for input and staff interaction. It is a continuous process, and can be adapted to almost any situation or level. It lacks a real wargaming methodology, however.

The significant features of the British process are similar to those of the U.S. process. The emphasis is different, though. The British "appreciation" is very methodical, and requires an almost rigid adherence to the outline. It orients heavily on the aim--the actual intent of the commander. All analysis is related to the attainment of the aim.

The German system is a continuous process. Its most significant feature is the orientation toward determining and comparing combat power and estimating combat effectiveness. In contrast to the first two processes, there is less emphasis on wargaming each course of action.

The Russian process is based on the individual commander's knowledge, experience, and will. Although the specifics of the process are difficult to determine, the system used combines the best of logic, mathematics, and inductive reasoning. There appears to be

less structure to the process than the others, but it is apparent after study that the Russian decisionmaker has less time and information in which to decide.

With this chapter serving as the theoretical foundation for study and analysis, the orientation now turns to the practical view. Ultimately the theoretical and the practical will blend together through analysis and comparison, resulting in a method that better serves the corps G3/Commander.

END NOTES

- ¹Seigle, The Estimate of the Situation, page 18.
- ²Ibid, page 10.
- ³Ibid, page 12.
- ⁴Ibid, page 15.
- ⁵FM 101-5, page 5-10.
- ⁶RB 100-9, page 1-11 to 1-14.
- ⁷FM 101-5, page F-21.
- ⁸Ibid, page F-22.
- ⁹Ministry of Defense, Joint Service Staff Manual, page 9-1.
- ¹⁰Ibid, page 9-2.
- ¹¹Ibid, page 9-2.
- ¹²Ibid, page 9-5.
- ¹³TRADOC, The Command and Control Systems of the Germany Army, pages 1 and 2.
- ¹⁴Ibid, page 7.
- ¹⁵Ivonon, D. A., and Shemonski, P. V., Fundamentals of Troop Control in Combat, page 158.
- ¹⁶Ibid, page 170.
- ¹⁷Ibid, page 171.
- ¹⁸Ibid, page 192.

CHAPTER 3

DECISIONMAKING IN PRACTICE

1. INTRODUCTION.

With the historical, doctrinal, and comparative base of chapter 2 as a foundation for the theoretical side of military decisionmaking, it is now important to observe the more practical side of the problem. The purpose of this chapter is to record the way military decisionmakers--with a primary look at the corps or equivalent level--use the doctrinal guidelines in application. The chapter will study the method taught at the Command and General Staff College (CGSC) for application of the estimate process, an approach to developing real combat power in a model developed by a serving Army officer and teacher, and finally, observations made of active US Army corps' commanders and staffs in estimate/decisionmaking cycles, along with conversations with and comments made by serving corps commanders.

2. DOCTRINE--TEACHINGS

In order to understand the ways in which decisions are made in practice, it is necessary to know the doctrine that drives and guides the decisionmaker. This doctrine for the US Army is the AirLand Battle. This doctrine is designed to meet the battlefield of tomorrow. It envisions fighting battles of movement, with indistinct

battle lines. The linear battlefield of the past is gone. The doctrine expects the opposing forces to field vast quantities of lethal weapons systems, sensors and communication equipment of high technological capabilities, and an air mobility and air power that will drastically extend the depths of the battlefield. Commanders will find their command and control problems to be more difficult, and often they must be prepared to fight with austere support. The AirLand Battle doctrine bases its success on answering this battlefield challenge with leadership, readiness, and training. This doctrine is guided by an approach to fighting that uses the full potential of all U.S. forces. It envisions the coordinated action of all forces fighting to achieve a common goal.

The AirLand Battle doctrine is founded on the basic tenets of initiative, depth, agility, and synchronization. Initiative gives the spirit of the offense to the doctrine. Everything done must be oriented on securing or retaining the initiative. The need for quick planning and execution that keeps the enemy off stride and disorganized is vital. Individual commanders at every level must seek opportunities to use initiative and exploit successes. Depth for the doctrine orients on time, distance, and resources. To fight the battle in depth, the commander requires the time to move forces and concentrate fires, the distance or space in which to maneuver combat power and yet restrict the enemy's, and the resources positioned to fight the battle where he chooses. Agility is nothing more than the

mental flexibility required to think and act faster than the enemy. Synchronization is the total devotion of every single part of a force toward the accomplishment of the commander's concept. It applies to Army forces and also to other services and allies.

The AirLand Battle doctrine is based on preparing for and fighting a war at three levels--strategic, operational, and tactical. The strategic level is the application of armed forces to achieve national objectives, guided by national interests and policy. It normally does not directly apply to the corps battle. The operational level and the tactical level, however, do apply. At corps, these two levels blend together to formulate how the available forces will fight against the enemy forces.

The operational level of war is often hard to define within limits of size of forces and types of battles. The operational level involves the planning and conducting of campaigns. By applying the necessary forces to defeat the enemy in a sustained operation of battles in a specified space and time the corps conducts and participates in campaigns. The operational level is conducted by large units. While divisions may, on occasion, plan and conduct campaigns over sustained periods of time, the resources and forces available to a division are normally too austere to conduct "large unit" operations. Most of the time the corps is the smallest organizational level that will plan for and conduct operational level battles and campaigns. In AirLand Battle doctrine, this includes the

marshalling of forces and logistical support, direction to ground and air maneuver, the application of conventional and nuclear fires in depth, and the employment of unconventional and psychological warfare.

The corps also operates at the tactical level, and most often is the highest organizational force to do so. It is very difficult at corps level to separate the tactical and operational levels. Undoubtedly the corps always operates at the tactical level--employing specific techniques to win engagements and battles. Only when the corps conducts a series of sustained battles, or a major large unit operation that attains a specified theater/strategic goal by employing significant combat power with maneuver, is the corps at both levels at the same time.

Because the operational level of war requires many resources and capabilities, and centers on the massing and concentration of combat power, a dedicated amount of space and time on the battlefield is needed. Ideally the corps commander and staff are not under time pressure situations, but that is unavoidable. Since the theory of the operational level requires the marshalling of combat power and resources in a space/time/depth environment, quick operational decisions are not desired. However, enemy actions and the dynamics of the battlefield all serve to force staffs and commanders into time-pressured decision requirements. At the Corps level, with all of its resources and capabilities, anything outside of 72 hours is "adequate," relatively speaking. When enemy actions and the

environment of the battlefield requires decisions about situations where there is less than 72 hours of planning, decision, and execution time to effect the operational level, time is considered to be compressed, and plays a very significant role in the estimate process.

Although the tactical level involves normally fewer forces and resources, time is still a critical factor. The compression of time to 24 hours or less of decision/execution time available at the corps level places a severe handicap on the corps decisionmaker. A way to deal with this compression of time, at both the tactical and operational level of war, is needed. Since the thrust of chapter 2 dealt with the doctrine of decisionmaking, it naturally observed the system as it applies to any situation. As noted previously, most of the situations that allow the doctrinal appreciations and estimates to be used are not time restricted. Even when, doctrinally, time is compressed, the manuals and teachings do not definitively and comprehensively address methods of dealing with the problem. For the most part, the suggestion that the "doctrinal process" is abbreviated, shortened, or altered is the only solution. While, in general, this is certainly a way of solving the problem, a more operational approach is needed.

In an effort to come to grips with this problem, the faculty at CGSC has taught, with a source document the Reference Book (RB) 100-9, A Guide to the Application of the Estimate of the Situation in Combat Operations, ways to more comprehensively apply the necessary "factors

of consideration" for all of the paragraphs of the estimate process. The RB, and the faculty teachings, provide a systematic process for proceeding through the estimate of the situation. It orients on planning for combat operations, involving a detailed analysis of the mission, enemy, terrain and weather, troops available, and time (METT-T). The RB preface states:

The techniques suggested in this book incorporate, but are not meant to replace, doctrine. Instead, an attempt has been made to place the analysis of factors leading to the formulation of courses of action and the making of a decision into a logical sequence. This attempt enables you to see how each element fits into the commander and staff action process; to see the relationship between the commander, G2, and G3 in the analysis of combat operations; and to make your analysis faster, easier, and more accurate. The estimate represents a continuous process that is as thorough as time and circumstances permit. The amount of detail considered in an estimate of the situation varies with the level and type of command.¹

The intent of the RB, and its use in an instructional environment, is to "internalize" the system, and to "establish a thought pattern for commanders and staffs in the field to use under the pressure of time and the stress of battle."² The hope is that the process will become a rapidly conducted mental, methodical process. While the aim of this thesis is at the third paragraph of the process, the analysis of courses of action, an understanding of the factors applied against the paragraphs of the entire estimate of the situation is appropriate.

The first paragraph, the restated mission, is normally the action that initiates the estimate process in a planning scenario.

However, in most of the instances of compressed time, the corps mission is not in the process of change. Many of the decisions will come under the initiative of the corps, as opposed to a mission or order from a higher headquarters. Regardless, the mission and intent of the higher commander is always important--for the operational level commander has to be fully cognizent of the "battle or campaign operational concept." Additionally, the RB suggests, among other planning factors, that the factors of risk acceptable to mission accomplishment, a preliminary analysis of time available, and a preliminary analysis of the terrain to identify any new decisive terrain are all factors which the commander and G3 should review in the first step. The factor of time available is clearly an important and necessary one. It is, without doubt, one of the most critical elements of the entire estimate process. The RB suggests that time "has a major impact on courses of action, schemes of maneuver, task organization and initiative."³ For corps level operations, the most important elements of the analysis of time available are those of "critical nodes" and "decisive time." Critical nodes are time chokepoints that, without proper handling, could cause a delay in the execution of an operation. Decisive times are in relationship to enemy events and friendly actions. They are identified as the period of time in which a major event occurs, and any change or alteration of the event to the time period could jeopardize the mission.

Paragraph 2, Situation and Courses of Action, is a lengthy step in the process for the commander and G3, if the factors to be considered as outlined in the RB are all worked. In addition, this paragraph has many factors for consideration that require specific input from the G2. Most of this information is a direct result of the Intelligence Preparation of the Battlefield (IPB) done by the G2. The G2 provides such things as information on the weather, the terrain, enemy situation, disposition, composition, and strength, as well as any peculiarities and weaknesses he might be able to identify. The staff interaction between the G2 and G3/commander is very important in this step of the analysis. In a compressed time scenario, during the course of a battle, the participating members of the decisionmaking team should already be intimately familiar with the terrain, and have developed certain characteristics and knowledge of the enemy forces. One of the critical factors at this point is the analysis of enemy capabilities and projected courses of action. This is especially true at the operational level of the AirLand Battle. The IPB process calls for a series of enemy templates, with the last one becoming the decision support template. It would contain the places on the ground where the commander may have to make battlefield event decisions. These decision points equate time to specific points on the battlefield. In the long run, these templates are the enemy factors that the G3/commanders use to wargame friendly courses of action. For the G3/commander, all of this is used in paragraph 2, with some overlap into paragraphs 3 and 4.

Paragraph 2 of the operations estimate is principally a study of the weather and terrain as it applies to the enemy and friendly situation (strengths, dispositions, forces committed, etc). A thorough knowledge of friendly forces is vital. Often the commander/G3 will require input of information in this step from other staff officers or agencies. The most important factor considered in this paragraph is the determination of relative combat power! "The basic factors of combat power are maneuver units and supporting fires. Additional factors that might be considered are intelligence, deception, mobility, terrain, dispositions, weather, logistic support, psychological operations, and electronic warfare."⁴ Force ratios might be used here to determine several impressions of the relative capabilities of forces. However, it must be remembered that force ratios alone are not indicators of chances of success. The final step in paragraph 2 is the development of feasible courses of action.

Paragraph 3, the Analysis of Courses of Action, is the wargaming step in the process. Wargaming is an art, not a set of prescribed procedures or a specific process. It is a "conscious attempt to visualize the flow of a battle given friendly strengths and dispositions, the enemy's assets and courses of action, and a set piece ⁵ ground." A mental activity, wargaming identifies advantages and disadvantages, problems for analysis, specific critical events, risks, and future developments, options, and contingencies. During the wargaming process, courses of action may be modified based

on information the wargame provides. Consequently, wargaming not only evaluates a course of action but also can improve on a course of action. The following are the steps to follow in wargaming as provided in the RB:

Wargaming Steps⁶

- o Gather the tools.
- o Select the method.
- o List all friendly forces, assets, and combat multipliers.
- o List the assumptions.
- o List the significant factors.
- o Portray the action.
- o Visualize the battle and assess the results.
- o Make adjustments.

A review of each step in the wargame is necessary.

Gathering the tools is the simple act of choosing a course of action to wargame, posting it graphically on a map, along with friendly unit dispositions and the situational, event, and support templates.

The selection of a wargame method is left to the commander/G3. Three possible methods suggested in the RB are the maneuver-in-depth technique, the belt technique, and the box technique.

Listing of the friendly forces, assets, and combat multipliers is done to ensure that no resource is overlooked during the wargame. It includes any assets, organic, attached, or in support, that the

commander/G3 may commit to the battle. In this component of the wargame the allocation of resources, assignment of missions, and identification of shortfalls may fall out.

The listing of assumptions helps to shape the course of action. Each assumption must be valid, logical, realistic, and stated positively.

The heart of the wargame is the step that comes here--the listing of significant factors. Each factor is a piece of criteria against which the course of action is tested. They are the basis for determining the advantages and disadvantages of the course of action. Twenty-five significant factors are listed for possible consideration in the RB. They are:

Significant Factors⁷

Does the course of action--

- (1) Provide all-around security--
 - o Against flank and cross-over approaches?
 - o For rear area protection?
 - o Against vertical envelopment?
 - o Against potential incidents.
- (2) Provide opportunity to seize the initiative?
- (3) Provide for cohesion with flank units?
- (4) Provide time for additional battlefield preparation?
- (5) Provide for adequate logistic support?
- (6) Make optimum use of command and control headquarters?

(7) Permit successful execution in the absence of continuous command and control?

(8) Integrate and effectively use available combat support assets?

(9) Allow for the timely concentration of forces in support of the course of action?

(10) Provide a balance between mass and dispersion?

(11) Allow for terrain alteration by nuclear and chemical weapons?

(12) Facilitate the exploitation of friendly use of nuclear weapons?

(13) Provide the opportunity to employ tactical deception and/or surprise?

(14) Provide the proper type of force consistent with mission and terrain? Maximize the use of terrain?

(15) Exploit enemy vulnerabilities?

(16) Provide for the capability to conduct future operations?

(17) Appear sufficiently flexible to address various enemy maneuver options?

(18) Succeed without the use of nuclear and/or chemical weapons?

(19) Succeed without dependence on weather?

(20) Allow for decentralized execution?

(21) Facilitate the conduct of the deep attack?

- (22) Permit the establishment of a reserve?
- (23) Incorporate natural or artificial obstacles?
- (24) Clearly assign responsibility for objectives, key terrain, and avenues of approach (axis of advance)?
- (25) Comply with the principles of war and combat imperatives?

In the component step of portraying the action, the commander/G3 records and displays the results of the wargame.

While all of these 25 significant factors are listed, the RB does not envision the wargames considering each factor. That would be mentally and physically impossible. The significant factors, as they apply to a specific situation, have to be singled out for consideration. Where factors do not apply, they are not considered in the wargame.

Visualizing the battle and assessing the results is the next to last step in the wargame. Using the method selected, the wargamer uses the process of action--reaction--counteraction. Each course of action is visualized, and all assets available are used. Time is accounted for.

In the last step of the process, any adjustments are made to the course of action/or to force dispositions, locations, etc.

The RB also provides some guidelines for the measurement of combat power, the composition and type of forces, risk assessment, and time-distance factors. Products of the wargame include the

requirements for combat support, control measures, attrition estimate, deception and surprise requirements, combat service support needs, and requirements for external support.

The last steps of paragraph 3 are the identification of critical events and actions and the listing of advantages and disadvantages. Critical events are those things that can mean success or failure. The identification of advantages and disadvantages orients on the ones most significant for each course of action, as they were derived from the wargame.

Once the commander/G3 has completed the analysis of the feasible courses of action, he then compares the courses of action and selects the one that best meets the requirements of the significant factors. The RB recommends a method of comparing courses of action that weighs each course of action by rank ordering the significant factors based on essentiality to the success of the mission. The courses of action are then compared using a matrix comparison model.

The final paragraph in the estimate process calls for a decision/recommendation.

3. A NEW MODEL.

A method to develop the traditional variables that are of importance in making decisions on the battlefield has been prepared in a paper entitled, "Understanding and Developing Combat Power," by Colonel Huba Wass de Czege, a serving Army officer. The model is an effort to identify better analytical techniques, arguing against the

opposing methods of "intuition" and "by the numbers." The author states that the method of analysis "supplements but does not replace the military decisionmaking process or the wargaming methodology developed by the Department of Tactics at CGSC to analyze courses of action."⁸ Assessing that the outcome of battles is the direct result of the relative combat power that each side employs at the point of decision, the author puts a heavy emphasis on the intangible factors of training, motivation, quality of leadership, and firmness of purpose, among others, in the development of combat power. In addressing the essence of combat power, Wass de Czege states:

Combat power is always relative, never an absolute, and has meaning only as it compares to that of the enemy. Combat power is defined as that property of combat action which influences the outcome of battle. It has meaning only in a relative sense--relative to that of the enemy--and has meaning only at the time and place where battle outcomes are determined. Prior to battle there exists only capability. Leaders and the forces of their environment, to include the actions of the enemy, transform this capability into combat power. Superior combat power has been generated on the battlefield by superior leaders and superior units against forces vastly superior by any objective criteria. The appropriate combination of maneuver, firepower, and protection by a skillful leader within a sound operational plan will turn combat potential into actual combat power. Superior combat power applied at the decisive place and time decides the battle.⁹

The model centers around the four elements of combat power: maneuver, firepower, protection, and leadership. These four complex variables form a two-sided equation, of which leaders must operate on both sides of the equation. Each leader must attempt to increase the

effectiveness of maneuver, firepower, and protection for his own forces, and at the same time attempt to degrade those of the enemy. This allows one side to achieve a superior relative combat power.

Firepower is the actual employment of weapon systems--the combination of volume of fires, lethality, and weapon systems flexibility. Firepower effects directly contribute to maneuver. Elements which make up the firepower effect variable include target acquisition systems, command and control, adequate munitions supply, firepower delivery means, and the necessary mobility to range critical targets on the battlefield.

Maneuver ties to firepower. It is a function of unit mobility, tactical analysis, resource management, and command, control, and communications. It requires knowledge of the terrain and the enemy, logistical support, and flexibility. At the operational level it is the massing or concentration of forces, by positioning or maneuver, to create a significant combat power advantage.

Protection is simply the sum of defensive measures taken to preserve friendly fighting potential. It has two components. First, protection consists of those actions taken to actually hide and/or secure forces. The second component is made up of those things done to maintain the health and fighting spirit of friendly soldiers. Protection is designed for people, equipment, and units. The effects of protection are measured by the fighting potential a unit possesses when committed to fight.

Without the leadership component, all of the others would be wasted. It is the "overall effect" the leader creates on the battlefield vis-a-vis the enemy through proper application of his potential maneuver, firepower, and protection capabilities which generates relative combat power."¹⁰

On the following pages is a diagram of the combat power model. There are 18 variables as a subset of the four relative effects components. There are listed additional variables for each of the 18. The listing of any subset of variables is not all-inclusive. Each variable is a factor for the wargamer, the decisionmaker, to consider. Each should be applied against the trilogy of (1) maximizing friendly capability; (2) degrading enemy capability; and (3) countering enemy ability to degrade friendly capability.

THE COMBAT POWER MODEL¹¹

COMBAT POWER IS A FUNCTION OF:

1. FIREPOWER EFFECT: (Which is a function of)

Volume of Fire: (Which is a function of)

Number of delivery means.

Supply capability.

Rate of fire of weapon systems.

Lethality of Munitions:

Design characteristics.

Explosive energy.

Accuracy of Fires:

Weapon and munition design characteristics.

Crew proficiency.

Terrain effects.

Visibility.

Target Acquisition:

Intelligence and intelligence analysis.

Location and functioning of observers and sensors.

Transmission of target data.

Flexibility of Employment:

Weapons ranges.

Mobility.

Signature effects.

Fire control systems.

Tactical employment doctrine.

2. MANEUVER EFFECT:

Unit Mobility:

Physical fitness and health of individuals.

Unit teamwork and esprit.

Unit equipment capabilities.

Unit equipment maintenance.

Unit mobility skills.

Tactical Analysis:

Intelligence and knowlege of enemy tactics.

Understanding of terrain effects.

Understanding of own unit capabilities.

Management of Resources:

Equipment utilization.

Supplies utilization.

Personnel utilization.

Time utilization.

Utilization of energies of subordinates.

Command, Control, and Communications:

Span of control.

SOPs and doctrine.

Staff efficiency.

Communications efficiency.

3. PROTECTION EFFECT:

Concealment:

Camouflage.

Stealth.

Equipment design.

Counter enemy intelligence acquisition means.

Exposure Limitations:

Minimize potential target size.

Minimize potential target exposure time.

Complicate potential target tracking.

Damage Limitations:

- Individual protective equipment design and use.
- Use of natural cover.
- Use of artificial cover (incl field fortification).
- Combat vehicle design.
- Medical treatment and evacuation system.
- Combat equipment cannibalization and repair.
- Alternate command and control arrangement.
- Providing personnel and materiel replacements.
- Miscellaneous efforts to maintain continued combat effectiveness of units.

4. LEADERSHIP EFFECT

Technical Proficiency:

- Training.
- Experience.

Understanding of Unit Capabilities:

- Training.
- Experience.

Analytical Skills:

- Selection.
- Training.
- Experience.

Communication Skills:

- Selection.

Training.

Dedication, Commitment, and Moral Force:

Selection.

Motivation.

Training.

Understanding of Battlefield Effects:

Combat experience.

Training.

This model can be effectively used to assist the decisionmaker in the wargaming process. By applying each of the variables as potential factors for consideration, the competing courses of action can be appropriately analyzed and composed. The payoff with this model is twofold: (1) The realization of an estimate of relative combat power, and (2) the inclusion of an analysis of the intangible factors that have impact on the wargaming process.

4. THE CORPS IN THE FIELD TODAY.

The purpose of this portion of this chapter is to review the decisionmaking system as it is used today by US Army corps' commanders and G3s. The basis for this information comes from actual observation of the corps commanders and G3s of the III (US) Corps, V (US) Corps, and the VII (US) Corps. Additionally, interviews were conducted with the corps commanders and G3s.

Most of the decisionmaking performed within the corps is done in a structured, programmed routine. The use of a decisionmaking

system, formalized or not, is centered chiefly around the longer range planning of operations, as opposed to deciding operational issues in a time-compressed scenario. Even then there is little evidence of a totally staff integrated and managed estimate process. The chief format for the presentation of information and assessment of the battle, as it is studied from a planning orientation, is the daily situation/update briefing(s), mostly held in the morning and evening. During these briefings, the principal staff sections, as well as others, present updates on their specific area of interest. Questions are answered for clarification, and sometimes specific or general guidance is issued. Rarely are courses of action, either formally or informally, addressed at these meetings.

The corps plans officer is the primary staff officer for developing courses of action and making long-range plans. He receives guidance from the CG and G3 and, through daily "plans meetings," goes over the "working" plans with staff officers from the other staff sections and agencies. In only a few instances were other staff sections preparing their own estimates to support the planning or courses of action.

This is not to say that the decisionmakers do not go through a mental or oral wargame, or estimate process. The fact is, however, that the doctrinal estimate of the situation found in FM 101-5 or used in RB 100-9 is not employed to its fullest extent.

In the operation arena at corps, that portion of the staff that monitors and controls the close-in battle (where we find the tactical level time-shortened scenarios), the actual mental or oral wargaming is used. Unfortunately, though, the wargame is a sole product of the experience, knowledge and judgment of the corps commander or G3. For the sake of this thesis, there are no prescribed factors considered, pieces of information desired, or critical decisionmaking guidelines followed. There are, however, some key areas which the commander and G3 always seem to focus.

One of the most important areas is that of the concept, or intent of the commander. In practice, while each of the corps observed does not always outwardly express a "campaign" or "operational concept," one does exist. Often the concept, or intent, is not known by everyone who needs to know, however. But when deciding on a critical event or situation in a time-compressed scenario, the commander and G3 almost always tried to look at the decision from a viewpoint of its tie-in to the commander's concept, or intent.

There was a constant desire for more information and intelligence about the enemy. This included an evaluation of the "threat," and some determination as to his options. Particular importance was always given to his follow-on forces, if attacking, or to his reserves, if defending. Often, though, the commander and G3, with the G2's assistance, were forced to conduct their own mental

templating. The IPB process was never fully used or required. Terrain preparation and study, as well as situational, doctrinal, event, and decision-supported templating was virtually non-existent--at least from a graphically portrayed viewpoint. Often the G2, G3, and commander would, from a study of the operation situation map, make estimates of the enemy capabilities and projected activities.

The product of a time/space analysis was important. This analysis attempted to determine the "windows of opportunity" for the friendly forces to use in response to expected enemy activities. The analysis identified the size or amount of forces that could be used in a certain area, and how long it would take to move these forces to this space. This included friendly and enemy forces.

Armed with these few pieces of information, and balanced against their own experience and judgment, the corps commanders and G3s decided what actions to take.

5. SUMMARY.

This chapter has oriented on the practical side of the estimate process. The primary base for discussion centered around the doctrine reflected in RB 100-9 and as taught at CGSC. The contrast and comparison of this chapter to the previous chapter 2, the theoretical version, reflects methods that attempt to give the decisionmaker the best of both worlds.

ENDNOTES

¹CGSC RB 100-9, page IV.

²Ibid, page IV.

³Ibid, page 2-7.

⁴Ibid, page 4-7.

⁵Ibid, page 2-46.

⁶Ibid, page 3-3.

⁷Ibid, page 3-12 through 3-16.

⁸Wass de Czege, "Understanding and Developing Combat Power," page 3.

⁹Ibid, page 8.

¹⁰Ibid, page 10.

¹¹Ibid, page 13--15.

CHAPTER 4

THE REQUIREMENTS OF TOMMORROW'S BATTLEFIELD

1. INTRODUCTION.

The purpose of this chapter is to discuss tomorrow's battlefield, and specifically, what the corps will be faced with in order to succeed on the battlefield. This chapter will build on the theoretical and practical foundations already established. For the purpose of this thesis, a notional corps and a fictitious battlefield will be described in order to better understand the parameters for the decisionmakers, the corps commander and G3. What will evolve will be a discussion of the nature of the battle (tactical level) and campaign (operational level) from the corps commander's and G3's perspective.

2. THE CORPS.

The US Army's corps remains its largest maneuver unit. The direction and planning of the battle at corps level differs in scope and magnitude from lower echelons of command. The corps plans for and conducts major operational and tactical tasks--with a very active role in the direction of campaigns and the way battles are fought. For the scenario associated with this thesis, the corps will fight the AirLand Battle as part of a larger combined force, on a European battlefield, in a mid-to-high intensity conflict.

As outlined in the CGSC Field Circular 100-15, Corps Operations, the corps performs several critical functions in the AirLand Battle. These include:

CRITICAL FUNCTIONS¹

- o Providing the link between tactical operations and strategic objectives.
- o Fighting the enemy throughout the corps' area of operation with maneuver forces or firepower.
- o Maintaining surveillance within and acquiring information beyond the corps' area of operations to provide an accurate picture of those enemy forces that can affect current and future battles.
- o Supporting the battle with combat support and combat service support forces.
- o Monitoring closely air support availability and distributing close air support (CAS) sorties for the close-in battle, requesting missions for tactical air reconnaissance (TAR), and selecting targets and providing target information for battlefield air interdiction (BAI) missions within the corps area of operations.
- o Integrating nuclear and chemical fires into the ground scheme of maneuver.

Corps are organized based on the factors of METT-T. "Generally, a corps consists of two to five divisions, a corps aviation brigade, a corps artillery force, a corps support command, and a number of separate combat, combat support, and combat service support units that range in size from companies to brigades."² A corps normally is a forward deployed corps or a contingency corps. The corps assumed for this thesis is forward deployed--established logistic facilities, defined missions, assigned areas of responsibility, and established command relationships.

The scenario envisioned for this thesis has the forward deployed corps under the operational command of an Army Group, operationally responsible to the NATO chain of command. The initial mission of the corps is to defend. The major combat, combat support, and combat service support forces of the notional corps, by type, are:

Notional Corps

Corps HHC	Combat Aviation Group
1 Light Infantry Division	1 GS Aviation Battalion
	1 Attack Helicopter Battalion
1 Mechanized Infantry Division	1 Maintenance Battalion
2 Armored Divisions	Military Intelligence Group
Separate Mechanized Brigade	3 CEWI Battalions
Armored Cavalry Regiment	Military Police Group

Ranger Battalion	3 MP Battalions
3 Field Artillery (FA)	
Brigades HHB's	Engineer Brigade
3 Lance FA Battalions	5 Combat Engineer Battalions
4 8" FA Battalions	5 Bridge Companies
2 155MM FA Battalions	
	Signal Brigade
Air Defense Artillery Group	
	4 Signal Battalions
Chap/Vulc Battalion	
3 Hawk Battalions	
Corps Support Command (COSCOM) (Major Units)	
3 Support Groups	
Ammunition Group	
Transportation Brigade	
Medical Brigade	
3 Petroleum Supply Battalions	

3. THE THREAT.

The threat forces opposing the Army Group include a Soviet Front and additional forces that could attack from a secondary avenue of approach. The Front is composed of three combined arms armies (CAA's), one guards tank army (GTA), one German Democratic Republic (GDR) motorized rifle division (MRD), one tactical air army (TAA), one airborne rifle division, and one artillery division.

When the Front attacks, the notional corps is expected to defend against a first echelon force of one CAA, consisting of two motorized rifle divisions (MRDs) and two medium tank divisions (TKDs). The GDR MRD could reinforce the CAA. The Front second echelon force, available for employment in the corps sector, is a Guards Tank Army (GTA), composed of three guards medium tank divisions (GTD). The corps could be attacked by a total of nine(9) Warsaw Pact divisions (four MRD and five TKD). The Front has the airborne rifle division in reserve. The tactical air army (TAA) is organic to the Front and provides tactical air support. The Front also has an additional combined arms army, undergoing mobilization, that could eventually be employed in the Army Group sector. The main attack of the Front is expected to come in the notional corps' sector.

4. THE BATTLE.

The corps fights on the battlefield on two of the three levels of war--the operational level and the tactical level.

The operational level is the bridge between strategic and tactical actions. It focuses on the broad conduct of operations. It deals with maneuver and planning well beyond the horizon of today's battle. "The objective of the operational level of war is the defeat of an enemy force, usually by maneuver. It is long-range in its outlook and seeks to establish a general plan or campaign for defeat of the enemy."³ The massive threat of the conventional and nuclear forces of the Warsaw Pact requires a unique perspective of the

battlefield. Success or failure may not be measured at the Forward Edge of the Battle Area (FEBA), or by the amount of terrain held by a force--the outcome may be something totally different. Victory might very well be when the enemy subjugates his will to ours and ceases to pursue aggressive action, or when he has lost control of the battle. Defeat of the enemy comes about not necessarily with the destruction of his forces, but by convincing him that it will be too costly to continue. The corps seeks to achieve this end through the execution of an operational concept, done primarily by maneuver. "At the corps level, the skillful coordination of fire in depth with the movement of large units represents the basis for successful maneuver. Maneuver in the operational sense is the swift positioning of forces to attack the enemy's rear, to bog him down in non-decisive areas, to fall on an isolated segment of his force, or to elude his attack."⁴

The tactical level of warfare deals with the direct and indirect fire engagement of weapons systems. It consists of movement to better facilitate the engagement of targets and some maneuver to place the opponent off balance. It orients on the destruction of elements of an enemy force or the direct denial of the enemy's objectives. The tactical level deals with the conduct of the fight at hand.

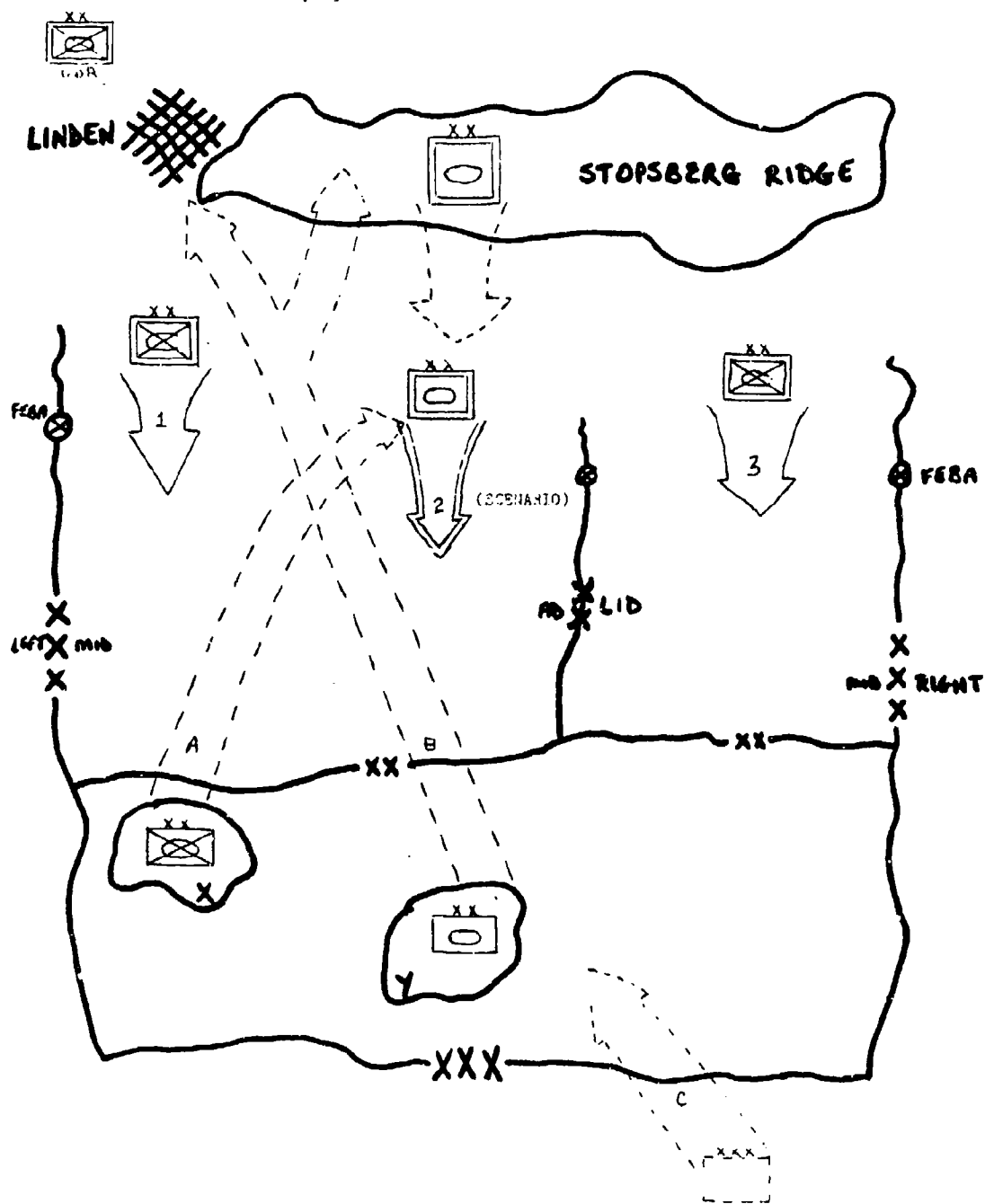
5. THE SCENARIO. (See scenario page)

Since the corps is deployed forward, it will be defending at the outbreak of the war because of the nature of alliance strategy,

which is to deter war or in the event of war to return to the status quo antebellum at the cessation of hostilities. The campaign plan for the Army Group is initially to absorb the attack with the enemy's main thrust to the left corps of the three defending. Then, by massing forces, both in country and arriving, to the rear of the center corps, conducting a counteroffensive aimed at striking deep into the enemy's rear. The mission given to the center corps is broad in scope, allowing the corps commander considerable freedom of action. The Army Group commander wants the center corps to defend initially, and by shaping the defense and the enemy's attacks, to attack then to defeat the first echelon forces (CAA) in sector and gain a terrain foothold that will allow the Army Group to attack through the center corps sector.

6. THE PLAN (As described by the Corps Commander with METT-T as a descriptive vehicle.)

MISSION. "We have, as the center corps of the Army Group, a very tough job. We have to defend, and we have to do it very well, or the Army Group's entire campaign for a counter offensive is in jeopardy. So even though our scheme of maneuver calls for an offensive spirit, I don't want us to forget our role in the big picture. If we do not succeed in our defensive mission it has a



greater impact than just on us. Consequently, we will organize our defense to take risks that allow us good chances of success. We will base our defense on fewer forces forward, initially, than normal, in order to take advantage of maneuver options. This is also necessary since we know that we have to attack later in order to give the Army Group maneuver space to pass a Corps through our sector, and to seize the terrain forward of our sector to hold the shoulder for them. Our defensive operations, then must serve only to create the opportunity for a change to the offensive. The corps operational concept is to conduct a defense flexible enough to respond to the enemy's initiative, and yet strong enough to absorb the enemy's initial attacks. Retention of terrain and movement of forces will occur only to win the tactical battles. Where possible, risks will be taken to conserve the fighting strength of the corps for the move to the offensive. My desire to move to the attack as soon as possible led to the decision to fight at the tactical level to attack the enemy's lead forces as much as possible, orienting on firepower and movement of forces. Simultaneously, we will conduct a deep attack with air and long-range weapons systems to slow, impede, and disrupt the follow-on forces. We have to stop the first echelon forces of the CAA, counterattack against the second echelon forces, and seize the terrain forward of the corps sector before any additional enemy forces can move against us. Once we start the attack, it might very well be a race to the dominant terrain."

ENEMY. "First of all, our area of interest must be an expanded one. We have to look deeper and wider than normal for two reasons. The main reason is the corps intent--the fact that we are going to attack forward. Secondly, though, is the fact that we are unsure about the Front's intentions. If he perceives success in our sector, he could shift his main thrust towards us. Additionally, when he figures out we are making a strong attack forward, he will undoubtedly move to occupy the defensive terrain needed to stop us, in order that he can continue to attack elsewhere. The size of the force in the first echelon of the CAA is expected to be two(2) MRDs and one TKD. This will place a TKD in the second echelon of the CAA. An additional MRD, the GDR MRD, will probably be given to the CAA for its second echelon force once he moves against us. The tactical defense will be oriented against the close-in battle--the fight against the CAA's first echelon. It will also fight the rear-battle attacks that the enemy is sure to make in support of his main effort. The initial corps deep battle efforts have to be toward identifying the location and activity of the second echelon forces of the CAA, and efforts to slow and disrupt their entrance into the close-in battle. We can expect simultaneous attacks by a variety of forces throughout our rear area and the possible use of the GRD MRD as an Operational Maneuver Group (OMG) to exploit a penetration. The enemy will strive to disrupt our rear area with a combination of direct airmobile/airborne attacks, operations of his specially trained and equipped special

purpose forces, as well as his own tactical air. The enemy's purpose will be to draw our attention away from the forward areas, to cause diversion of resources to the rear area battle, to interfere with our logistic support activities and with the movement of our reserves, to degrade our ability to generate tactical air, and to reduce our ability to command and control."

TERRAIN. "Since the success of the defense and the subsequent attack depend on preserving the force, massing of combat power, and seizing the initiative quickly when the opportunity comes, we have to be very concerned with the maintenance of routes, lines of communications (LOCs), and the reserve positions. The occupation of the defensive sectors by the forward divisions will vary. The terrain on the right part of the corps sector is highly wooded and thicker, allowing a more positional defense. Here, the forces deployed can take advantage of the good cover and concealment, coupled with the poor avenues of approach and obstacle support, to hold terrain longer to defeat and stop the attacking divisions. The terrain in the center of the corps sector, and to the left area, allows for a more mobile defense. The enemy's two division-sized avenues of approach are good, with the center A/A the best. The retention of terrain by forces defending against these two A/A must be necessary only to succeed in the tactical fight. Some absorption of the enemy by giving ground has to be planned for. The terrain available for the reserve forces provides good cover and concealment, while positioning them behind the

main threat areas. There are also good routes and attack corridors forward to support the counteroffensive. The key terrain for the corps plan is the Stopsberg Ridge and the town of Linden that is forward of the corps sector. These pieces of terrain serve two purposes. First, they help to slow the enemy's introduction of follow-on forces into our sector. We can add to the delay characteristics of the Stopsberg Ridge by blocking key passing lanes with obstacles. Secondly, and most importantly, once we attack forward, they become corps objectives. Seizure of these features will give the corps good terrain to either defend from against enemy Front second echelon forces, or to continue the attack. Also, and vitally key to the Army Group plan, we have to reach these objectives and control them before the enemy to give the Army Group a firm right shoulder to attack deep. Once we attack forward, they become initially the most important pieces of terrain in the Army Group's sector."

TROOPS AVAILABLE. "In order to succeed with our plan, we have to take some initial risks. The light infantry division is well suited to defend the right portion of the corps sector, where the terrain is wooded and choked up. This is almost a true positional defense. For the corps to succeed elsewhere, this division has to stop the enemy division attacking in their sector with little give in ground. They have to be given engineer support to prepare defensive positions, create obstacles, and reinforce the terrain. This is also

critical since the corps reserves will be positioned in depth in other parts of the corps sector. The light division has to tie in strongly with right corps units at the boundary. We will also take a risk by using only one division, an armored division, to defend against the center and left enemy division avenues of approach. This armored division has to defend prepared to hold on the left and give ground on the right. He has to help shape the battle for us by shaping a penetration along A/A 2 to draw the second echelon tank division on the friendly side of the Stopsberg Ridge and into the fight. Once the penetration is shaped he has to hold to give the corps a firm shoulder to attack against the flank of the penetration. We have to make sure we give him enough forces to hold the penetration. The mission of the mechanized division, in X-ray, is to conduct the tactical level attack against the forces in the penetration, and continue the attack to Stopsberg Ridge. The armored division, in Yankee, will follow on the heels of the mechanized division, conducting the operational level attack to seize Linden."

TIME AVAILABLE. "Since the corps is forward deployed, and early warning has been adequate, time to prepare and occupy defensive positions is good. The more time available, the better the defensive positions. Once the defensive battle begins, however, time is of considerable importance. For the tactical fight, we must constantly evaluate the defense, seeking ways to move forces, allocate resources, and influence the battle to ensure it goes the way we intend. For the

tactical level fight, there are two key time decisions that will have to be made. The first is the time it takes to shape the penetration, where the CAA's second echelon forces are, and how quickly they can be introduced into the close-in fight. The second piece of time that influences a decision is the time we will have to decide and move the mechanized division from X-ray along Alpha to conduct the attack. Certainly we will have less than 24 hours to assess the situation and decide on the attack. We may have to decide to try to delay any second echelon force. Coupled with this is the continuation of the attack by the second echelon division to the Stopsberg Ridge. This is tied into the operational level attack by the armored division to Linden. There has to be sufficient time to move both forces forward and succeed in getting to the objectives before any enemy second echelon forces. In deciding to conduct the operational attack, time will probably be the most critical of any factor to be considered, assuming the defensive phase and the tactical attack phase are successful. If Linden and the Ridge can be reached by enemy forces prior to our attacking forces, then the operational attack will more than likely have to be scrapped. Consequently, we have to be ready to decide on and move the forces on this attack within 72 hours or less of the time they are to get there. This decision is the most crucial of all. All of the planning must evaluate the situation continuously, looking beyond the current battle. Planning for the next battle must be done continuously and concurrently with the on-going fight."

With this plan as a base, and the wargaming discussion as guidance, a look at the decisions, and subsequent wargaming, is next.

7. A TACTICAL/OPERATIONAL DECISION.

SITUATION. The battle in the Army Group's sector has developed better than anticipated. The Front's main effort has been against the left corps, and the CAA attacking against the center corps has not received the GDR MRD as a part of the its second echelon. The GDR MRD remains under Front control, and is positioned still to attack within either the left or center corps areas. The attacks against the center corps have been slow and gone almost as anticipated. The LID on the right continues to defend and is holding well against the attack from the MRD on A/A 3. The AD defending on the left has held ground against the MRD on A/A 1 and shaped a penetration, as planned, against the TKD on A/A 2. The AD is able to hold this penetration. The CAAs second echelon TKD, although attrited and delayed somewhat, has come through the Stopsberg Ridge corridors and is moving to follow the TKD making the penetration along A/A 2. It is anticipated that this TKD will be moved to positions to be introduced into the battle within 14-20 hours. The GDR MRD, from its current position, could move to reinforce the CAA toward Linden and the Stopsberg Ridge immediately, if chopped from Front to CAA. The GDR MRD could reach these areas within 36-48 hours. The Army Group commander, because of the early success within the Army Group area of operations, and because of the positioning and strengths of friendly forces, has asked the center

corps commander to consider early attacks, as planned, to allow the Army Group counterattack to take place within four days. He feels the opportunity will be lost if he waits much longer than that. Although there have been some rear area enemy activities targeted against logistical activities within the corps rear area, they have been isolated and appear to have no principal aim. The separate brigade (mechanized) has moved to take care of these threats, and continues to act as the corps RACO force. The Armored Cavalry Regiment (ACR) was depleted to 60% during the initial covering force fight, and has been refitting and undergoing maintenance and recovery operations in the corps rear. They should be back to 80% within 48 hours. They could be used now, but the corps commander has decided to get them back to at least 75% before he gives them another mission. The situation so far has allowed for this. However, he will commit them before they reach 75%--80% if need be. The Mechanized Division in X-ray and the Tank Division in Yankee continue to act as corps reserve, with their strength at 96%--98% each. The road nets, LOCs, and movement corridors have not been significantly degraded by enemy air and/or rear area attacks."

CORPS COMMANDER'S WARGAME. "This is most likely the key decision point for us in the war. Not only does what we do now and when we do it significantly effect own area corps, it has tremendous impact on the Army Group's operational concept. While our mission continues to be to defend, we have to take the initiative soon or we

lose the opportunity to set up the terrain and the situation for the Army Group's attack, as well as the chance to defeat the attack of the CAA against us, and his forces. The enemy now has an almost 3 to 1 ratio against us along A/As 1 and 2 combined, assuming the introduction of the second echelon TKD within the next 10--20 hours. Our deep attack efforts against this TKD so far have been primarily counter mobility. If we want to succeed against him, we must now switch to priorities that allow him to move into the penetration, clearing the Stopsberg Ridge, and targeting our deep attack to kill him while he moves. The biggest enemy concern is the GDR MRD. If he moves to reinforce the CAA against us, he could cause the force ratio to be prohibitive, and force us to delay or cancel the operational thrust forward to the terrain objectives. The Army Group will devote a large share of its air interdiction against this division. He is our primary named area of interest (NAI). The same terrain considerations from our planning wargame still apply. The town of Linden and the Stopsberg Ridge still are the key pieces of ground we have to hold to give the Army Group a firm shoulder to attack from. We need to get the second echelon TKD through the ridge, but keep any other follow-on forces from moving to these two pieces of ground. The movement corridors, road nets and LOCs are still favorable for our attacks. The weather for the near future is favorable, also. Our troops available are positioned about as well as we could hope for. The LID on the right is doing much better than anticipated, and the AD

defending on the left can hold the penetration and the shoulders with the forces he has. Since our attacks have to have stable shoulders at the penetration, we have to continue to evaluate the defense of the AD, and consider giving him additional forces, if necessary, to hold. I want the attack helicopters to be responsive to his needs. If we do attack soon, the separate brigade can initially act as corps reserve. Since the attacks might end up becoming a race to the terrain objectives, consider some options for the use of the ACR in the attack plans. Once we go, all of the close in support (CAS) and battlefield air interdiction (BAI) has to go to support this scheme. The LID will have to defend with little or no air support. We also may have to begin now repositioning some field artillery to support the attacks. Every resource we own has to go to priorities that support the attacks. This includes engineer mobility efforts, traffic control, maintenance and logistics support, air defense, intelligence collection and operational security. The Army Group will support us with additional intelligence agencies, and is also ready to conduct a deception plan that will support our attacks as well as their subsequent attack. The time available to decide, issue the orders, move the forces, and execute the attacks is very compressed. We know that the second echelon TKD will be in place within 14-20 hours. We want to go against him once he is committed to following the AD within the penetration. The mechanized division in X-ray will need about 12 hours of movement time to the attack position. Additional time has

to be allowed for troop leading steps, and artillery repositioning, and to include the other factors of the "friction of war". If he goes, he has to get the word within 2--4 hours. The hard part is deciding when to move and attack with the armored division in Yankee. We don't want to commit him until the attack by the mechanized division has gone, and the estimate of its success looks favorable. However, if we wait too late the GDR MRD could be moved against us and get to the Linden and Stopsberg Ridge areas within 36--48 hours. It will take our armored division about 18 hours to move forward to his attack position. He also needs time to coordinate, prepare, and conduct his own troop leading steps. The decision to move him forward has to come within the next 12--18 hours. This will allow the tactical level attack force to move and begin his attack. The decision to then jump off with the operational level attack has to come within the next 6 hour window. This would allow the armored division to fight his way to the terrain objective and reach them before the GDR MRD could get there, even if he started to move now."

8. SUMMARY.

This chapter has given us a look at how the corps organizes itself for a mission on tomorrow's battlefield and then wargames decisions on the fight as it takes place. With this corps commander's perspective, a better appreciation is gained for the factors that should be considered by the corps commander and G3 in wargaming courses of action.

END NOTES

¹FC 100-15, page 1-3.

²Ibid, page 1-4.

³Ibid, page 4-3.

⁴Ibid, page 4-4.

CHAPTER 5

AN ANALYSIS

1. INTRODUCTION.

The purpose of chapter 5, An Analysis, is to conduct an analytical evaluation of the theoretical and practical methods for decisionmaking processes discussed in chapters 2 and 3. This will be done by testing each different process against a set of criteria--a wargame. Ultimately this analysis will determine which, if any, is the optimum method for use by a corps commander/G3. The new "model" will be the best of all combined.

There are five different methods to be evaluated. Three, the British appreciation, the German estimate system, and the Russian decision cycle are all theoretical, or doctrinal. The US Army estimate of the situation, in its theoretical form, will be blended with the detailed system for wargaming discussed in the CGSC RB 100-9, a practical system. The Wass de Czege model for relative combat power is a practical model. Since no distinct system is in use within the field corps, no separate evaluation of their "system" will be conducted. However, the elements of consideration observed will be used for the development of a new model. Additionally, a short analysis of METT-T, a way to wargame any course of action under any system, will be conducted.

2. CRITERIA.

Six criteria have been established to measure the effectiveness of a wargaming method. While each criterion is a subjective element of what it takes to make a good wargame method, they all, both individually and collectively, lead to a system that can be used to solve the problem statement. A discussion of the criteria follows.

Staff Integration. The primary measurement here is to determine if the method, in either an information seeking role and/or an analysis role, uses all of the necessary staff agencies and sections. The method should, when time and circumstances permit, allow for some measures of staff input and analysis. Understandably this may not always be possible. However, at the corps level, the management of resources, gathering of information and processing of knowledge is too comprehensive and complex for one or two men to handle. Consequently, the corps commander and G3 must rely on assistance from other staff officers and commanders. Any method that does not do so--because of time available, structure of the method, whatever--will not adequately measure up to this criterion.

Mental Visualization. "Fight the battle." Any acceptable method has to provide an opportunity for the commander/G3 to conduct the mental wargame visualization of how he thinks the battle is going to be fought. This is the essence of wargaming. The measurement determined in analyzing the methods is against standards of ease and

clarity. Any method that requires a written, long, drawn-out analysis fails. So does a method that does not provide enough detail or information against which the decisionmaker can visualize the fight.

Timeliness. "Wargaming and application." The key ingredient of measure here is the question: How quickly can the analyzed decision/recommendation be made? Any method that requires excessive, time, either in information gathering, analysis, or determination of recommendation/decision, is a poor method. Remember that the time criterion for an operational decision is 72 hours or less, and the time criterion for a tactical decision is 24 hours or less. Also, the criterion measures the time for application. If the wargame process is not quickly transferable in informing staff and commanders of the recommendation/decision, the commander's intent, risks, priorities, or other vital pieces of information or guidance, then it will not do.

Use of Significant Combat Factors. The idea here is not to develop a set list of combat factors and require each of them to be considered in the process. That goes against the idea of developing a system, or model, that allows for thought and reasoning based on the situation and circumstances. The measure here, in fact, is the actual inclusion of the step itself.

Constant and Continuous Process. Simply put, is the method capable of a quick beginning, picking up the analysis at any point in the battle? Or does it have to regenerate itself, from the beginning, each time a new situation arises?

Continuing Application. "Evolution." This is a test to determine if the method can apply tomorrow as well as today.

3. THE US ARMY ESTIMATE OF THE SITUATION.

This method is ideal for long-range planning and situations where time is not a critical factor. It not only allows for total staff integration, it demands it if it is to be done right. The contributions each staff officer makes as he conducts his own estimate are invaluable in contributing to the determination of the best course of action--the recommendation/decision. It calls for a mental visualization of how the fight is to take place, and uses a large number of significant combat factors in the wargame step. The mental wargame is not, however, quick, and not easily done just mentally. The recommended methods of wargaming require too much detail on the part of the decisionmaker for a time critical situation. It also begs for note taking and written documentation. When done correctly, it takes too much time to accomplish, and does not allow for quick application. It is a constant and continuous process, but each time it is applied it requires a return to the beginning. The significant advantages of this method are its staff integration and its detailed, comprehensive consideration of the factors of analysis. The significant disadvantages are the time required to complete the process and the fact that it is structured more for a long-range plan in a non time restricted scenario.

4. THE BRITISH APPRECIATION.

This system is similar to the US Army estimate of the situation. It begins with a situation study and ends with a decision or recommendation. While not formally calling for staff integration and input, the method of reasoning allows for it. The principal thrust of the appreciation is the determination of the "aim," what is to be done and why. This is a strong part of the appreciation, forcing the decisionmaker to state up front the intent. The system does consider significant factors and calls for each factor to be looked at in its relationship to the attainment of the aim. The method, though, does not formally call for a mental visualization to be made by the decisionmaker on how he sees the fight--a deficiency. It does analyze various courses of action, determining advantages and disadvantages. It is quicker than the US Army estimate of the situation, but still not organized for fast application. It does allow for some constant and continuous study of situations, but calls for a re-start at the beginning each time. The major advantage of this system is its orientation on the "aim," the intent of what is to be done and why. The significant disadvantage is the fact that it allows for no mental visualization of the fight.

5. THE GERMAN SYSTEM.

Since the US Army "borrowed" its system, in the beginning, from the German system, there is a great deal of structural similarity between the two. Although no formal staff integration is required,

the process provides for it. The estimate uses the significant combat factors to determine combat power and to estimate combat effectiveness. There is, again, no specific step that calls for a mental visualization of the fight. The process is not lengthy, and it can be easily applied once completed. It is, more than the US and British systems, a constant and continuous process. It does have application in a changing environment. The significant advantages of this system are the realization of effective combat power and the fact that it is a continuous process. The main disadvantage is the lack of a mental visualization of the fight.

6. THE RUSSIAN SYSTEM.

It is difficult to measure the Russian system of decisionmaking because it is not a well-defined, structured process. However, in measuring what we know of it against the criteria, some factors fall out. Since the decisionmaker in the Russian system is under the one-man command and centralization of control principle, the system does not allow for much staff integration. Most of the information gathering and analysis is up to the commander/G3. It does use the significant factors of combat, but also applies scientific and mathematical methods of analysis. It appears to be time-consuming, and does not mentally visualize the fight under normal procedure. This occurs only when the commander possesses the skill to do so. It is a constant and continuous process. The major advantage of this system is the flexibility of the decisionmaker in using various

methods to help him determine the decision--scientific, mathematical, intuitive. The primary disadvantage is the lack of staff integration.

7. THE WASS DE CZEGE COMBAT POWER MODEL.

This model has a lot of promise. It has excellent potential for application within an educational system, but its use as a wargaming system on the battlefield is more limited. It allows for staff integration, and mentally fights the battle. It does call for a consideration of significant combat factors, even providing a framework for more detail, if needed. The aim of the combat factors, however, is more at the tactical level than operational. Also, to do it right, the wargame would take more time than desired, and, in its application phase, requires translation into courses of action to be recommended/decided upon. It does provide for a constant process, and has excellent application in a changing environment. The major advantages of this model are its inclusion of the leadership factors, and the fact that it focuses on the actual combat factors necessary to develop real combat power. The primary disadvantage is that it has application for the tactical level, primarily, and is more suited to an educational system as opposed to a battlefield environment.

8. METT-T.

The use of the wargaming methodology of mission, enemy, terrain and weather, troops available, and time (METT-T) has been used within the US Army for a very long time. Although it has best application at the tactical level, especially battalion and lower, it can be used to

wargame any course of action at any level. Simply put, it is a way to look at all of the significant factors that affect a course of action. Also, it has application in any estimate process or system. It will support the wargamer using the US Army estimate of the situation, the British system, and the German and Russian systems. When measured against the criteria, it stands up very well. Any staff member or agency can use METT-T to answer his wargaming question. By applying specific points of emphasis and consideration under each METT-T heading, the staff officer can quickly arrive at some answers to key questions. His input can be easily and quickly integrated within the staff. Normally, METT-T is a total visualization process. This is especially true for the lower, tactical levels. The same can be said for using it at higher, operational levels, too. It does not require a long, drawn-out analysis, and is best used when done mentally. A major advantage of METT-T is the fact that it is quick and timely. It also is adaptable to quick transfer of information and decisions. It does not normally use a set list of combat factors, but rather applies itself to each individual situation--determining the significant combat factors that each heading of METT-T should consider. It is an easy way to constantly and continuously analyze specific situations, and has excellent application for the future. The major advantage of the METT-T wargame process is its adaptability to any level, any situation, and its easy and quick application. The disadvantage of METT-T is that it relies on the judgment, knowledge, and experience of the wargamer.

9. A CORPS WARGAMING MODEL.

The first thing to consider when developing a system for the corps commander/G3 to use for wargaming a course of action is that, if we assume the situation calling for a decision/recommendation is time critical, then some factor outside of the ordinary has caused the requirement for the decision or recommendation. Otherwise, the compression of time as a factor in determining the best course of action would not apply. This "influencing factor" might be a change in the corps mission, as directed by higher, an unexpected enemy development or action, a change in terrain or weather, or a change in forces available for employment. All of these are directly related to the considerations of METT-T--Mission, Enemy, Terrain and Weather, Troops Available, and Time. Time is going to be a significant factor regardless which of the other factors is causing the decision cycle to generate. It is a factor in the amount of time available for deciding, disseminating the decision, and executing the decision. It also is critical when placed against the fact that the enemy will often also be involved with his own decision cycle process, caused possibly by the same influencing factor.

The method for the corps wargame, then, centers around the factors that contribute to a METT-T consideration. As the commander or G3 wargames, mentally, the situation, he actually develops his deciding course of action by visualizing the fight with the METT-T considerations as his guide. A look at his mental process for each element of METT-T is required here.

Mission. The mental process begins with a quick analysis of the intent. The decisionmaker asks himself what he intends to accomplish, almost the "aim" of his actions. It is vital that the action contemplated correspond to the higher and the corps operational plan or concept. The key question--what is it I want to accomplish?

Enemy. Key questions:

What is he capable of doing?

What will he do?

How long will it take?

During this step of the mental process, the decisionmaker has to project himself into the future. At the corps level, the emphasis has to be on the enemy's use of uncommitted forces. All of the thought process has to be aimed at the projected moves/actions of the enemy, and when they can influence the situation.

Terrain and Weather. This should be a very quick assessment of any impact these elements will have on what the intent of the corps is. The terrain has to be looked at from a time and space factor--both friendly and enemy. A determination must be made of the size force that can influence the battle at the decisive point, and how long it will take for that force to move to the area.

Troops Available. At the corps level the chance of success is dependent on the capability to mass or concentrate combat power at the decisive point on the battlefield. This can be firepower as well as

maneuver. Linked with this assessment is the mobility and logistical status of the available forces, as well as the effective combat strengths.

Time. This is often the most critical factor. The thought process here is oriented on an assessment of time as it affects both friendly and enemy forces, and what can be done to create a more favorable time factor for the friendly forces.

The estimate process at the corps level requires a new understanding. Previously, the primary emphasis was on the division. The AirLand Battle doctrine has caused the emphasis to change. There are obvious differences between the way a division and a corps looks at the estimate process. The divisions are very concerned with relative combat power. This is because they are fighting primarily at the tactical level. They have less time to conduct estimates and plans. The division is concerned with less space--both offensively and defensively. Additionally, the size of the force and the capabilities at division level are significantly less than those of a corps. The same is true for the intelligence capabilities. Corps is the focal point for overcoming an enemy force. By using the forces available and the resources of a corps, the corps can manage to overcome the ratio imbalance that the Soviets will initially have.

Consequently, for a corps, the estimate is driven by the mission(s) assigned, the numbers of subordinate units assigned, and the time available to use the forces to properly accomplish the

mission. The corps must constantly think risk versus payoffs. Keeping the commander's concept and intent in mind, the corps has to look for opportunities to mass combat power, surprise the enemy, and create a favorable ratio of combat power. The corps decision has to support a thrust that aims toward some offsetting of the mobility of the enemy and his numbers advantage.

10. SUMMARY.

This chapter has analyzed the different estimate processes and systems against a set of criteria. While no actual "corps mold" jumps out at you, there are definitely major factors that the corps commander and G3 must always assess in order to arrive at good decisions.

CHAPTER 6

CONCLUSIONS AND RECOMMENDATION

1. INTRODUCTION.

a. The thrust of this thesis has been to develop an optimum method for wargaming a tactical and operational course of action at the corps level. The method used was to establish a fundamental base with a study of the estimate process, from a doctrinal or theoretical view. This study has included a review of the history of the process, as well as how it is applied in other armies. Then a more practical approach was taken with a look at how the process was applied in reality. The requirements of tomorrow's battlefield were studied. Each of these models was then analyzed against certain criteria, with the significant advantages and disadvantages identified. Based on this, a model for wargaming courses of action at the corps level was developed, with METT-T as the base of consideration. The purpose of this chapter is to review the steps leading up to this point, arrive at any conclusions, and make recommendations.

2. REVIEW.

Chapter 1 established the framework for this thesis. As the introductory chapter, it laid out the purpose, scope, and methodology to be followed in the following chapters. With an assessment of the

battlefield of tomorrow, it placed a heavy emphasis on the importance of reaching sound decisions on this battlefield. With the corps headquarters as a war fighting level, the problem statement oriented on the commander's and G3's estimate of the situation. By asking three questions--Where are we now? Where do we want to go? How are we going to get there?--the chapter set the foundation for what the discussion and analysis portion of the thesis would be. It included a brief view of the estimate of the situation and the wargaming associated with it. Time criteria were established for both a tactical decision and an operational decision. After listing the necessary assumptions, the chapter concluded with a brief synopsis of the methodology to be used, and what each of the other chapters would discuss.

Chapter 2, Military Decisionmaking, was a study of the historical background of the estimate and tactical thought processes, including foreign armies. The primary review centered around the system used by the US Army--its history, development, and application. The systems used by the armies of Great Britain, Germany, and Russia were also studied. The history of the US Army system was traced, to include how it helped to formulate educational teachings. A thorough study of the military decisionmaking process was done, with a detailed discussion of the estimate of the situation. The 5-step method of appreciation used by the British Army

was discussed next, followed by a like analysis of the system in use by the German Army and the Russian Army. This chapter served as the theoretical foundation for study and analysis.

Chapter 3, Decisionmaking in Practice, used the historical base of chapter 2 as a start point for its study of the more practical, or doctrinal, application of the estimate process. It began with a review of the tenets of the AirLand Battle doctrine, and what the corps would be asked to do as part of that doctrine. A review of the levels of warfare was included. The first "doctrinal" process reviewed was the one developed and taught at CGSC and included in the Reference Book (RB) 100-9. This process is a detailed way to use the estimate of the situation. Included in the discussion was a comprehensive look at the wargaming portion of the estimate of the situation. The next review was of a method that orients on the traditional variables that are of importance in making decisions on the battlefield. This was a look at the model developed by Colonel Huba Wass de Czege, "Understanding and Developing Combat Power." The model attempts to supplement the estimate process by placing heavy emphasis on the factors of training, motivation, and quality of leadership, among others. It strives to develop some form of quantifiable relative combat power. This model centers around the four elements of combat power: maneuver, firepower, protection, and leadership. The chapter concludes with a review of how the corps in the field today uses the decisionmaking system.

Chapter 4, The Requirements of Tomorrow's Battlefield, interrupted the review of the historical and practical side of the estimate process by discussing the nature of the battle and campaign from a future corps commander's perspective. The corps organizational structure and doctrinal functions were discussed, along with its reasons for existence. A notional corps was structured to identify what the future battlefield might hold. The threat was established, and the battlefield outlined. Then, using METT-T as a guide, each of these views was discussed from the corps commander's perspective. The chapter painted the picture of the modern battlefield to determine the kinds of decisions to be made and the factors involved in those decisions.

Chapter 5, An Analysis, provided an analytical evaluation of the theoretical and practical methods for decisionmaking that were identified in chapters 2 and 3. Each of the systems was tested, or wargamed, against a set of criteria. The criteria used were: staff integration; mental visualization, timeliness; use of significant combat factors; constant and continuous process; and continuing application. Each model, or system, was evaluated and analyzed against the criteria, with the major advantages and disadvantages identified. The end result was a discussion on a corps wargaming model for consideration. The significant factors of METT-T at the corps level were identified, and the considerations that drive the estimate process at the corps level.

2. CONCLUSIONS.

a. The estimate of the situation, as it is doctrinally and theoretically outlined in US Army publications and teachings, is still a valid method of determining which course of action to adopt to satisfy tactical problems. It does not, however, satisfy the demand for a method of wargaming a course of action in a time-compressed environment. It remains to be more useful for long-range, deliberate planning where time is not considered to be a significant factor in the estimate of the situation process. It also is more appropriate, in its comprehensive and detailed form, at high levels of command. It serves as an excellent vehicle for integrating the entire staff into the sequence of commander and staff actions, and has great value when used as a formal step in that process.

Regardless of the method used to wargame a course of action, a great deal of the validity of the wargame still rests with the balanced portions of experience, knowledge, and judgment of the person conducting the wargame. Although practice at wargaming and study of how it is done can help, little overcomes the practical side of actually doing it.

Even though the sequence of commander and staff actions, and the estimate of the situation process as a part of it, is a doctrinal system and taught as the US Army method, it is not widely used at the corps level to the extent intended.

3. RECOMMENDATIONS.

a. The importance of the corps decision cycle grows daily. The complex nature of the battlefield, the emerging technologies, the lethality of weapons systems, and the command and control variables of the integrated battlefield all seem to make the criticality of making the right decision even more important. This is especially true when the operational level of war is proposed as a means of linking the tactical and strategic levels. Because of this, it is recommended that the estimate of the situation and the military commander and staff sequence be more fully implemented within the corps headquarters. Every opportunity to teach, practice, and execute the system needs to be seized upon by the corps staff. This will only serve to more fully integrate the staff, as well as cause the various staff sections and agencies to think about their particular area of interest as it applies to any tactical situation.

b. The educational system of the US Army must continue to stress the military decision process and the estimate of the situation. More importantly, students at all levels of instruction must be able to think through not only the what and how of a course of action, but also the why--the reasons that support the selection of a course of action. This will, along with the doctrinal literature and teaching references available for education and training, help to establish in the student a capability to think through a situation

using the factors that apply. It will help to create a mental thought process that he can use when he is in the more practical side of the environment.

c. It is recommended that the estimate of the situation continue to be the doctrinal method for determining the best course of action to a tactical and operational problem or situation. It is also recommended that RB 100-9 continue to be developed as a method of teaching and educating officers on how to implement in detail the estimate process.

d. Lastly, it is recommended that the corps manual, FC 100-15, include a chapter on the estimate of the situation process at the corps level. Special emphasis should be given to the wargaming methodology, and what ought to occur during a time-sensitive situation.

BIBLIOGRAPHY

BIBLIOGRAPHY

Books

Addington, Larry H. The Blitzkrieg Era and The German General Staff, 1865-1941. New Brunswick: Rutgers University Press, 1971.

Armed Forces Staff College. Joint Staff Officers' Guide, Norfolk, VA, August 1, 1980.

Clausewitz, Carl von. On War. Edited and translated by Michael Howard and Peter Paret. Princeton: University Press, 1976.

Dale, Ernest and Urwich, Lyndell. Staff in Organization. New York: McGraw-Hill, 1960.

Dupuy, Colonel T. N. A Genius for War: The German Army and General Staff, 1807-1945.

Earle, Edward Mead, ed. Makers of Modern Strategy. Princeton: University Press, 1944.

Fuller, J. F. C. Generalship; its Diseases and their Cure: A Study of the Personal Factor in Command. London: Faber and Faber, 1933.

Gabriel, Richard A., and Savage, Paul L. Crisis in Command. New York: Hill and Wong, 1978.

Gawne, Captain, trans. The Defence of Duffers Drift (E. D. Swinton). Kansas: Hudson, circa 1909.

Goerlitz, Walter. History of the German General Staff, 1957-1945. Translated by Brian Battershaw. New York: Praeger, 1953.

Hittle, Lieutenant Colonel J. D. The Military Staff: Its History and Development. Harrisburg: The Military Service Publishing Company, 1949.

Ivanov, D. A. and Shemanskiy, P. V. Fundamentals of Troop Control in Combat. Moscow: Voenizdat, 1977.

Ropp, Theodore. War in the Modern World. New York: Collier, 1962.

Schellendorff, von General Bronsert. The Duties of the General Staff, 4th Edition. London: Harrison & Sons, 1905.

Periodicals and Articles

"A Form for an Estimate of the Situation," Cavalry Journal, Vol XLV March-April 1936.

Corkley, P., "A Sound Decision," Military Review, Vol XXXV, April 1955.

Falwell, Marshall L., "The Principles of War and the Solution of Military Problems," Military Review, Vol XXXVI, May 1955.

Headquarters, Department of the Army. FC 100-1, The Army. Washington, D.C.: US Government Printing Office, 1981.

_____. FM 71-2, The Tank and Mechanized Infantry Battalion Task Force. Washington, D.C.: US Government Printing Office, 1977.

_____. FM 71-100, Armored and Mechanized Division Operations. Washington, D.C.: US Government Printing Office, 1978.

_____. FM 100-5, Operations. Washington, D.C.: US Government Printing Office, 1982.

_____. FM 101-5, Staff Organization and Operations. (Draft, May 1983). Washington, D.C.: US Government Printing Office, 1982.

Headquarters, US Army Combined Arms Center, CGSC. RB 101-999, Staff Officer's Handbook. CAC Printing Office, 1983.

Headquarters, Training and Doctrine Command. Periodic Report, Articles of Special Interest: The Command and Control System of the German Army. Fort Monroe, VA, 14 July 1977.

Koomtz, Lieutenant Colonel Ronald D., and Ira T. Kaplan. "Communication and Leadership Styles of Battalion Commanders." Military Review LXIII (1983): 11-20.

Ministry of Defense, United Kingdom. Joint Service Staff Manual, Vol I, November 1978.

Orr, George E., Major, USAF. Combat Operations C³I: Fundamentals and Interactions. Airpower Research Institute. Maxwell Air Force Base, Alabama: Air University Press, July 1983.

Seigle, John W., Major, USA. The Estimate of the Situation. Student Research Paper. Fort Leavenworth: U.S. Army Command and General Staff College, January 19, 1967.

Strategic Studies Institute, U.S. Army War College, Operation Planning: An Analysis of the Education and Development of Effective Army Planners, Carlisle Barracks, PA, 30 September 1982.

U.S. Army Command and General Staff College, Reference Book 100-9, A Guide to the Application of the Estimate of the Situation in Combat Orders, Fort Leavenworth, KS, September 1983.

_____, FC 100-15, Corps Operations, Fort Leavenworth, KS, March 1984

U.S. Naval War College, Sound Military Decision. Newport, September 21, 1942.

Unpublished Material

Wass de Czege, Huba, Colonel, U.S. Army. "Curriculum." Unpublished Paper, 1982.

_____. "Education Requirements of Modern Field Grade Battle Leaders and Staff Officers." Unpublished Paper: 1982.

_____. "Understanding and Developing Combat Power." 10 February 1984.

Other Sources

Observations/Interviews with Staff and Commanders of III (US), V (US), and VII (US) Corps', 1983-1984, during Command Post Exercise.

Observations/Interviews with Staff, Faculty and Students of Furungsakademie, Federal Republic of Germany, Mar 1984.

INITIAL DISTRIBUTION LIST

1. Combined Arms Research Library
US Army Command and General Staff College
Fort Leavenworth, Kansas 66027
2. Defense Technical Information Center
Cameron Station
Alexandria, Virginia 22314
3. School of Advanced Military Studies
US Army Command and General Staff College
Fort Leavenworth, Kansas 66027
4. Headquarters, VII (US) Corps
Chief, Operations Branch
APO New York 09107
5. US Army Command and General Staff College
Department of Tactics
ATTN: COL Danner, Corps Committee
Fort Leavenworth, Kansas 66027