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THE ART AND SCIENCE OF OPERATIONAL MANEUVER (U) ARMY
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SCHOOL OF ADVANCED MILITARY STUDIES J SCHROEDER

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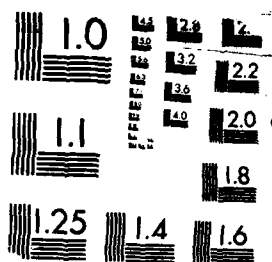
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THE ART AND SCIENCE OF OPERATIONAL MANEUVER

By

Major Joseph Schroedel
U. S. Army

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School of Advanced Military Studies
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Fort Leavenworth, Kansas

4 May 1988

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SECURITY CLASSIFICATION OF THIS PAGE

REPORT DOCUMENTATION PAGE				Form Approved OMB No. 0704-0188	
1a. REPORT SECURITY CLASSIFICATION UNCLASSIFIED			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution unlimited.		
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE					
4. PERFORMING ORGANIZATION REPORT NUMBER(S)			5. MONITORING ORGANIZATION REPORT NUMBER(S)		
6a. NAME OF PERFORMING ORGANIZATION School of Advanced Military Studies, USAC&GSC		6b. OFFICE SYMBOL (If applicable) ATZL-SWV	7a. NAME OF MONITORING ORGANIZATION		
6c. ADDRESS (City, State, and ZIP Code) Fort LEAVENWORTH, Kansas 66027-6900			7b. ADDRESS (City, State, and ZIP Code)		
8a. NAME OF FUNDING/SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (If applicable)	9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER		
8c. ADDRESS (City, State, and ZIP Code)			10. SOURCE OF FUNDING NUMBERS		
			PROGRAM ELEMENT NO.	PROJECT NO.	TASK NO.
11. TITLE (Include Security Classification) The Art and Science of Operational Maneuver (U)					
12. PERSONAL AUTHOR(S) MAJ Joseph Schroedel					
13a. TYPE OF REPORT Monograph		13b. TIME COVERED FROM _____ TO _____		14. DATE OF REPORT (Year, Month, Day) 4 May 1988	
15. PAGE COUNT 52					
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP	operational maneuver		
			mobility		
			movement		
			maneuver		
			Korea (Inchon)		
			blitzkrieg		
19. ABSTRACT (Continue on reverse if necessary and identify by block number) <p>This monograph examines operational maneuver from a theoretical and historical perspective. It suggests a framework for the development of operational maneuver concepts. The monograph first defines movement, mobility, and maneuver at each level of war. It then describes operational maneuver theory in terms of a framework that consists of leverage, concentration, and risk. Those elements facilitate maneuver concept design. The monograph concludes by using the framework to examine two successful and two unsuccessful historical examples of operational maneuver. The Battle of Flanders (1940) and the Inchon landing (1950) were successful and the Battle of Kursk (1943) and the Battle of Alam Halfa (1942, North Africa) were unsuccessful.</p> <p>The monograph includes two useful appendices: the first is a glossary of operational terms, the second is a description of the operational environment (force, time, and space considerations).</p>					
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input checked="" type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS			21. ABSTRACT SECURITY CLASSIFICATION UNCLASSIFIED		
22a. NAME OF RESPONSIBLE INDIVIDUAL MAJ Joseph Schroedel			22b. TELEPHONE (Include Area Code) (913) 684-2138		22c. OFFICE SYMBOL ATZL-SWV

DD Form 1473, JUN 86

Previous editions are obsolete

SECURITY CLASSIFICATION OF THIS PAGE

UNCLASSIFIED

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4 May 1988

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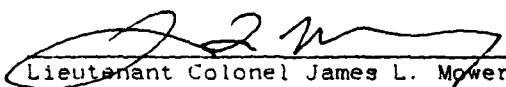
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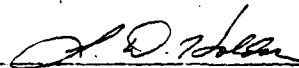
Name of Student: Major Joseph Schroedel, U.S. Army

Title of Monograph: The Art and Science of Operational Maneuver

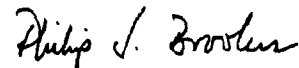
Approved By:



Lieutenant Colonel James L. Mowery, M.A. Monograph Director



Colonel L.D. Holder, Jr., M.A. Director, School of
Advanced Military Studies



Philip J. Brookes, Ph.D. Director, Graduate Degree
Programs

Accepted this 4th day of May 1988.

ABSTRACT

THE ART AND SCIENCE OF OPERATIONAL MANEUVER by MAJ Joseph Schroedel,
USA, 52 pages.

➤ This monograph examines the concept of operational maneuver from a theoretical and historical perspective. It suggests a framework for the development of operational maneuver concepts.

The monograph first defines the terminology associated with operational maneuver. Movement, mobility, and maneuver are distinct concepts which form the basis for understanding operational maneuver.

Next, the monograph examines operational maneuver theory in terms of leverage, concentration, and risk. These elements form a framework which facilitates the design of operational maneuver concepts early in a campaign.

The subsequent examination of several historical examples, both successful and unsuccessful, illustrates the applicability of the suggested framework. Operational commanders who developed viable concepts early and appreciated the elements of the framework achieved decisive results.

Finally, two implications for current U.S. doctrine emerge. First, operational maneuver theory must be articulated to and understood by leaders at all levels. Secondly, operational commanders must exercise the theory to develop a capability which is essential on the Airland battlefield.

Keywords: Operational maneuver, Airland battlefield, Leverage, Concentration, Risk, Mobility, Tactical maneuver, Strategy, Airland battle.

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Section I

INTRODUCTION

The question might be asked: When shall one formulate a plan of maneuver? The answer is: The sooner the better! What made commanders great was the fact that they always had an initial plan and did not rely on improvisation of the moment.¹

This monograph suggests a framework for developing operational maneuver concepts. It begins by defining the difference between movement, mobility, and maneuver: distinct but related concepts which form the basis for understanding operational maneuver. Operational maneuver theory is then presented in terms of a framework which consists of leverage, concentration, and risk. The study concludes by utilizing that framework to analyze four historical examples: two successful and two unsuccessful attempts at operational maneuver.

As the historical examples illustrate, the degree of success or failure of operational maneuver depends on the concept developed by the operational commander. Viable concepts are the product of a sound understanding of theory and a solid background of peacetime practice. The framework proposed in this study provides operational commanders with a vehicle to develop operational concepts that can be practiced in peacetime and in war.

Section II

Movement, Mobility, and Maneuver

Movement, mobility, and maneuver are often used interchangeably. However, they are distinct terms which must be understood before discussing operational maneuver. Movement is the simple state of being in motion. Mobility is a physical capacity to move in its basic sense; it also has a cybernetic dimension - the inclination or imagination to press the limits of physical mobility. And maneuver combines movement and mobility with relation to the enemy. This section defines movement, mobility, and maneuver at each level of war.

Movement

Movement is motion in any direction, for any purpose, by a force of any size. It is a physical state.² Friendly movement may or may not be influenced by enemy activity or location. As a calculus, it considers the size of the force to be moved, the available means of movement, and the friction imposed by the medium of movement (land, sea, air).

Movement at the strategic, operational, and tactical levels of war is qualitatively the same. The scope of time, distance, transportation means, and routes of movement account for any differences. At every level, movement is the foundation for mobility.

Mobility

Mobility is often regarded as the potential to move.³ The following thoughts illustrate the inadequacy of that definition:

Thought 1: General Creighton Abrams stated: There is some confusion as to just what makes mobility in the ground elements of the Army. ... but mobility, if it is to be effective, is made up of a complex balance of factors. The essential factors of mobility are equipment, organization, communications, command structure, and logistical organization.⁴

Thought 2: Soviet writings on operational art include flexibility in deciding when and where to accept battle, speed of mission accomplishment, and the ability to shift directions quickly as fundamental to mobility.⁵

Thought 3: NATO defines mobility as the ability of vehicles and forces to move in differing conditions and situations.⁶

Mobility transcends the more general nature of movement. It encompasses the organizational, leadership, equipment, and other less quantifiable factors such as direction, security, sustainment, firepower, intelligence, and movement support. Mobility includes the ability to shift directions, resources, and even how one thinks. Mobility is a mental as well as a physical state.

Strategic, operational, and tactical mobility are qualitatively similar. At each level, mobility is a response to the situation. One author's description conveys the distinction between the levels:

Battlefield mobility allows the forces in the field to respond to the commander's plan. ... Strategic mobility is bringing units to the theater of operations. Operational mobility guides unit movement within the theater. Tactical mobility is that of units in contact.⁷

Mobility, then, is the ability to shift forces and dispositions in response to changing conditions and situations. It builds on movement to produce the flexibility required for successful maneuver.

Maneuver

FM 100-5 defines maneuver as the movement of forces in relation to the enemy to secure or retain positional advantage. NATO defines it

in virtually the same manner." The fundamental difference between maneuver and mobility or movement is that maneuver is relational. It combines movement, mobility, and direction of a force with relation to an enemy at any level of war. The position, size, or activity of the enemy force is usually somewhat unclear; it may be extremely vague.

Maneuver is normally employed to gain an advantage over the enemy. There are several considerations which determine the extent of that advantage. Most importantly, maneuver effects are temporary. Given time to react, the enemy will neutralize the advantages gained by maneuver. Maneuver advantages can also be affected by the freedom of action of friendly forces (possibility of, options for maneuvering) and by the character of the operation (static versus open warfare). The type of operation (offense/defense) can also dictate conditions which impact on the advantage gained. Only sound judgement can weigh those considerations. In any case, maneuver offers an advantage if it facilitates destruction of enemy forces or contributes to the survival of friendly forces.

Maneuver can be employed in both the offense and the defense. In the offense, maneuver is the attacker's means of seizing the initiative, setting the terms of battle, or exploiting earlier battles. In the defense, maneuver is the defender's means of economizing force, restraining the attacker, or dodging the attacker's blow. In either case, maneuver has two primary orientations -- one that seeks battle and one that seeks to avoid battle."

Maneuver is qualitatively different at each level of war. Strategic maneuver seeks to deploy the appropriate type, quantity, and quality of forces into a theater in order to gain strategic aims. Operational maneuver seeks to concentrate force (appropriate to the aims) at oper-

ational depths against decisive enemy vulnerabilities both simultaneously and successively. It sets the terms of battle, exploits tactical results, and causes the enemy operational commander to react.¹⁰ Tactical maneuver seeks to gain advantages of position in an engagement or battle. It is a means of seizing and sustaining the initiative, exploiting success, preserving freedom of action, and reducing the vulnerability of friendly forces.¹¹ At every level, maneuver combines movement and mobility in a dynamic enemy environment.

Summary

Movement, mobility, and maneuver are distinct yet related terms. Movement is a physical state. It is the foundation for all activities associated with a maneuver-based doctrine. Mobility, as the actual ability of forces to move, adds flexibility to respond to changing conditions. It is a mental as well as a physical state. Maneuver combines movement and mobility against the dynamic influence of the enemy. It is an art which, properly employed, secures an advantage over the enemy and brings a force to bear in the most effective way. Figure 1 illustrates the distinction between movement, mobility, and maneuver.

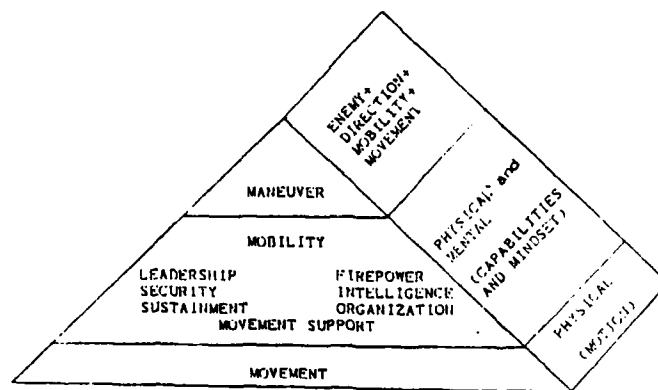


Figure 1

Movement, mobility, and maneuver differ across the levels of war primarily with respect to forces, time, and space. Those elements form the unique operational environment within which the operational commander conducts maneuver. Appendix B (Operational Environment) presents a review of that environment. The next section describes operational maneuver in the context of that environment.

Section III

OPERATIONAL MANEUVER THEORY

Developing viable concepts of operational maneuver is a tremendous challenge for the operational commander. This section describes the theory of operational maneuver in terms of leverage, concentration, and risk. Leverage is a means of enhancing the relative effectiveness of friendly forces. Concentration of adequate force at decisive points provides the capability to destroy enemy forces. Risk is a measure of the probability of successfully achieving significant gains at acceptable costs. This section describes the maneuver theory associated with each of these elements and suggests practical ways to apply the theory. These elements are presented sequentially for clarity only. In practice, they must be considered simultaneously.

A. Leverage

Leverage enhances the effectiveness of friendly forces by coordinating their employment in time, space, and mission. Leverage results in isolating the enemy center of gravity and gaining the freedom of action to seize or retain the initiative. Richard Simpkin's mechanical analogy is a simple method of comprehending the arrangement of forces in time, space, and mission.

Figure 2 depicts a lever system which consists of a mobile mass (M), the lever arm or depth at which the mobile mass is operating (D), the main enemy force (E), and the fixing force or fulcrum (H). The complementary nature of the missions of the forces is depicted by the hinge which links the mobile mass to the holding force. The holding

force fixes the enemy in order to facilitate the movement of the mobile mass. The mobile mass can then quickly move to a position from which its combat power is relatively superior to the enemy. Leverage is dependent upon the positional power that M exerts on E. The critical aspects are the speed at which M gets there and the selection of the destination of M. Leverage, then, is a function of position, speed, and mass.¹³

Objective
Points = M, O

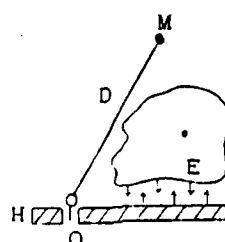


Figure 2

Before a commander can synchronize his forces in time and space as the lever model suggests, he must select objective points which are potentially decisive. Decisive points become pivots of maneuver which sustain momentum.¹⁴ The hinge in the lever system is a pivot of maneuver. The objective points will be decisive if they enable forces to retain their effectiveness. In practical terms, the selection of good objective points enables the commander to determine the type, quantity, and physical arrangement of force required. The coordination of force in relation to decisive points produces leverage.

Proper selection of objective points is greatly enhanced by good intelligence. Peter Vigor stresses this point by stating:

... what is important above all else is accuracy.
Better to admit to a total lack of knowledge about a

particular subject (the effectiveness of the enemy's tank guns, for example) than to posit data which turn out to be wrong. For plans based on faulty data are themselves bound to be faulty; 18

The elements of information which the commander must assess are: the location of the enemy center of gravity, enemy strengths, enemy vulnerabilities, the enemy's capabilities, and enemy perceptions of friendly intent. Intelligence will always be incomplete. However, the intelligence collection effort must provide the commander with the best possible assessment of those elements.

Those elements of information permit the commander to shape the second major way he can enhance leverage -- through deception and surprise. Reinforcing enemy preconceptions and selecting objective points which will gain surprise enable the commander to employ a smaller holding force. It also magnifies the affect of the main striking force. Thus, deception and surprise enhance the effectiveness of the force to produce leverage.

The next consideration is the size of the mobile force. A small force can produce the desired operational impact if properly configured. Here, mobility becomes an issue. A large mass is obviously going to be less mobile than a smaller one (assuming it is similarly equipped). The issue is how that mass is to be employed. If it must move 200 Kilometers and protect its own link to the holding force, it will have to be larger than one which only has to travel 100 Kilometers and can operate out of direct contact with the holding force. There are no norms for the commander to follow. He must assess his ability to retain favorable lines of operation and still have adequate punch left at the objective point. 19 This suggests that leverage can

be achieved in two other ways: possessing a mobility advantage and possessing favorable lines of operation.

A mobility advantage at the operational level is produced by forcing continuous decisions on the enemy. That can be accomplished by going through the observation - orientation - decision - action cycle faster than the enemy. The slower side is placed at a disadvantage because by the time he acts, his action is inappropriate since the faster side is doing something different already.¹⁷ Hence, not only physical speed but also mental speed is essential in gaining a mobility advantage. This advantage comes with the initiative and lasts until the attacker has to go through a major revision of his plan.

Favorable lines of operation and communication allow the operational commander to protect his own center of gravity. Interior lines of operation generally favor a smaller attacking force by giving it central position. A turning movement is best conducted from interior lines. Its lines are shorter and it can piecemeal the enemy. Exterior lines generally require a larger force and facilitate an enveloping maneuver.¹⁸ The commander's ability to protect his lines of communication and resupply his forces depends on his selection of initial bases and his choice of lines of operation. Extended lines of communication can reduce tempo which results in a failure to achieve leverage.¹⁹

The operational commander can greatly enhance his ability to isolate the enemy center of gravity and configure and protect his own if he considers leverage in terms of the interaction of the components of a lever system. He will then be able to synchronize the means at his disposal to retain the initiative and the power to act effectively.

B. Concentration

Once the enemy center of gravity is isolated, it must be destroyed. While many argue that disruption is the aim of maneuver, disruption omits the essence of destruction which is to render the enemy center of gravity irrelevant. The effects of disruption are temporary and serve maneuver by destroying the coherence of the enemy, thus sustaining freedom of action. That dynamic effect enables the commander to concentrate force in time and space against enemy weaknesses.

The object of concentration is to gain superiority of combat power rapidly at the decisive time and place.²⁰ The critical decision for the operational commander is insuring that he conveys enough physical fighting power (commensurate with the aims) against decisive points. This is not a mere correlation of force calculation. It is a correlation of force calculation times the leverage factor.²¹

So how much is enough? The operational commander must first keep in mind the objective military condition he seeks -- to render the enemy operationally irrelevant. That may or may not mean annihilating him.²² Ultimately, the amount of force employed is a matter of judgement which is shaped by the commander's appreciation for the theoretical basis for concentration -- denying the enemy the time or space to recover. As Willoughby points out:

There is nothing to prevent the enemy from retiring in complete liberty; there is no victory, no decision, and no decisive moment.²³

Denying the enemy time to recover is a matter of approach. The commander must decide whether to attack the enemy center of gravity or defend his own directly or indirectly. His choice of approach is based

on an assessment of the effectiveness of his leverage, his ability to retain favorable lines of operation and communication, and the amount of time required to concentrate forces (from their current positions) at the decisive points. His choice must insure that friendly strength confronts an enemy weakness.

The second key concept is the force-to-space ratio. The greater the force-to-space ratio, the smaller the space the enemy will have to recover. Furthermore, the greater the ability of the enemy to recover, the more temporary are the effects of maneuver. Given time or space, the enemy commander will be able to avoid decisive battle. Table 1 depicts the comparison of German force-to-space ratios in 1940 (successful operations on the Western front) to those in 1941 (unsuccessful Eastern front operations) which illustrates the importance of this concept. -4-

<u>Year</u>	<u>Area</u>	<u>Aircraft/sq km</u>	<u>Tanks/sq km</u>	<u>Personnel/sq km</u>
1940	193,800 sq km	1/51 sq km	1/75 sq km	14/sq km
1941	1,076,250 sq km	1/245 sq km	1/291 sq km	4.5/sq km

Table 1

There are several ways the operational commander can achieve concentration of force at critical or objective points. FM 100-6 summarizes some of the most important ways:

He does this by grouping (task organizing) forces and other resources, and by taking optimum advantage of the unique capabilities of each type of force ... anticipates and plans for multiple employment options, both offensive and defensive, ... enabling him to respond to changing situations and exploit success. -5-

Napoleon's corps system is a good example of the impact of organization on operational maneuver. He employed a cavalry screen to gather vital intelligence and mask his intent. Behind it, he maneuvered his "sheaf of corps". The essence of his organization was that it "fused maneuver with combat: its purpose was to enable masses of French forces to move faster and concentrate more readily for battle. ²⁶ A contemporary analogy might be the employment of army aviation to cover and reconnoiter the axis of advance of the mobile mass. The net effect is that this avoids the necessity to detach ground forces for that purpose. That prevents degradation of the force, insures adequate force at the objective point, and prevents piecemeal defeat of the striking force. The operational commander must know the capabilities of all of the forces at his disposal and capitalize on them in a manner that sustains momentum and insures adequate force at the objective point.

Another important consideration is the reserve. History suggests that the lack of adequate reserves can lead to the immobilization of front line units who have met stiffer resistance than anticipated. ²⁷

Firepower must be adequate too. Firepower serves two functions in maneuver warfare -- to facilitate maneuver by fixing the enemy through suppression and to destroy enemy forces when appropriate. The key is to develop the capability of responsive fire support (including air support). At the operational level, firepower can disrupt the movement, fire support, command and control, and sustainment of enemy forces. This degrades enemy strength, mobility, and destroys forces displaced by battle. Friendly forces are protected by the effects of firepower.

The operational commander must insure that adequate logistical support is available to sustain the firepower required at each level. Logistically, the mobile force must be as self-contained as possible. Choices of logistics base sites and lines of communication are crucial decisions which must be made in relation to the decisive points. Lack of sustainment or improperly sited bases and lines of communication can cause operational pauses which destroy the continuity of maneuver.

Timing of the operation is also key. The object is to stay ahead of the enemy's expectations. The enemy can calculate friendly capabilities. Arriving faster than the enemy expects provides the operational commander with the flexibility to concentrate when and where he chooses. It also gives him the freedom of dispersed movement to concentrate at decisive points.

Just as proper timing enables greater freedom of movement, the proper disposition of forces (initially and subsequently) provides the means to exploit that freedom. The effectiveness of friendly forces is enhanced when dispositions conceal friendly intent, reduce the impact of the physical environment, and maximize the ability to concentrate against decisive points. The disadvantages otherwise caused by enemy dispositions are reduced, resulting in greater flexibility to exploit the results of the maneuver.

The final way an operational commander can achieve concentration is to plan several branches and sequels. Operational maneuver is dynamic and highly dependent on tactical success. As conditions change, the operational commander must be prepared to maintain the continuity of the operation by regrouping forces, avoiding decisive engagement, shifting resources, or otherwise insuring that an undesired pause does

not occur. Branches and sequels ensure that the enemy is denied the time and space to recover by facilitating the concentration of force at decisive points.

C. Risk

Prudent commanders constantly evaluate risk. Risk, which is a tradeoff between cost, potential payoff, and probability of success, is especially important to operational maneuver. Operational maneuver is useful to the extent that it offers significant gains. However, failure can result in significant losses in terms of strategic aims as well as means. Maneuver warfare is less predictable than a static, attrition-based slugfest; and friendly forces are exposed by the the movement associated with maneuver. Therefore, risk warrants the undivided attention of the operational commander. This is especially true if a maneuver style of war is employed by an outnumbered force.

At this point, risk must be differentiated from gambling. Risk is based on an informed assessment of enemy capabilities and intentions. Gambling is based on high risk (perhaps even poor odds), less information, and 'hopes' that the enemy will comply with the conditions necessary for success. Both risk and gambling can produce significant gains at reduced costs and hence apply to maneuver theory. The following paragraphs discuss the primary sources of risk in operational maneuver -- intelligence and tempo.

Viable operational maneuver concepts require good intelligence. As available intelligence decreases, the chance for success at the operational level decreases more rapidly than at any other level.²⁸ A lack of perfect intelligence is compensated for by branches to the

the basic plan. However, the basic plan must be based on reasonably accurate intelligence because of the time required to shift forces should the intelligence prove faulty. As discussed earlier, good intelligence also enhances leverage.

The operational commander must also assess the effects of his plan on enemy will. The stronger the enemy's will, the more flexible will the commander's plan have to be. The intelligence requirement imposed here is an appreciation for the state of morale and leadership of the enemy force. The commander's assessment reveals the potential impact of the psychological factors of surprise, speed, terror, and shock. The greater the impact, the less risk assumed by the commander.

Tempo is the rate of progress toward the accomplishment of the mission. It is a complex combination of mobility; tactical rates of advance; quality and reliability of intelligence; command, control, and communications; and patterns of combat and combat service support. To assess risk, the operational commander must ask two basic questions. First, what tempo will provide the maximum security for friendly forces? Secondly, what tempo can be sustained and not unhinge the mobile force from its fulcrum (ie. holding force)?

Tempo exploits the benefits of surprise and provides security to forces as they move to the objective point. The impact of tempo on security is striking. Consider the differences in losses, supply expenditures, and rates of captured material experienced by the Russian Army in World War II. The 39th Army sustained twenty times fewer tank losses and six times fewer personnel losses by increasing its tempo from one Kilometer per day to nine Kilometers per day. Average expenditures of class III and V dropped by over 300% by

doubling the rate of advance. The rate of captured material was doubled by tripling the rate of advance.³¹ Hence, a faster tempo can provide greater security and reduce risk.

Unhinging the mobile force from its fulcrum presents the risk of piecemeal defeat. A lack of synchronization or overextension of sustainment capability are two primary causes of unhinging the maneuver. The commander must assess the relationship of his bases and lines of operation and communication to the objective points he has selected. The extent to which he can achieve synchronization determines risk.

Finally, the commander's risk assessment must drive his allocation of forces, space, and time. Viewed in the context of leverage and concentration, the commander must minimize risk by arranging his forces and assigning them missions which will produce the greatest gains at minimum costs. His operational maneuver concept must also contain branches to accommodate his lack of perfect intelligence and potential errors in tempo, both of which increase risk.

D. Summary

Operational maneuver is as complex as the force, time, and space environment in which it is conducted. Merely moving large forces to great depths within or beyond the forward line of own troops (FLOT) is not operational maneuver. Rather, it must be directed against an operationally significant objective which forces the enemy to react operationally. It combines many elements synergistically, both calculable and judgemental, which operate within a framework defined by leverage, concentration, and risk. The following historical examples illustrate the utility of that framework.

Section IV

Historical Examples

This section utilizes the proposed framework to analyze four historical examples of operational maneuver. Whether successful or unsuccessful, the examples illustrate the complexity and potential of operational maneuver. Furthermore, the examples illustrate the utility of the concepts of leverage, concentration, and risk in developing viable operational maneuver concepts early in a campaign. This section assumes some knowledge of the campaigns and therefore presents only necessary facts.

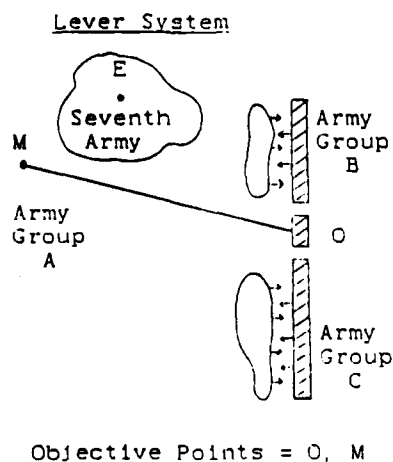
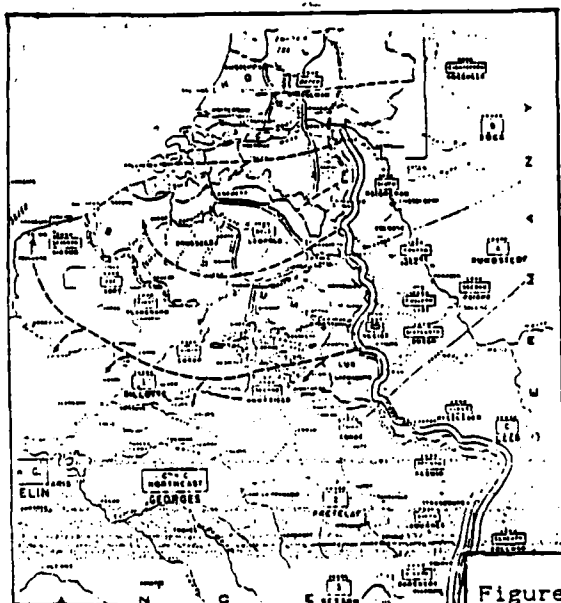
A. France, 1940 (Battle of Flanders)

The first phase of the German attack on France and her allies, (10 May - 5 June), is a classic example of successful operational maneuver. Despite success beyond the initial limited objectives, (breakthrough of the Meuse), proper consideration of leverage, concentration, and risk enabled operational commanders to succeed.

Leverage

The proper employment of German forces in time, space, and mission produced leverage which isolated the Allied center of gravity and provided German forces with complete freedom of action. Army Group B (north) conducted a fixing attack to reinforce Allied expectations of a modern Schlieffen attack. Belgian forces were fixed by Army Group B. In the south, Army Group C fixed French forces which were on the other side of the Maginot Line. Army Group A was the Schwerpunkt or

mobile mass in terms of leverage. Army Group A was to split the French and British forces in Belgium and head for the coast while Army Groups B and C fixed Allied forces.³² Figure 3 depicts the battlefield dispositions and resulting lever system.³³



Several factors enhanced the degree of leverage gained by the Germans. The Mechelin incident (though not planned) was a key part of the deception effort which allowed for the correct identification of Allied weaknesses and location of their center of gravity. Concerned about the weak Dutch position, Gamelin prematurely committed the French mobile reserve (7th Army) in accordance with the Breda Variant.³⁴ This concentrated almost all of the Allied mobile assets in a position favorable to the German plan.

Accurate intelligence and deception enabled the German forces to select proper objective points. The initial objective point was

established between the weak Ninth and Second Armies. Capitalizing on surprise (main effort in the Ardennes) and reinforced by the preemptive attack in Belgium, the French forces were paralyzed and tactical success at the Meuse was virtually assured. The holding efforts of Army Group C at the Maginot Line helped form the fulcrum for the subsequent deep maneuver. Although the mechanized configuration of Army Group A's main effort was aimed at a successful breakthrough, it was significant to the success of the subsequent maneuver. Additionally, agents, disguised as tourists, guaranteed that key communication centers and road junctions remained clear.

The German mobility advantage, the surprise of their tactics, and the location of their main attack paralyzed the Allies in indecision. Following the bold leadership of Guderian and Rommel, these advantages were translated into tactical successes which enhanced leverage.

German forces were coordinated in time, space, and mission to produce the leverage necessary to isolate the Allied center of gravity. That leverage was exploited by the subsequent concentration of force against Allied weaknesses.

Concentration

Numerically, the opposing forces were nearly equal. Allied forces were dispersed across the entire front and lacked mobility. The German forces were however able to concentrate force at decisive points and capitalize on their mobility advantage. Although one might argue that French weaknesses (doctrine, use of armor as infantry support, etc.) contributed to German success, the German appreciation for French shortcomings was decisive. As one German officer put it:

We have discovered the enemy's weak point, their lack of maneuverability and the fact that they fight singly and in loose formations and not altogether under one command. They cannot take advantage of their strength of numbers.

This knowledge allowed Army Group C (19 Div) to hold 43 French divisions, thus enabling the concentration of Army Group A (107 Div) to defeat 74 French divisions piecemeal.

The organization and employment of the various forces available to operational commanders was significant. Combined arms and joint cooperation were evident in German organization. Army Group A received two Panzer divisions from Army Group B, which were used to form nine mobile units (5 panzer and 4 mech). Army Group A also received the bulk of the Luftwaffe assets which created the suppression and close air support required to allow the river crossings at Sedan. Responsiveness was illustrated by the fact that a tank corps or division could enlist almost immediate air support or quickly receive orders from above to make a rapid shift to exploit a new situation. The use of airborne and glider forces to secure deep objectives (bridges, etc.) further paralyzed the Allies, allowing pockets of resistance to be bypassed and adequate force concentrated at the commander's choice.

The goal of timing the concentration of force is to exceed enemy expectations. German armor reached an 80 mile front along the Meuse two days faster than expected by the French.

The mobility differential between the armored spearhead and the logistic troops created shortages of fuel and vehicles. Pressed into an operational pause (22 May - 5 June) while forward supply bases were built in Belgium, the Germans were fortunate the pause occurred after the Battle of Flanders and before the drive on the Weygand Line.

Risk

While not evaluated in these terms, risk was reduced in this operation by bold leadership, confident units, accurate intelligence, and proper tempo. The balance of cost, payoff, and probability of success favored the Germans.

The Polish campaign taught the German Army valuable lessons which did not go unheeded. Organizational changes prior to the Western Campaign enhanced the combat experience of the veteran force. Esprit was high and German leaders understood the role of tactical air, mobility, speed, and the shock action of massed armor.⁴³ Auftragstaktik was a reality as indicated by this quote:

Subordinate commanders knew the ground well and shared the view to cut the panzers loose - "to the channel!" ... That was clear inspiration to every one of our soldiers and he could follow it even though he might receive no orders for long periods of time once the attack was launched.⁴⁴

Bold leaders such as Guderian and Rommel led from the front and exploited opportunities which supported the operational aim.

Accurate intelligence significantly reduced risk. It allowed the Germans to identify correctly the Allied center of gravity and points of vulnerability. It also confirmed Allied preconceptions which were exploited by deception.

Tempo provided tremendous security and, despite the fears of Hitler and some of his commanders, it never unhinged the maneuver. The devastating shock and moral destruction it caused the Allies reduced risk considerably. Guderian himself pointed out:

... the use of available limited offensive power of our armor in one surprise blow at one decisive point; to drive a wedge so deep and wide that we do not need worry about our flanks; and then immediately exploit any successes without bothering to wait for reinforcements;⁴⁵

Summary

Despite the role of chance, the elements of leverage, concentration, and risk played a significant role in the success of the operation. It was a success because it achieved operational aims which contributed directly to strategic aims. It did so at minimum cost. It seems logical to conclude that had OKH based the first Plan Yellow on the proposed framework (leverage, concentration, risk), they may have reached the same conclusions that Manstein did earlier and without relying on chance.

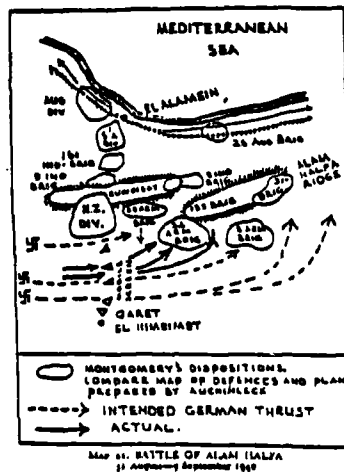
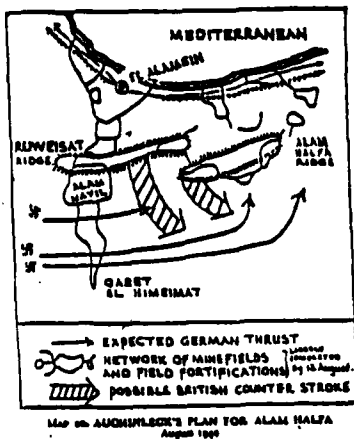
B. North Africa, 1942 (Alam Halfa)

On 30 August 1942, Rommel launched an offensive against the British 8th Army which failed because he accepted undue risk. Well aware of the massive British resupply effort and of his own worsening supply status, Rommel chose to accept inordinate risks. The failure proved to be a turning point in British morale under the newly appointed leadership of Montgomery.

Leverage

Rommel's intelligence failed to discern the depth, density, and extent of British minefields.⁴⁶ The resulting delays foiled Rommel's plan to drive 30 miles east by moonlight then turn northward.⁴⁷ This loss of speed resulted in a loss of surprise. Rommel's intelligence also failed to determine the enemy's intent. The British had divined Rommel's plan and his intent as indicated in figure 4-2.⁴⁸ Thus, Rommel's lack of accurate intelligence denied him the ability to employ deception to protect his own center of gravity (Africa Corps)

and synchronize his forces in time and space. He failed to isolate the enemy center of gravity (armored forces) because he was forced to turn northward too early. Figure 4 depicts Rommel's shortened lever arm which resulted when he was slowed by British minefields.



Italian
20th Corps

Actual —

Planned----

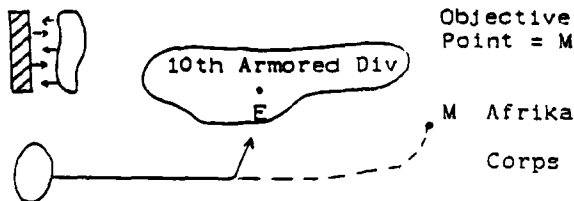


Figure 4

Concentration

The delays caused by the formidable British defenses were compounded by British air superiority, massive artillery bombardments, and Rommel's supply problems. The tough going caused fuel consumption to increase, which caused several pauses. Rommel was consuming twice as much as was being flown in.⁴² Rommel concentrated forces but not the necessary supplies. Without adequate supplies, the concentration

of force is useless. He may not have even had adequate force in the first place; he had just lost the First Battle of Alamein.

He gave the British time and space to recover and ultimately beat him. Montgomery was able to redeploy the 10th Armor Division to cover the gap between Alam Halfa and the Alamein defenses, move the South African Brigade out of Alamein and put it at Ruweisat Ridge, and move a fresh brigade from the Delta to occupy the area east of the main battle vacated by the 10th.⁸⁰ Montgomery had the initiative.

Risk

Before the battle, the Axis and Allied forces were essentially equal.⁸¹ Both sides were still learning the implications of mobile warfare, such as the need to equip infantry with anti-tank weapons since tanks were decisive in desert terrain.⁸² However, Rommel failed to account for the impact of extended supply lines on his tempo. That is where he accepted undue risk. Short on fuel, he launched his plan with two hopes of resupply. The first was a large tanker which reached Tobruk but was sunk before it was unloaded.⁸⁴ The second was Kesselring's promise to deliver 400 tons of fuel per day by air. The planes used most of the fuel getting to Rommel.⁸⁵ His logistical failure combined with his failure to detect the minefields to shackle his tempo. As a result, his forces were left vulnerable and his maneuver was unhinged.

Rommel's loss of several key leaders at the beginning of the battle presented him with another element of risk which he wrongly accepted. The loss of those leaders caused great confusion and gave the British more time to defeat Rommel's plan.⁸⁶ Rommel's reliance on hope justifies offering his action as a gamble vice a risk.

Summary

Rommel understood the role of leverage, concentration, and risk in planning his maneuvers. He admitted that his failures gave the British the time they needed to seize the initiative.** He also admitted the role logistics played in his defeat: "An assured flow of supplies is essential; without it the army becomes immobilized and incapable of action."** Despite his awareness of the poor odds, he gambled and lost. However, had he won, his gamble may have been justified when contrasted against the gains he would have made. Alam Halfa is an example of a professional failure. What follows is an example of an amateur's approach to a complex problem.

C. Russia, 1943 (Kursk)

OPERATION CITADEL (5-13 July 1943) was a decisive failure for the Germans. The German attempt to envelop the Central and Voronezh Fronts in the salient at Kursk is a good example of improperly planned and executed operational maneuver. Hitler personally controlled the operation from a distance and failed to heed the advice of his top generals.*** As a result, they failed to identify the Russian center of gravity: an error that doomed the operational maneuver from the start.

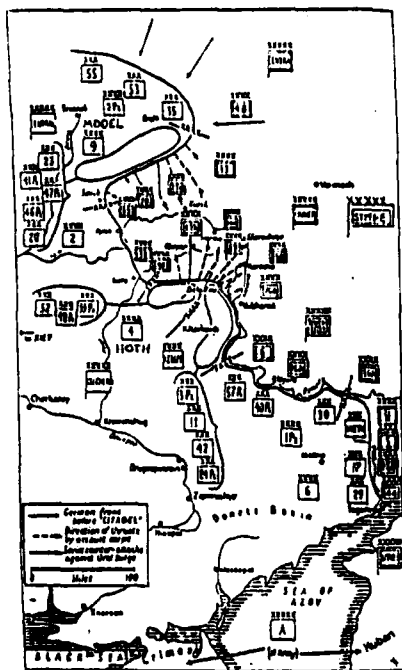
Leverage

Poor German intelligence and accurate Russian intelligence combined to render the Germans incapable of isolating the Russian center of gravity (Steppe Front). The Germans never identified the Russian center of gravity, strengths, weaknesses, preconceptions, or intent. Even on 13 July, when Hitler was cancelling OPERATION CITADEL, Manstein argued

for allowing Hoth (4th Panzer) to press his local success in the south while Model stopped and fixed the 'remaining' forces in the north. The Germans did not know that the Steppe Front (reserve) had three of the original five mobile armies left.²²

Russian intelligence also rendered the German deception plan irrelevant. The plan attempted to portray a German frontal assault against the western angle of the salient, rather than cutting it off.²³ The Russians never considered that option. 'Lucy' provided all but the time of the attack. That was provided by a captured Hungarian engineer!²⁴ Without an effective deception plan and surprise, it was impossible to select objective points for the maneuver properly.

The German plan was doomed from the outset. Figure 5 depicts the German missions, lever system, and the situation.²⁵



Army Group Center: 9th Army penetrates on Orel-Kursk highway, pushes to Kursk, links up with Army Group South at Kursk.

Army Group South: Breakthrough north and south of Belgorod, push to Kursk via Oboyan, secure eastern flank and link up with 9th Army. 4th Panzer Army is main effort - drive to Kursk.

Provisional Army Detachment Kempf: Secure 4th Panzer Army flank, with three panzer corps storm north and assist in battle at Prokhorovka.

Lever System:

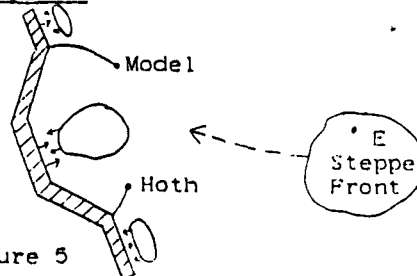


Figure 5

The Russians were ready. Recognizing armor as the German strength, they planned to conduct an operational defense, exhaust German forces, then launch a counteroffensive with a mobile reserve. They prepared a formidable defense in depth (150 km deep) which was designed to kill Panzers.-- This defense unhinged the German maneuver by stripping it of the speed necessary to succeed. Army Group South's Schwerpunkt (4 Pz) became unhinged when Vatutin sent the 69th Army into the gap that was created between the 4th Panzer Army and Army Detachment Kempf. That move slowed Army Detachment Kempf enough to unhinge 4th Panzer Army.-- The Germans also failed to achieve a mobility advantage as a result of the stiff defense. The maneuver failed to isolate the Russian center of gravity, which was protected by the defense in depth. Conceptually, the plan made sense; however, when contrasted against reality: the need for accurate intelligence, the plan as amateurish at best.

Concentration

The German concentration of force was moot because they gave the Russians time and space to recover from the expected offensive. This resulted from three major German failures: delays imposed by Hitler, an underestimation of the Russians, and poor intelligence. A two month delay allowed the Russians time to replenish their losses from the harsh winter. That was precisely what the 'forehand' option was supposed to preempt.-- Russian war production exceeded the German output, especially in anti-tank weapons. The German underestimation of Russian production, tactical maturity, and resolve gave the Russians time to prepare their defenses and rehearse their plan. As a result, Russian familiarity with the ground gave them the ability to respond to the

situation as it unfolded. In other words, they retained freedom of action to concentrate their forces in local counterattacks against planned armor kill sacks. On the other hand, the Germans lacked adequate combat power to exploit the envelopment even if it were successful.** Furthermore, on 8 July, Hitler stripped the 4th Panzer Army of their air support, which allowed the Russians to counterattack at Prokhorovka.** German strength was pitted against Russian strength.

Russian intelligence allowed them to concentrate their strength where it was needed. Without accurate intelligence, they would have had a vast front and inadequate forces to defend it.** The combination of Russian intelligence and the German failure to identify the enemy center of gravity rendered German concentration moot.

Risk

OPERATION CITADEL was a gamble. Hitler's preoccupation with the Donetz region, unfounded delays, and intelligence (Russian success and German failure) made CITADEL a lost gamble. As one author stated:

... Hitler told Guderian that whenever he thought of (Kursk) the implications his stomach turned over; as it well might, since he was hazarding what remained of the Reich's offensive capacity in one gigantic gamble.**

Summary

The attempted maneuver at Kursk failed because Hitler lacked the appreciation many of his generals had for the complex nature of operational maneuver. His plan failed to identify, isolate, and destroy the Russian center of gravity. Had Hitler followed Manstein's advice, he might have changed his plan, had he attacked at all.

B. Korea, 1950

General Douglas MacArthur's concept to land at Inchon and defeat North Korean forces by a subsequent breakout from Pusan by the Eighth U.S. Army was a successful operational maneuver. MacArthur envisioned the maneuver early in the campaign and implicitly relied on leverage, concentration, and risk to develop his concept.

Leverage

Accurate intelligence, deception, and proper selection of the objective point provided U.S. forces with the necessary leverage. Operation Trudy Jackson provided accurate intelligence on vital details of the seawalls, tide tables (confirmed Japanese tables right and U.S. wrong), and enemy strengths at Inchon, Seoul, and Kimpo airfield. "The successful raids by this small band operating from Yonghung Do island only 14 miles from Inchon was invaluable. They reinforced MacArthur's identification of the enemy center of gravity which he considered to be the NKA forces on the Pusan perimeter. They also confirmed the shifting of NKA forces between Inchon and Seoul.

The deception effort was comprehensive and enabled X Corps to achieve the surprise MacArthur fully expected:

The enemy, I am convinced, has failed to prepare Inchon properly for defense. The very arguments you have made as to the impracticabilities involved will tend to ensure for me the element of surprise."

He was right: Russian mines were never used in the channel. Other key deception actions included air operations and raids to reinforce the NKA expectations of a landing at Kunson, an open air lecture to a marine brigade mounting out of Pusan, and many others."

MacArthur's selection of Inchon, despite the hazards of the Flying Fish Channel, illustrates his appreciation for the depth required to to conduct a successful operational maneuver. This appreciation led directly to his selection of Inchon as the objective point.

As to the proposal for landing at Kunson, it would indeed eliminate many of the hazards of Inchon, but it would be largely ineffective and indecisive. It would be an attempted envelopment which would not envelop.⁷²

U.S. forces also enjoyed a mobility advantage. UN air interdiction forced the NKA to operate railroads at night and destroyed most of their vehicles.⁷³ MacArthur must have envisioned the impact of a break-out from Pusan on such light forces which were threatened from their rear. Not only would he achieve interior lines of operations, he would destroy the cohesiveness of the NKA by cutting their supply lines while EUSA held their attention at Pusan (their objective). His vision was "Inchon is our anvil and Johnnie Walker can smash against it from the south."⁷⁴ Figure 6 illustrates the lever system MacArthur envisioned.

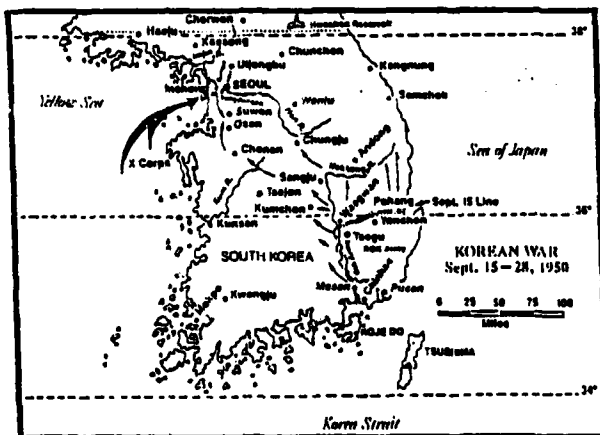
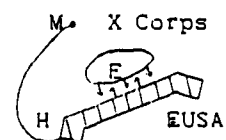


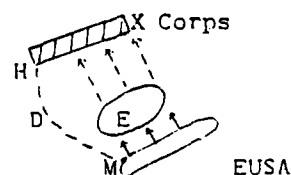
Figure 6

Lever Systems

A. Initially



B. After Landing



Concentration

The original estimates of enemy forces at Inchon were fairly accurate. The 18,000 enemy soldiers in Seoul were not expected. Instead of 6500 soldiers, X Corps ultimately faced 30,000.⁷⁶ X Corps was prepared to meet the challenge. Consisting of almost 70,000 soldiers, a reserve, and a devastating naval firepower preparation, X Corps was assured of concentrating enough force at the objective point. While timing of the concentration was not a key factor, the size of the operational maneuver force was adequate for the operation.⁷⁷

The correlation of forces at Pusan was much closer. UN forces totaled 92,000 (47,000 U.S.) to 70,000 NKA soldiers.⁷⁸ Estimates of enemy strength were higher. This was initially MacArthur's holding force. Early in August he instructed Walker to establish a second defensive line in case the Naktong gave.⁷⁹ This would guarantee the protection of his center of gravity (EUSA) and the economy of force of his holding force. It would also provide the time needed for X Corps to take Inchon.

The organization of the attacking force under the X Corps insured unity of effort and close coordination of air, ground, and sea operations. The employment of the 187th Airborne RCT as a reserve enabled the left flank of the corps to be secured and Kimpo airfield to be used by the Air Force.⁸⁰

MacArthur's concept denied the enemy the opportunity to recover. The successful concentration of force at Inchon and Seoul led directly to the defeat of North Korean forces.

Risk

MacArthur was well aware of the risks involved. His bold leadership, accurate intelligence, and appreciation for tempo enhanced his ability to assess the probability of success of his plan. He also knew well the potential gains which success would bring:

There is no question as to the feasibility of the operation and I regard its chances of success as excellent ... It represents the only hope of wrestling the initiative from the enemy ... to do otherwise is to commit us to a war of indefinite duration, of great attrition, and of doubtful results.²¹

Accurate intelligence provided security for the X Corps and enabled MacArthur to correctly identify the enemy center of gravity and points of vulnerability to establish economy of force measures at Pusan. Once the breakout achieved initial success, EUSA was ordered to "advance where necessary without regard to lateral security".²² The rapid advance enabled tactical commanders to enjoy relative security and exploit the general withdrawal which was prompted by news of the Inchon landing. The large haul of enemy prisoners (over 130,000) and enemy casualties attest to the success of the maneuver and to MacArthur's accurate assessment of risk.

Summary

MacArthur's vision proved to be correct. The operational maneuver that he conducted resulted in the achievement of the operational and strategic goals (up to that time). North Korean forces had not only been driven out of South Korea, they had been decisively destroyed and were no longer an effective fighting force.

Section V

Conclusions and Recommendations

A. Conclusions

Operational maneuver is an art and a science. It is a complex combination of judgement and calculation. The value of operational maneuver lies in its potential for substantial gains at acceptable costs. Its potential to contribute to the decisive achievement of strategic aims surpasses any other style of warfare.

Merely possessing the means to execute operational maneuver will not insure the realization of its potential. Viable maneuver concepts are a prerequisite and must be developed early in the campaign. Those concepts are the product of the operational commander's understanding of the unique nature of operational forces, time, and space. With that understanding, he can apply his knowledge, experience, and genius in a logical manner to articulate his vision.

One logical method for developing operational maneuver concepts is to use the framework which consists of leverage, concentration, and risk. The flexibility inherent in that framework helps commanders maintain an operational perspective and to account for changes in weapons, mobility, intelligence gathering capabilities, and technological innovations such as the helicopter which did not exist during the campaigns considered here.

Several historical examples were studied in addition to those discussed in this monograph. The results were always the same -- where operational commanders understood and applied the elements of the

proposed framework, they achieved decisive results. Where they failed to identify, isolate, and destroy the enemy center of gravity or accepted undue risk, they failed (often decisively).

Though not explicitly discussed in this monograph, several qualities of the commanders who conducted operational maneuvers stand out. Commanders such as Manstein, Rommel, MacArthur, and Patton were bold, decisive, visionary, and oriented on destroying the enemy force, not just disrupting it. They also understood their unique position as operational commanders and asserted themselves at the strategic as well as tactical levels. These men were mavericks. Their keen insights enabled them to break the shackles of conservatism and formulate viable operational maneuver concepts.

The success of operational commanders will depend on their ability to be bold, decisive, and visionary. Operational maneuver is complex and warfare is constantly changing. The challenge to today's commanders is to be capable of developing viable maneuver concepts quickly within the existing environment. That may require being mavericks.

B. Recommendations

The U.S. Army should articulate the theory of operational maneuver and insure that leaders at all levels understand it, which implies that they understand the theory as well as their role in executing it.

The U.S. Army should adopt a framework for developing operational maneuver concepts. Current operational commanders are inexperienced in conducting such operations. Adopting a simple framework, such as the one proposed, will provide operational commanders with a point of departure, in peacetime training and in future wars, to develop sound operational maneuver concepts.

Appendix A: Glossary

ANNIHILATION, STRATEGY OF -- The first natural principal of all strategy is to assemble one's forces, seek out the main force of the enemy, defeat it, and follow up the victory until the defeated side subjects itself to the will of the victor and accepts his conditions, which means in the most extreme case up to occupation of the entire country. Hans Delbruck, History of the Art of War Within the Framework of Political History; Vol IV, The Modern Era, trans by Walter J. Renfro, Jr., (West Port, Conn., : Greenwood Press, 1985), p. 293.

ATTRITION-FIREPOWER DOCTRINE -- ... in the attrition/firepower doctrine, maneuver is primarily for the purpose of bringing firepower to bear on the opponent to cause attrition. The objective of military action is the physical reduction of the opposing force. William S. Lind, "Some Doctrinal Questions for the United States Army," Military Review, (March, 1977), 54-65. (See also FIREPOWER-ATTRITION)

AUFTRAGSTAKTIK -- A mission-type order tells the subordinate commander what his superior wants to have accomplished. That is the mission. It leaves how to accomplish it largely up to the subordinate. As the subordinate's situation changes, he does what he thinks is necessary to bring about the result his superior wants. William S. Lind, Maneuver Warfare Handbook (Boulder Colorado: Westview Press, 1985), p. p. 13.

BRANCHES -- "Branches" to the plan -- options for changing dispositions, orientation, or direction of movement and accepting or declining battle -- preserves the commander's freedom of action. FM 100-5 OPERATIONS (May 1986), pp. 30-31. (See Sequels.)

CENTER OF GRAVITY -- ... one must keep the dominant characteristics of both belligerents in mind. Out of these characteristics a certain center of gravity develops, the hub of all power and movement, on which everything depends. That is the point against which all our energies should be directed. Clausewitz, Book 8, Ch 4, pp. 595 et seq.

DECISIVE POINT -- (A point) the possession of which, more than of any other, helps to secure the victory, by enabling its holder to make a proper application of the principles of war; arrangements should therefore be made for striking the decisive blow upon this point.omini, Ch IV, ART XXI, p. 120.

DESTRUCTION OF FIGHTING FORCES -- The fighting forces must be destroyed; that is, they must be put in such a condition that they can no longer carry on the fight. Whenever we use the phrase "destruction of the enemy's forces" this alone is what we mean. Clausewitz, Book I, Ch 2, p. 90.

ENVELOPMENT -- An offensive maneuver in which the main attacking force passes around or over the enemy's principal defensive positions to secure objectives to the enemy's rear. FM 101-5-1, OPERATIONAL TERMS AND SYMBOLS (21 October 1985), p. 1-30.

EXTERIOR LINES -- ... those formed by an army which operates at the same time on both flanks of the enemy, or against several of his masses. Jomini, Ch III, ART XXI, p. 93.

EXTERIOR LINES OF SUPPORT -- ... [lines of communication] which originate from multiple theater bases. FM 100-5 OPERATIONS (MAY 1986), p. 67.

GENIUS -- ... its ordinary meaning, in which "genius" refers to a very highly developed mental aptitude for a particular occupation. Clausewitz, Book I, Ch 3, p. 100.

INTERIOR LINES OF OPERATIONS -- ... are those adopted by one or two armies to oppose several hostile bodies, and having such a direction that the general can concentrate the masses and maneuver with his whole force in a shorter period of time than it would require for the enemy to oppose to them a greater force. Jomini, Ch III, ART XXI, p. 93.

INTERIOR LINES OF SUPPORT -- ... lines of communication interior to projected lines of action, that is, behind and centered on the supported force. FM 100-5 OPERATIONS (MAY 1986), p. 66.

OBJECTIVE POINT -- Objective points are not geometric points, but ... a form of expression used to designate the object which an army desires to attain.

In the defense, the objective point ... is that which is to be defended.

... objective points of maneuvers -- ... those which relate particularly to the destruction or decomposition of the hostile forces. Jomini, Ch III, ART XIX, pp. 77, 80, 81. (Jomini also refers to political objective points.)

PIVOTS OF MANEUVER -- ... detachments of troops left to guard points which it is essential to hold, while the bulk of the army proceeds to the fulfillment of some important end ... Jomini, Ch III, ART XX, p. 82.

SEQUELS -- Actions after battle or sequels are also an important means of anticipating the course of action and accelerating the decision cycle. FM 100-5 OPERATIONS (May 1986), pp. 30-31. [See Branches.]

"SCHWERPUNKT" -- The focus of effort is a [subordinate] unit, not a geographic point or a direction. William S. Lind, "Tactics in Maneuver Warfare", Marine Corps Gazette, (September, 1981), p. 39.

SYNCHRONIZATION -- Synchronization is the arrangement of battlefield activities in time, space and purpose to produce maximum relative combat power at the decisive point. FM 100-5 OPERATIONS (MAY 1986), p. 17.

TURNING MOVEMENT -- A variation of an envelopment in which the attacking force passes around or over the enemy's principal defensive positions to secure objectives that are deep in the enemy's rear. In doing so, it forces the enemy to abandon his positions, to divert major forces to meet the threat, and to fight in two directions simultaneously. FM 101-5-1, OPERATIONAL TERMS AND SYMBOLS (21 October 1985), p.

Definitions extracted from A Glossary of Operational Terms, School of Advanced Military Studies, Ft. Leavenworth, Kansas, 1980, by Colonel Richard Swain.

Appendix B: The Operational Environment

A. Overview

FM 100-5 states:

Reduced to its essentials, operational art requires the commander to answer three questions:

- 1) What military condition must be produced in the theater of war or operations to achieve the strategic goal?
- 2) What sequence of actions is most likely to produce that condition?
- 3) How should the resources of the force be applied to accomplish that sequence of actions?

FM 100-5 also states: "There is no particular organizational level associated with the operational level." Richard Simpkin emphatically argues this point in Race to the Swift by illustrating the operational impact of smaller units. He concludes by defining the operational context of maneuver theory. To be operational it must:

have a mission lying at one remove, and one remove only from an aim which can be stated in politico-economic terms (in other words from a strategic aim);

by a dynamic, closed-loop system, characterised by speed and appropriateness of response;

consist of at least three components, one of which reflects the opponent's will;

be self-contained within the scope of its mission. 13

B. The Operational Elements

The operational environment is unique. It is more than an adjunct between strategy and tactics. Understanding the operational perspective is a prerequisite for developing viable maneuver concepts. The

operational elements are forces, time, and space as described here:

operational environment: is preempted by initial surprise; its means and objectives are logically tied to strategic aims down to all levels; objectives are forces, not ground; power is derived from opportunism - the calculated risk and exploitation of chance circumstances; and it has mass, time, and a third dimension, space considerations.==

Forces Available

The forces available to the operational commander vary in type as well as quantity. Air, ground, and even sea elements comprise his forces. While his means may be limited, the main responsibility of the commander is to insure that the full range of forces at his disposal are employed in a manner which produces operational results.

Operational Time

Operational time can vary too. There are no set parameters for operational time. The commander must look beyond the immediate battle from both an enemy and friendly perspective. He must also insure that he provides adequate time to subordinates for planning and execution. To accomplish this, the operational commander must develop his concepts early. His vision of the campaign drives the timing of the issuance of his guidance. This time estimate is not made in a vacuum; space must be considered in conjunction with time.

Operational Space

Operational space differs in extent and purpose from strategic and tactical space. The size of the theater of operations and the extent operational depth varies between theaters. The important point is that

space increases geometrically as one crosses the bounds of operational space. Richard Simpkin suggests a wavelength analogy (Figure 7).⁴⁴ The scale representation illustrates the discontinuous nature of tactical and operational space. This discontinuity differentiates the use of space in maneuver warfare from attrition warfare.⁴⁵ At the tactical level, individual forces are exposed by movement. At the operational level, units are exposed by discontinuities in space.

m = 10 ⁿ	"Waveband" common-sense unit	Significance
10 ⁻¹	100 millimetres to 1 metre	ride
10 ⁰	unit metres	
10 ¹	tens of metres	infantry fieldcraft tank fieldcraft platoon tactics
10 ²	hundreds of metres	
10 ³	unit kilometres	company/battalion tactics brigade/divisional tactics operational level
10 ⁴	tens of kilometres	
10 ⁵	hundreds of kilometres	

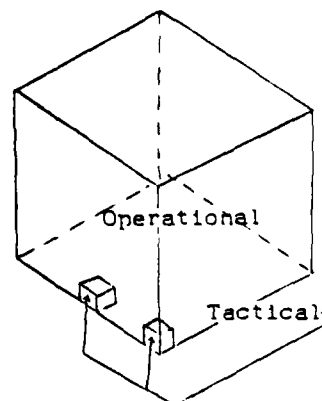


Figure 7

G. Linkages - Strategy, Operations, Tactics

Figure 8 suggests the linkages between maneuver at the strategic, operational, and tactical levels of war. At the strategic-operational interface, the operational commander must be involved with positioning forces and their bases within the theater. His ability to maneuver depends on these positions. At the operational-tactical interface, he must insure his subordinate commanders fully understand the campaign objectives. At both junctures, it is paramount that the operational commander assert himself to insure the synergism essential for success.

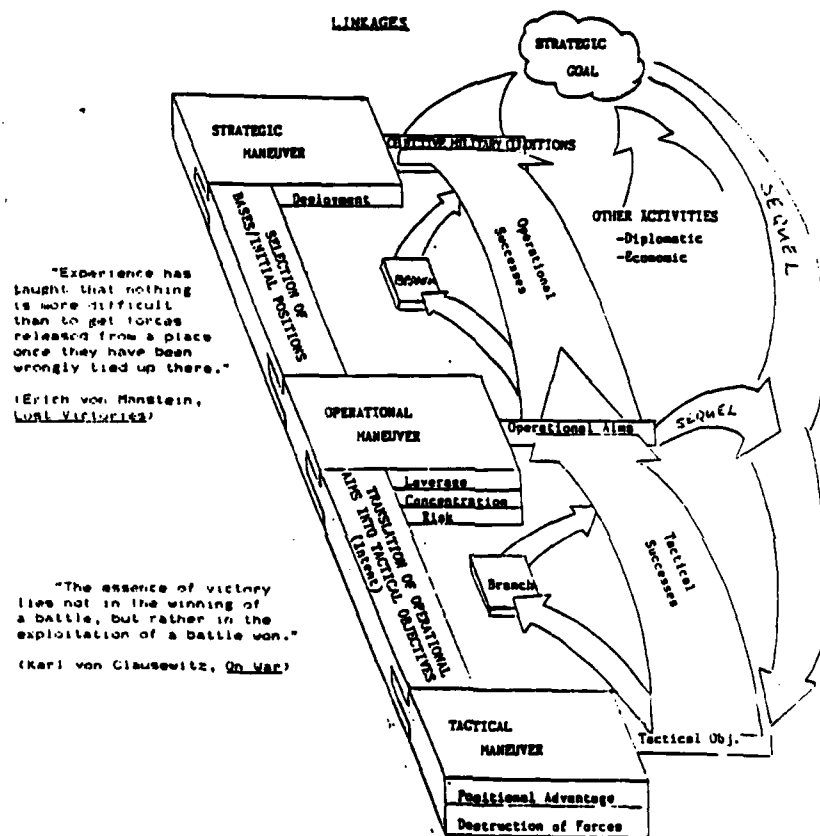


Figure 8

Sequencing of major operations also depends on understanding these linkages. The commander must think the campaign through to its completion. In so doing, he will be able to establish realistic aims and determine when and where to accept operational pauses. Peter Vigor calls this principle "chewability" or biting off only what you can chew. Unwarranted pauses can destroy the continuity of maneuver. Therefore, proper sequencing is critical to operational maneuver.

C. Summary

Force, time and space considerations define the unique operational environment which the commander must understand in order to develop viable maneuver concepts. Furthermore, he must understand and assert his influence over the linkages between the strategic, operational, and tactical levels. Though not explicitly discussed, several influences such as technology continually change the nature of the operational environment. Therein lies the dynamic context of forces, time, and space which can only be dealt with through anticipation of events within that context.

ENDNOTES

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- ³ Henry Bosley Woolf, editor-in-chief. The Merriam-Webster Dictionary. New York: G & C Merriam Co., 1974, p. 450.
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- ⁵ V. Ye Savkin. The Basic Principles of Operational Art and Tactics. Washington, D.C.: U.S. Government Printing Office, 1974, p. 45.
- ⁶ NATO Manual ATP-35, Land Force Tactical Doctrine. 1987, p. 1-2.
- ⁷ David C. Isby. "Mobility on the Battlefield". Defence and Diplomacy. Vol. 4, No. 10, 1986, p. 19.
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- ⁹ James J. Schneider. "The Theory of Operational Art." Ft. Leavenworth, Kansas: SAMS Theoretical Paper No. 3, 1986, p. 37 and discussion with COL Holder.
- ¹⁰ Field Manual 100-6 (Coordinating Draft), Large Unit Operations. Ft. Leavenworth, Kansas: USACGSC, 1987, p. 7.
- ¹¹ Field Manual 100-5. Operations. Washington, D.C.: US Government Printing Office, 1986, p. 12.
- ¹² Richard E. Simpkin. Race to the Swift. Oxford: Brassey's Defense Publishers, 1985, p. 21.
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- ¹⁴ Schneider, p. 37.
- ¹⁵ P.H. Vigor. Soviet Blitzkrieg Theory. New York: St. Martin's Press, 1983, p. 96.
- ¹⁶ Simpkin, Race to the Swift, page 97 contains a good discussion of lines of operation (interior).
- ¹⁷ William S. Lind. Maneuver Warfare Handbook. London: Westview Press, 1984, p. 5.
- ¹⁸ Willoughby has a good discussion of central and flank maneuvers from both a theoretical and historical perspective.

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