Leavenworth Papers



The Evolution of US Army Tactical Doctrine, 1946-76

by Robert A. Doughty
US Army

COMBAT STUDIES INSTITUTE
Army Command and General Staff College
Fort Leavenworth, Kansas
and
CENTER OF MILITARY HISTORY
United States Army
Washington, D.C.

FOREWORD

In June 1979, the Combat Studies Institute was formed within the US Army Command and General Staff College. Among its several missions, the institute is charged by the commander, US Army Training and Doctrine Command, to undertake historical research into problems having a bearing upon the concerns of the modern Army and to disseminate the fruits of this research throughout the Army. Major Robert A. Doughty's, *The Evolution of US Army Tactical Doctrine, 1946-76,* is the first of a series of studies called the *Leavenworth Papers* to be published under the auspices of the *Military Review.*

It is fitting that this inaugural study of the Combat Studies Institute should focus upon the formulation of doctrine since World War II. In no comparable period in history have the dimensions of the battlefield been so altered by rapid technological changes. The need for the tactical doctrines of the Army to remain correspondingly abreast of these changes is thus more pressing than ever before.

Future conflicts are not likely to develop in the leisurely fashions of the past where tactical doctrines could be refined on the battlefield itself. It is, therefore, imperative that we apprehend future problems with as much accuracy as possible. One means of doing so is to pay particular attention to the business of how the Army's doctrine has developed historically, with a view to improving methods of future development. This study is the first step along the road.

J.R. THURMAN
Lieutenant General, USA
Commandant, USACGSC

Director
Lieutenant Colonel William A. Stofft
John F. Morrison Professor of Military History
Dr. Ira D. Gruber
Chief, Research Committee
Major Charles R. Shrader
Research Fellows
Dr. Allen F. Chew
Dr. Roger J. Spiller
Chief, Teaching Committee
Major(P) David M. Glantz
Teaching Fellows
Major Robert T. Frank
Major Robert K. Griffith, Jr.
Major Thomas W. Sweeney
Captain John C. Binkley
Dr. Robert H. Berlin
Dr. Edward J. Drea
1SG(P) Kenneth Chavis, Jr.
Staff
Major Stanley L. Walker
SFC Nelson C. Rogers
Mrs. Lana S. Kleimon

The *Leavenworth Papers* are issued irregularly by the Fellows of the Combat Studies Institute, an element of the United States Army Command and General Staff College, Fort Leavenworth, Kansas 66027. Publication is under the auspices and with the editorial assistance of the *Military Review.* The views expressed in this publication are those of the author and not necessarily those of the Department of Defense or any element thereof. Request for additional copies or for permission to reprint *Leavenworth Papers* in whole or part should be addressed to the Director, Combat Studies Institute, United States Army Command and General Staff College, Fort Leavenworth, Kansas 66027.

The Library of Congress has cataloged the first printing of this title as follows:

Doughty, Robert A
The evolution of US Army tactical doctrine, 1946-76/by Robert A. Doughty. — Fort Leavenworth, Kan.: Combat Studies Institute, US Army Command and General Staff College, 1979.

57 p.; 25 cm. — (Leavenworth papers; no. 1)

Includes bibliographical references.

1. Tactics. 2. Military art and science—United States —History—20th century. 3. United States. Army—History—20th century. I. United States. Army Command and General Staff College, Fort Leavenworth, Kan. Combat Studies Institute. II. Title. III. Series.

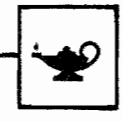
U165.D58 79—604167
355.4'2'0973—dc19

MARC

Library of Congress

For sale by the Superintendent of Document, U.S. Government Printing Office, Washington D.C. 20402

CONTENTS



PAGE		
	1	INTRODUCTION
	2	THE ARMY, 1945-50
	7	ADAPTATION DURING THE KOREAN WAR
	12	THE OPENING OF THE ATOMIC ERA
	19	THE ROAD CONCEPT
	25	COUNTERINSURGENCY
	29	THE VIETNAM WAR
	40	THE RETURN TO THE CONVENTIONAL
	46	CONCLUSION

The Evolution of US Army Tactical Doctrine, 1946–76

by Major Robert A. Doughty
US Army

I. INTRODUCTION

THE tactical doctrine of the US Army changed considerably between 1946 and 1976. The changes which took place were influenced by a variety of factors, including improved conventional weapons, increased mobility, the development of nuclear weapons, the desires of different military leaders, wartime demand, parochial clashes between various branches, interservice rivalry and evolving national security policy.

The competing or conflicting demands of these various influences often affected the formulation and dissemination of tactical doctrine. Army doctrine evolved amid great cycles of change, with new methods appearing only to be overwhelmed by the resurgence of older methods or the appearance of even newer methods. Although Europe remained the center of its primary concerns, virtual revolutions in tactical doctrine occurred in the late 1950s, early 1960s and early 1970s, as the Army shifted the focus of its doctrine from conventional, to nuclear, to counterinsurgency, to conventional operations. The combination of these changes has contributed to modern Army tactical doctrine being more complex than at any other time in American history.

The purpose of this study is to describe and analyze the major trends in Army doctrine since World War II. While the development of doctrine for individual branches is important, this study avoids a detailed analysis of the narrower aspects and concentrates on broader themes or issues in the evolution of US Army tactical doctrine. Since the development of tactical organization and equipment cannot be separated artificially from tactical methods, the study also describes the major organizational and weaponry changes which were an integral part of doctrinal innovations.

Throughout the period under study, the general purposes of doctrine remained relatively unchanged. Doctrine continued to provide guides for action or to suggest methods that would probably work best. Similarly, doctrine facilitated communication between Army officers, for it defined terms and provided concepts which enabled the numerous arms on the battlefield to act together in a coherent manner or to be successfully orchestrated.

Since doctrine is also that which is officially approved to be taught, it provided the primary content of the curriculum of the Army school system. Doctrine also assisted in the development of organizations and weapons systems, for it established the potential functions of the various systems and the parameters under which units were organized. This enabled the Army's leaders to favor the development of a particular organization or weapon system. Doctrine has thus affected several widespread and important aspects of the Army.

By examining broad themes in the evolu-

tion of tactical doctrine, significant insights can be gained which can help the Army officer understand and apply contemporary doctrine. Indeed, the evolution of tactical doctrine illustrates that the great value of doctrine is less the final answers it provides than the impetus it creates toward developing innovative and creative solutions for tactical problems on future battlefields.

II. THE ARMY, 1945-50

IN THE years between World War II and Korea, the Army carefully considered its tactical doctrine, but its methods remained essentially those of World War II. While the postwar strategic environment encouraged the reconsideration of doctrine, it also made the formulation of Army doctrine especially difficult.

Since the American atomic monopoly seemed to have provided the perfect response to any threat, many Americans questioned the need for large ground forces. Many believed an act of aggression would result in all-out war which the United States would inevitably win with its atomic weapons. Given the Air Force monopoly over the delivery means for these weapons, the Army's potential contribution seemed much less than in the past, and questions concerning its tactical doctrine also seemed less important. The introduction of atomic weapons seemed to forecast the demise of ground combat.

The Army, nevertheless, argued that its contribution in any future war was indispensable. The War Department Board of 1946 on Army equipment, headed by General Joseph W. Stilwell, stated that the next war might open with a surprise attack which would be followed by "retaliation with bombing, long range missiles, and biological weapons." Yet the ultimate victory could only be achieved by "occupation of the hostile territory."[1]

In 1949, General Omar N. Bradley, the Army chief of staff, envisioned a war occurring in three stages. In the first stage, the United States would employ its strategic weapons against the enemy, and, in the second, American military forces would seize strategic bases from which the enemy's homeland might be bombed or from which the enemy might bomb the United States. Airborne forces, because of their strategic mobility, would be especially useful in this second phase. The third and final phase would be a large-scale ground assault to defeat the enemy.[2]

Consequently, from the Army's viewpoint, ground combat was far from obsolete. A final victory could still be gained only by rather traditional ground operations, and the World War II experience, especially in the European theater, remained a valid basis for postwar doctrinal development.

Accordingly, as part of its energetic attempt to demonstrate the need for a ground combat capability, the Army carefully reviewed its experience in the recent war through a series of postwar conferences designed to improve its weapons, tactics and organization. Perhaps the most common characteristic of these conferences was their assumption that ground combat would continue to be nonatomic, for the Army did not change its doctrine to reflect an atomic battlefield. The 1949 Field Service Regulations (Field Manual (FM) 100-5), for example, included only a discussion on the dangers of radiation and of radioactive materials and said nothing about tactics on the atomic battlefield.[3]

Instead, when the Army initially considered the range of possible battlefields or types of combat in which it might participate, the major consideration was terrain rather than different types of combat along a spectrum of warfare. The Army had just participated in a global war, and the broad, worldwide responsibilities of the United States after the war indicated that the Army might fight again in widely varying types of terrain.

The 1949 Field Service Regulations discussed "special" operations in towns, woods, mountains, extreme cold, jungle and

desert, but it considered the "basic principles of combat" applicable to each operation. While methods would differ, the essential features of conventional warfare would continue to apply. If there was an exception, it was "partisan warfare,"[4] but the manual's treatment of this subject hardly diverged from its treatment of other conventional operations.

Acceptance of widely varying possible types of battlefields soon dissipated. As the late 1940s waned and accelerating events of the Cold War raised the specter of a Soviet invasion of Europe, that Continent became the focal point for Army doctrine. Concern for European security as the most important strategic problem thus reinforced the Army's doctrinal preference for large-scale conventional operations. Although the Army did not rule out the possibility of operations elsewhere in the world, its doctrine was increasingly oriented toward a European-type battlefield reminiscent of World War II.

* * *

The requirement for closely coordinated and effective firepower emerged as one of the primary lessons of World War II. Consequently, the problem of fire support coordination was studied in detail after 1945. Prior to the war, artillery had been the major supporting weapon for land operations, but the events of 1939-45 demonstrated that tactical air and naval gunfire could also furnish important fire support. Following World War II, the number of artillery tubes was increased from four to six in the battery, and the cannon company in the infantry regiment was eliminated. A new method of adjusting on the observer-target line, converted to the gun-target line by use of a target grid, was introduced at the Artillery School at Fort Sill, Oklahoma. Used earlier by balloon observers, this method facilitated the control of naval gunfire in joint operations and simplified the duties of the artillery forward observer.[5]

With regard to close air support, no single system of coordination or control had been common in all the theaters of World War II. The doctrine for the European theater was created in North Africa, developed in Italy and polished after the Normandy invasion. The actual procedures employed by the ground forces, however, were often ad hoc and varied widely from unit to unit.

In the war in the Pacific, the Army profited from the Marines' earlier experience and quickly developed a fire support coordination standing operating procedure for army, corps and division levels.[6] This doctrine differed from that employed in the European theater. Following the war, General Jacob L. Devers, chief of Army ground forces, stressed the integration of all available fire support means. FM 31-35, *Air-Ground Operations*, was published in August 1946,[7] and, in December 1949, the Army published its first training circular on fire support coordination.

Formulation of the doctrines on fire support coordination and air-ground operations did not occur without serious disagreements between the Army and the newly independent Air Force. A major object of contention was the tactical air control party (TACP). The Artillery School maintained that a TACP should be provided on the basis of one per infantry and armored battalion and should be "organic to the direct support artillery battalion." The school also argued that observers in "artillery planes" should be able to perform the function of forward air controllers. It also objected to the establishment of separate air control nets and argued that requests for tactical air support should be handled like any other fire support request.[8]

The final solution favored the Air Force position, for only one TACP was furnished to a regiment. The Air Force kept its forward air controllers, as well as operating a separate air-request net. It was not about to relinquish some of its newly won independence to the artillery.

While every potential problem had not been resolved, important progress had been made in establishing a clear doctrine for tactical air support of ground troops. Considering the intensity of the interservice rivalry

before the Korean War, this accomplishment is especially noteworthy. It stands in sharp contrast to the pre-World War II era when only lip service had been paid to the problem of air-ground operations by the Army and the Army Air Corps.

Nevertheless, interservice rivalry and the pre-eminent emphasis on the atomic weapon affected other Army programs. For example, advances were made after World War II with the helicopter, but those advances were not as rapid as they might have been. The few helicopters manufactured in the United States during the last two years of World War II were used primarily for administrative and rescue purposes.[9] After the war, the Army conducted studies of the helicopter at Forts Benning, Sill and Bragg. The 1946 War Department Board on Army equipment analyzed the capabilities of the helicopter, but considered its employment appropriate only for assisting the supply of airborne troops or for use in ship-to-shore operations.[10]

Although the infantry conference in June 1946 at Fort Benning also studied the helicopter, its report described the new aircraft as "particularly adaptable to uses such as supply and evacuation, reconnaissance, observation, photography, column control, wire laying, and liaison and courier missions."[11] Since the existing helicopters were very small and fragile, it was difficult for anyone to envision their playing an important combat role in large-scale ground operations.

With the postwar reorganization of the War Department, the Army agreed to procure all its air vehicles through the newly formed US Air Force. However, with the advent of the "Big Bomber" and the atomic bomb, there was little room for the helicopter. When Lieutenant General James M. Gavin discussed the development of the helicopter with the director of requirements for the Air Force, he was told, "The helicopter is aerodynamically unsound. . . . No matter what the Army says, I know that it does not need any."[12]

The development of the helicopter fell to the Marine Corps which saw the new aircraft as a means of adapting its amphibious warfare operations to the Atomic Age. When the Korean War came, the Marines were better prepared to employ their helicopters for command and control, medical evacuation, supply, etc. In September 1951, the Marines used helicopters in an airmobile operation for the first time.[13] On the eve of the Korean War, however, the Army's methods continued to resemble those of World War II. Steps were taken to improve air-ground cooperation, but the Army developed no dramatically new concepts or weapon systems.

* * *

One of the most important and enduring concepts to emerge from the several postwar studies concerned the role of the tank. The 1946 Stilwell Board concluded, "The best antitank weapon is a better tank."[14] This conclusion was strongly supported by an armor conference of the same year and by an infantry conference which recommended that the antitank company be deleted from the infantry regiment and three tank battalions be assigned to each infantry division.[15] The artillery conference of 1946 also recommended that the armored arm assume most of the antitank responsibilities.[16] Along with the other studies, the General Board of the United States Forces in the European Theater stated that "the medium tank is the best antitank weapon."[17] Perhaps the most remarkable aspect of this conclusion was the relatively wide and uncontested support for the tank as the best antitank weapon.

While the armor protection, firepower and mobility of the tank made it an effective antitank system, its presumed superiority in this role was not based solely on its own capabilities. It was also based upon the perceived failure of the American antitank gun and self-propelled antitank destroyer in World War II. The primary antitank gun of the US forces during the war had been the 57mm gun, but this gun had not performed in a completely satisfactory manner. The

General Board of the European Theater, for example, concluded, "Lack of cross-country mobility, coupled with the fact that the penetrating power of the 57mm projectile is insufficient to stop the modern tank, makes it imperative that another weapon be substituted."[18]

During World War II, the Army had developed self-propelled tank destroyers on which were mounted effective antitank guns (3-inch, 76mm and 90mm) long before those guns were mounted on tanks. Yet widespread dissatisfaction with tank destroyer units resulted in their disbanding following the war. The Stilwell Board concluded, "The thin-skinned, self-propelled tank destroyer has too limited a role to warrant further development now that comparable gun power can be attained in tank development."[19]

In comparison with the 57mm gun and the self-propelled tank destroyer, the bazooka had performed extremely well. The General Board of the European Theater noted, however, that the primary function of the bazooka had been as an assault weapon and the secondary function had been as an antitank weapon.[20] Although a 3.5-inch bazooka had been introduced toward the end of the war to replace the 2.36-inch weapon, and a recoilless rifle had also been developed during the war, there was no move to designate either of these weapons as a primary antitank weapon. Rather, they would be used to supplement the medium tank which was viewed as the primary antitank weapon. In contrast to the perceptions of other nations of the world, the United States concluded, in effect, that it could manufacture a tank that could outshoot and outmaneuver other tanks of the world.

In its reconsideration of armored warfare, the Army concluded that there had not been enough infantrymen in the World War II armored divisions or enough tanks in the infantry division. It soon authorized four armored infantry battalions (with four infantry companies in each battalion) for each armored division. This increased the number of infantry companies in the armored division from nine to 16. While the infantry division was suited for a wide range of responsibilities, it could engage, according to the doctrine, in "decisive operations" in many situations only if it were supported by other arms.[21]

The experience of World War II reinforced this perception. The General Board of the European Theater, for example, concluded, "The uniformly better performance of infantry, in any operation, when closely supported by tanks is probably the biggest single tactical lesson of the European campaign."[22] Accordingly, the postwar solution was to add tanks to the infantry division, and, by the late 1940s, the infantry division had an organic tank battalion, plus one tank company per regiment.

The postwar review thus strongly reaffirmed the need for combined arms operations. The 1949 Field Service Regulations repeated a phrase which had often appeared in prewar manuals: "No one arm wins battles. The combined coordinated action or team work of all arms and services is essential to success." This injunction notwithstanding, the most important element within the combined arms team was the infantry which remained the center of focus of US Army doctrine. There was no intention to form large armored formations, and, if an armored division was employed, it would be within an infantry-heavy corps in which there was one armored division and two or three infantry divisions. The tank had demonstrated its potential in World War II, but the infantry remained the "queen of battle."

* * *

As for its concepts for the conduct of ground operations before the Korean War, Army doctrine emphasized the offensive. "The purpose of offensive action," according to the 1949 Field Service Regulations, "is the destruction of the effectiveness of the enemy's armed forces and of his will to fight."[23] The Field Service Regulations also stressed the envelopment over the penetration and explained, "When the situation

does not favor an envelopment, the main attack is directed to a penetration of the hostile front." Selection of the envelopment or the penetration would be made only after a careful estimate of the situation. If a penetration was necessary, its objective became that of enveloping one or more of the flanks created by the breakthrough.[24]

Army tactical doctrine for the defense was much more specific than that for the offense, but only one type of defense was considered. Although it had no precise name, this defense was essentially an area defense which resembled J. F. C. Fuller's "archipelago" defense. The major purpose of the defense was to maintain control of terrain, and the doctrine envisioned the selection and organization of a fighting position which was to be held "at all costs." Covering forces were to be placed forward of the main battle position to delay and disorganize the advance of the enemy, as well as to deceive him as to the true location of the battle position.

The main battle position consisted of a "zone of resistance"[25] in which there were a series of occupied defense areas organized for all-around defense. A line along the most advanced defense areas was called the main line of resistance, but the doctrine envisioned a defense in depth rather than a linear concentration of forces along the main line of resistance. Large reserves, especially large armored formations, were retained to relieve units in the main battle position, participate in a counterattack or to occupy a rear position. Relatively immobile infantry-heavy forces in the main battle area, however, were to bear the brunt of the heaviest fighting.

When an enemy attacked, he would initially encounter the covering forces and then enter the main battle area. Here, he would encounter a defense made up of islands of resistance which would canalize the attacker's forces and disorganize the cohesiveness of his attack. If the attack was halted, it would be by defensive forces toward the rear of the main battle area or by counterattack.[26]

But the objective was to maintain control of terrain, not to destroy the enemy's forces. The defense was considered a method used only to gain time or economize forces in order to permit the development of more favorable circumstances under which the decisive blow would be dealt. Under American doctrine, defeat of the enemy occurred through offensive or counter-offensive action which destroyed the enemy's "effectiveness" and his "will to fight." Attrition was not necessarily a part of destroying the enemy's combat effectiveness, for the ultimate purpose of larger unit operations was destruction of enemy units not soldiers.

* * *

Between 1945 and 1950, a number of changes thus occurred in Army doctrine. Despite these alterations, much remained the same. Notwithstanding the atomic bomb and the intense postwar studies of the Army's tactics, equipment and organizations, the doctrine for the employment of American tactical units in 1950 effectively remained that of World War II.

The most important changes were designed to increase and make more responsive the firepower available to American ground troops. Army units became somewhat heavier than they had been in World War II. However, the extra bulk did not come from the creation of more US units because the Army continued to be small up to the eve of the Korean War. Rather, the extra bulk came from the additional elements designed to increase the firepower of the infantry division which was the dominant division in the Army's force structure.

The issues encountered or addressed between 1946 and 1950 were not germane only to that short period. Several of them—in various forms—remained the concern of Army tacticians and doctrine writers for the next three decades. Problems such as the impact of atomic weaponry, the changing nature of mobility and the demand for greater and more accurate firepower were constant topics of discussion among Army thinkers. Other perceptions, such as the role

of the tank in antitank warfare, remained rooted in the conclusions reached during this short period.

Relations between the various branches of service or Army branches continued to be subjects of controversy. Attempts to formulate better doctrine (such as for fire support coordination) or to develop new weapon systems (such as the helicopter) were influenced by sometimes competing interests. Questions concerning national security policy also affected the development of Army doctrine. By the late 1940s, Army doctrine was oriented toward a European-type battlefield—an orientation which varied only slightly during the next 30 years. In sum, the evolution of tactical doctrine continued to be influenced by a variety of concerns, not all of which were technical in nature.

III. ADAPTATION DURING THE KOREAN WAR

ACCORDING to General Matthew B. Ridgway, who served as commander of the Eighth Army in Korea and US commander in chief in the Far East, the Army was in a state of "shameful unreadiness" when the Korean War unexpectedly began.[27] Except for a single division in Germany, every division had been skeletonized. Infantry regiments were reduced from three to two battalions, and artillery battalions from three to two batteries. Even then, most battalions were not maintained at 100-percent strength.

As a result of the several studies completed after World War II, a tank company was included in each infantry regiment and a tank battalion in each division, but most of the tanks belonging to the first units to arrive in Korea had been stored or deleted from the skeleton units. Equipment problems were compounded by poor physical conditioning of soldiers and a general insufficiency of training. All American planning had assumed that the next war would be a global war; according to General Ridgway, "The concept of 'limited' war never entered our councils."[28] In the initial dark and tumultuous days of this unexpected war, American soldiers paid a bloody price for this unpreparedness.

During the bleak summer and early fall of 1950, the ground forces, under the dogged leadership of Lieutenant General Walton H. Walker, strove to maintain a semblance of cohesiveness as they delayed south and established the Pusan Perimeter. Following the Inchon landing on 15 September 1950, the tide of the war swiftly reversed itself, and the United Nations' (UN) forces rushed north to the Yalu, only to be attacked by the Chinese Communists in November. The UN forces delayed south of Seoul but, by April 1951, had again pushed forward to the vicinity of the 38th parallel where the Chinese launched another major offensive. By May, the enemy attack had failed, and the UN forces were again on the offensive. But the fighting soon degenerated into a static war of position, reminiscent of World War I, which ended only with the cease-fire of 27 July 1953.

The first part of the war was thus characterized by relatively mobile operations as the opposing armies swept up and down Korea. Although comments from leaders such as General Walker indicated no real changes in tactical doctrine or tables of organization and equipment were needed,[29] the Army experienced difficulties with its doctrine. The combination of the terrain, weather and enemy tactics tended to hamper employment of much of the tactical doctrine and equipment of the Army which were oriented toward another world war that would be fought primarily in Western Europe. Major problems were encountered with the mountainous terrain, for it limited the full use of American mechanized and motorized might.

* * *

The enemy's tactics often took advantage of American weaknesses. The North Korean tactic of envelopment was especially effective. In the initial phases of the war, the thinly held defensive lines of the Americans had

numerous holes or exposed flanks. Infiltrating enemy units frequently occupied positions to the Americans' rear, striking command posts, support units or artillery positions. Guerrillas were also used. Groups of about 15 men operated as tactical units, and their raids struck throughout the American rear.[30]

Much of the initial North Korean success resulted from its employment of about four battalions of tanks which were often sent boldly forward of the main body. The Americans were ill-equipped in the initial fighting to deal with the Russian *T34* tanks since the 2.36-inch rocket launcher was effective only at very short ranges and, even then, could penetrate only certain parts of the *T34's* armor. In addition, there was a shortage of antiarmor ammunition for the artillery. The first American tanks to arrive in Korea were the light *M24s*, and they hardly fared better than the infantry's antitank weapons against the rugged enemy tanks. The Americans could effectively deal with the enemy tanks only after the arrival of the 3.5-inch rocket launcher, medium tanks, and bomber and fighter aircraft.

When the Chinese entered the war, they also stressed the penetration of weak points and the envelopment or encirclement of defensive positions. During the approach march, the Chinese usually moved with two units forward and one back. When they encountered defensive resistance, they withdrew one of the two forward units to create a "one-up" and "two-back" formation. Following a series of probing attacks to identify the defender's weaknesses, the Chinese shifted their units and made their attack through the weak points identified in the defender's lines. After penetrating deep enough to engage the defender's reserves, a portion of the attacking units engaged the reserves while the remainder attempted an encirclement of the forward defenders.[31]

Perhaps the best method employed by the Chinese to limit the effect of US air strikes and aerial observation was the superb use of camouflage and concealment. Air observers often stressed the remarkable differences between the enemy and American positions. While the US positions were filled with easily seen vehicles, weapons, bunkers and litter, the enemy positions were frequently undetectable. Without the threat of enemy air strikes, US ground units grew accustomed to the luxury of not stressing camouflage or concealment.

Because of the massive UN air, artillery and tank support, most Chinese attacks came at night to limit the effectiveness of these weapons.[32] Similarly, the enemy learned to schedule his major attacks during periods when he knew bad flying weather would limit effective air support. The enemy was also able to reduce the effectiveness of American firepower by moving close to a defensive position in the darkness and staying as close to the position as possible, thus making it difficult to use supporting air and artillery.

Night attacks often consisted of large numbers of soldiers moving closely behind a usually weak artillery barrage and hurling grenades without regard to losses. Without adequate communications or command and control, several Chinese units often followed one another in an attack on the same position, giving the effect of waves of attackers. The weapons of the defender were more effective when employed against the massed attacks of the Chinese than against dispersed individuals. The defender's artillery, mortars, tanks, automatic weapons and small arms fire caused thousands of Chinese casualties.

* * *

The Americans were forced to respond to the enemy's tactics. The initial phase of retrograde operations was especially difficult because of the hasty commitment of the ill-prepared units and because few Americans had ever participated in such an operation. In World War II, Americans had usually been on the offensive, and very few units had ever conducted a sustained defense. A 1954 study by the Infantry School discussed the initial difficulties with retrograde operations in the Korean War and noted, "Many

. . . withdrawals were mob movements rather than military movements, and the men were cut to pieces."[33]

The shock of the initial combat experience and the lack of discipline and training combined to create panic withdrawals in the first part of the fighting. After the combat-seasoning of men and units, the Americans slowly learned to remain in position until ordered to withdraw and then to conduct a cohesive, fighting withdrawal. Such tactics sharply reduced American casualties, but their slow adoption and application revealed the great difficulties inherent in training men and units for retrograde operations.

The Americans were also unaccustomed to operating on the wide frontages imposed by the shortage of units. They initially attempted to defend in a thin line stretching across the entire defensive area. This resulted in grave problems with command and control, and defensive positions often lacked the necessary depth to halt mass enemy attacks. After becoming commander of the Eighth Army, General Ridgway stressed the occupation of strong night defensive positions with all-around protection. By occupying suitable hill or ridge tops, and permitting enemy penetrations through the valleys, the enemy could be destroyed at daylight by strong combined arms teams of armor, infantry, artillery and air.

Another technique used effectively at the division level involved a more mobile defense. While a division's front was lightly outposted, major forces (often armor-heavy) were held back to counterattack when the enemy managed to penetrate the front. This method was used primarily when the enemy forces were not so numerous that all units of the mobile reserve had to be committed at the same time. Similarly, a greater emphasis was placed on counterattacks which often upset the rhythm of the enemy's operation and enabled the Americans to seize the initiative.

Part of the improved fighting capability of the soldiers came from better use of cover. The Americans were initially reluctant to dig or to provide sufficient overhead cover for their firing positions. Experience and exposure to enemy fire proved to be the best teacher, along with an increased command emphasis on preparing foxholes, trenches and bunkers.

Another aspect of the enhanced fighting capability of the Americans resulted from a better use of firepower. Despite continued problems with coordination and communications between air and ground forces, air support became almost indispensable, especially in the initial phases when insufficient artillery units were in Korea. Improvements in the effectiveness of American fire also resulted from the improved employment of weapons. Weapons such as the recoilless rifle and machinegun often had not been used to the best advantage, and inadequate fire support planning frequently reduced the effectiveness of supporting weapons.

Proper planning and careful preparation soon corrected many of these faults. At the same time, the density of automatic weapons, recoilless rifles and bazookas was increased. This reduced the number of rifles but dramatically increased the firepower of the small unit.[34] When attacks on fortified positions were necessary, additional augmentation with flamethrowers and demolitions occurred.

Offensive tactics were also modified and improved in the first part of the war. In the initial fighting, some American units had gotten into serious trouble by charging on the roads up valleys without first securing the high ground on the flanks. This exposed them to ambush or to envelopment or encirclement tactics. After he became commander of the Eighth Army, General Ridgway pushed to get the Americans off the roads and into the surrounding hills. The effect was to broaden the front of American attacks. Closely coordinated armor-infantry teams still operated in the valleys, but they maintained a presence on the hills to the left or right.

Another successful technique was derived from World War II but resembled the North Korean and Chinese envelopments. While

frontal pressure prevented an enemy from withdrawing or maneuvering, a strong force moved around the enemy's flank to attack his rear. Airborne troops were also used to seize positions to the enemy's rear. When blocking positions were occupied and other units attacked toward them, the enemy—to use General Ridgway's phrase—was caught between a "hammer and anvil."[35]

In the initial fighting, the Americans did not stress night operations. Many successful day attacks stopped promptly at dark with little or no pressure being exerted by a continuation of the attack or by increased patrolling. Since the enemy was an expert at digging in rapidly, the next morning's attack was often costly.[36] Consequently, US commanders began placing a greater emphasis on night attacks or continuing attacks after darkness.

Technical innovations also occurred. Battlefield illumination techniques were improved and added substantially to the defensive capability of the Americans. Sources of illumination were the flareship, searchlight tanks, engineer searchlights, and artillery and mortar illuminating shells. Illumination support for offensive operations, however, remained difficult because of the normal dust and smoke caused by incoming artillery and mortar rounds.[37]

* * *

The Chinese Communists' system of defense in the early part of the war differed from that of the UN forces. While the UN forces normally depended on strong defensive positions supported by artillery and air cover, the Chinese, due to a lack of such support, relied on a more fluid defense which stressed maneuver. The Chinese usually defended in a formation of one up and two back. While the forward unit served as a screening force and delayed the enemy, the two rear units strengthened their defenses and prepared for a possible counterattack. If these two units were also forced back, the Chinese withdrew and awaited more favorable circumstances rather than risk a decisive engagement along a main line of resistance. The purpose of the defense was not to hold terrain, but to create weaknesses in the attacker's forces which could be exploited by counterattack.[38]

During the large-scale, mass attacks of 1951, the Americans were also forced to use a more mobile form of defense. One such method was called the "fight and roll." The US I Corps created the new method which was based upon the premise that an inflexible defensive line had little or no effect against a mass attack. Waves of troops could charge a position almost faster than they could be killed, and the smallest penetration allowed the attackers to envelop the remaining line.

Under the concept of "fight and roll," the defenders remained in their positions as long as possible—until the enemy had paid the maximum price and before the defensive positions were engulfed by the attackers. After the highest possible cost was levied against the enemy, a rapid and orderly preplanned withdrawal was conducted to a previously prepared defense position. Although the defenders might be forced to occupy as many as five or six subsequent positions, it was "inevitable," according to I Corps, that the surging mass would eventually halt. The I Corps' description of the "fight and roll" defense stated: "Units will be decimated, command and control channels lost and equipment gone. The mass becomes a struggling, chaotic mixture of the remnants of many broken units."[39]

The defense, however, was not simply one of continually occupying subsequent positions. Local counterattacks were planned and were launched at critical times by tank-infantry teams. Most counterattacks, however, consisted of massive concentrations of artillery fire. Such techniques made excellent use of the firepower of the Americans and produced creditable results in the spring offensive by the Chinese in April 1951.[40]

After armistice negotiations began in November 1951, the UN forces refrained from large offensive operations, allowing the war to enter its static phase. For the re-

mainder of the war, American defensive positions were heavily fortified and much more elaborate, especially in mountainous areas. Main battle positions were often not based upon the strength of the terrain, but upon the location of the line of contact when armistice negotiations began.

Although American doctrine and the Korean experience favored a defense in depth, the established defenses were actually a shallow linear defense. Terrain features were occupied across the entire front, and defensive positions could often be supported only by adjacent positions. The primary means of gaining depth was to place relatively strong outposts forward of the main line of resistance. Such outposts constituted centers of resistance which provided mutual support for each other, served as patrol bases and limited enemy infiltration of the main defensive line.[41] As the war dragged on, some of the bloodiest battles were fought over these seemingly inconsequential outposts.

Artillery also became much more important. The American artillery had made its reputation in World War II through its ability to mass fires rapidly and by its responsiveness. In Korea, it was not unusual to have massed fire from as many as 14 battalions, with each firing 10 volleys within the space of two minutes. In one operation, the 38th Field Artillery Battalion fired 11,600 rounds in 12 hours, a rate of one round per minute per 105mm howitzer.[42] Although the results were impressive, critical shortages of ammunition resulted, and, in several instances, artillery rounds had to be strictly rationed.

Ammunition for the heavy artillery was especially short even though its employment was essential against solidly entrenched enemy positions. Despite the public uproar over the shortages, ammunition continued to be rationed since the long Pacific sea lines and insufficient road and rail net compounded the delivery problem. Nevertheless, Americans continued to rely on massive artillery support, and General Ridgway explained, "Steel is cheaper than lives and much easier to obtain."[43]

Tank units also provided additional firepower to the defensive positions. Special roads were often constructed along the main line of resistance, and tanks were kept behind the crest of a hill. When targets of opportunity appeared, they were moved forward to prepared positions. Other tanks were often left on the ridges, but only after being carefully dug-in and well sand-bagged.[44] In some cases, tanks were used as indirect fire weapons.

Armored personnel carriers were also useful, for they frequently moved supplies, equipment, wounded, and replacements or reinforcements along routes exposed to enemy fire. In the battle for Pork Chop Hill in July 1953, for example, armored personnel carriers played an especially crucial role in the movement of men and equipment.[45]

Despite the presence of the tanks and armored personnel carriers, the Korean War was dominated by the infantry and artillery from late 1951 until the war ended. Close cooperation between these two arms determined the character and nature of the fighting during those last two years.

During the period of static warfare, foot patrols were especially valuable for capturing enemy prisoners, disrupting enemy probes and maintaining contact with the enemy. Despite the frequency of the patrolling, major problems were encountered. The patrols frequently produced little or no results and often avoided enemy contact.

One staff study completed in the 7th Infantry Division concluded that the most important reason for the failure of US patrols was "psychological."[46] After armistice negotiations began, the Eighth Army maintained strict control of attacks in an effort to avoid casualties and in the hope that a truce would be signed. This lack of aggressiveness filtered down through the ranks of the soldiers who believed many of the patrols were pointless and merely served to fill a quota. As long as the war dragged on, there was no easy answer to the problem of patrolling.

Throughout the latter phases of the war,

tactical air continued to play a key role even though some argued that aircraft were often used when artillery would have been sufficient. Perhaps the greatest controversy arose over the actual contribution of the Air Force, particularly in its interdiction role. For example, General Otto P. Weyland, commander of the Far East Air Forces, said, "We are pretty sure now that the Communist wanted peace, not because of a 2-year stalemate on the ground, but to get airpower off their back."[47]

Generals Maxwell D. Taylor and Matthew B. Ridgway, however, argued that even though airpower had been vital to ground success, it had never successfully closed enemy supply lines.[48] The real measure of success, according to the Army generals, had been the ability of the ground forces to hold ground, or to move up and down the Korean peninsula. From their perspective, the most important aspect of airpower had been the support it provided, both directly and indirectly, to the ground forces. Perhaps more than anything else, Korea demonstrated that one cannot artificially separate air from ground operations or vice versa. Unfortunately, continued interservice rivalry was to blur and almost erase this important lesson.

* * *

When the Korean War ended in July 1953, the official position was that no real changes in doctrine had occurred or had been necessary during the war. For example, a special bulletin from the Army Field Forces originally entitled "Lessons Learned" was soon retitled "Training Bulletin." The introduction to one of the training bulletins explained that the fighting in Korea had provided "few items" that could be described as "lessons learned."[49] A 1954 study at the Infantry School noted that a more appropriate title might be "Lessons Relearned in Korea."[50] One of the training bulletins of the Army Field Forces concluded, "The mass of material from Korea . . . reaffirms the soundness of US doctrine, tactics, techniques, organization, and equipment."[51]

Despite these disclaimers, a subtle but important change had occurred in Army thinking if not in its doctrine. The Army had become accustomed to massive amounts of firepower which came at the expense of mobility. The Army had also perfected its techniques of employing firepower and the defense to inflict huge losses on an attacker. Thus, the Army focused upon attrition at the expense of maneuver and its offensive spirit. Finally, the Army had become somewhat bitter about the constant clashes with the other services, and the 1954 Field Service Regulations stated, "Army combat forces do not support the operations of any other component."[52]

IV. THE OPENING OF THE ATOMIC ERA

WHEN the atomic weapon was studied after World War II, most observers considered it to be solely a strategic weapon whose powers had been demonstrated against Japan. The views of many military leaders on this new weapon were reflected in the doubts of one general officer: "Show me how to use this weapon in tactical roles, if you can. It is *not* a tactical weapon."[53]

In addition to doubts about the suitability of the atomic bomb as a tactical weapon, problems of delivery also stymied potential tactical application of the weapon. The few bombs produced after the war were so cumbersome and heavy that only the Air Force's *B29* bomber was suitable for delivering them. Army leaders foresaw many difficulties in creating another delivery system. In a June 1946 presentation, for example, Major General Leslie R. Groves said, "Future delivery of atomic bombs . . ., if it is ever delivered again, will be [by] an airplane until such time as guided missiles come into being."[54]

Despite these reservations and difficulties, the Army had begun by 1949 to study the problem of the tactical use of atomic weapons, and a flurry of studies soon appeared. Early in 1949, the Army Field Forces produced a paper entitled, "Tactical

Employment of the Atomic Bomb." A short time later, the Weapons System Evaluation Group (WSEG) completed a project entitled, "A Study on Tactical Use of the Atomic Bomb."[55] Major General James M. Gavin, a member of WSEG, published an article on "The Tactical Use of the Atomic Bomb" in *Combat Forces Journal* in November 1950.[56] In September 1949, General Jacob L. Devers recommended that the atomic bomb be used as a "tactical weapon,"[57] and, in 1950 and 1951, the Operations Research Office produced a variety of studies on target analysis and weapon effects.

In early 1951, Project *Vista* was established at the California Institute of Technology as a joint undertaking of the Army, Navy and Air Force. Its purpose was to study ground and air tactical warfare with special attention to the defense of Western Europe, but its most important recommendation was for the maximum possible development of tactical nuclear weapons.[58]

One of the earliest efforts to study the atomic battlefield occurred in 1949 at the Command and General Staff College (CGSC) at Fort Leavenworth, Kansas. Lieutenant General Manton S. Eddy, commandant of the CGSC, assigned a small group of officers the mission of studying the role of the Army in modern warfare, and employment of atomic weapons by the Army was an integral part of this study. The group eventually completed a draft field manual on the "tactical use of atomic weapons," and, in November 1951, an improved and edited version was issued by the Department of the Army.[59]

One of the first books on atomic weapons was written by two members of the faculty at the CGSC, Colonel G. C. Reinhardt and Lieutenant Colonel W. R. Kintner. Their book, entitled *Atomic Weapons in Land Combat*, suggested the direction for many other efforts in the 1950s. The authors explained, "Atomic weapons, tactically employed, should be incorporated into our first line of defense against any creeping aggression."[60]

The major result of numerous Army studies was to emphasize the effectiveness of atomic weapons against ground targets of a tactical nature and to note the threat of such weapons against World War II-type targets. The studies also emphasized the potential of mass destruction weapons employed tactically against the Soviet or Chinese hordes. After mentioning, for example, the "traditional Soviet tactics of massing the men and means to do a job regardless of losses" and alluding to the mass Chinese attacks in Korea, General Gavin concluded that the atomic bomb could be used successfully against massed Soviet forces.[61] Similarly, an Operations Research Office study on the use of atomic bombs against massed armor concluded that such concentrations were "profitable targets for A-bombs."[62]

Steps were also taken to develop Army weapons capable of delivering atomic weapons on the battlefield. The first weapon to appear was the mammoth 280mm gun whose development had been initiated in November 1944 by the Ordnance Corps as a conventional, but very large, artillery piece.[63] In 1948-49, the Army concentrated on development of atomic capable artillery. In June 1950, less than two weeks before the Korean War began, the Army chief of staff, General J. Lawton Collins, publicly acknowledged the Army's efforts in atomic artillery.[64]

Since the 280mm gun had already been designed, the major developmental problem was evidently the design of a stable, rugged and relatively small atomic round that could be fired by the artillery. With reductions in size and an increase in the variety of yields, production of such a round soon became possible. In May 1952, the secretary of the Army, Frank Pace, officially announced the Army's development of an atomic howitzer.[65] To publicize its work in atomics, the Army included the 280mm gun in the January 1953 inauguration parade of President Dwight D. Eisenhower. In May 1953, the Army successfully fired an atomic shell from the World War II vintage 280mm gun. The resulting explosion not only symbolized the addition of an awesome new weapon to

the Army's arsenal, but also symbolized the true beginning of the atomic era for the Army.

* * *

During the Korean War, the Army had considered employing atomic weapons against the Chinese. A June 1952 study by the US I Corps argued that atomic weapons could "be used profitably on distant massed targets, with conventional artillery taking up the task as the human sea moves in."[66] When he returned to the United States at the end of his tour as Eighth Army commander, General James A. Van Fleet counseled against the use of atomic weapons but, nevertheless, conceded that they could be used against troop concentrations.[67]

His successor, General Maxwell D. Taylor, later explained why atomic weapons were not employed in Korea. First, the United States did not have enough atomic weapons to risk their use on a target which did not represent a major threat to the security of the United States. Second, the effectiveness of the weapons might have been reduced by the mountainous terrain of Korea. Finally, there were numerous fears that employment of the weapons might reveal shortcomings which could diminish their deterrent value elsewhere.[68]

The United States perceived the major threat to be in Europe, and it did not want the demands of the Korean War to upset the delicate balance in Europe. Korea did not seem to be worth the price of crossing the atomic threshold, but the experience with masses of Chinese soldiers in Korea was believed to offer many parallels to the possibility of a Soviet attack in Europe. As the United States refocused its foreign and national defense policies on Europe, atomic weapons appeared to be a feasible means of offsetting the apparently overwhelming Soviet superiority in conventional military forces on the Continent.

Following the Korean War, the Army intensified its study of tactics, organization and equipment for the atomic battlefield, especially after the Eisenhower administration began placing greater emphasis on the employment of atomic weapons rather than expensive manpower. The Army's interest in atomic weapons, however, was not solely the result of the administration's faith in massive retaliation. Many military observers believed the new weapons promised an unparalleled revolution in tactics.

The potential effect of the new weapons was suggested by General Charles L. Bolte, vice chief of staff, in an address to the Infantry School in 1954. General Bolte described their presence as introducing "a new complexity of conditions to the battlefield hitherto undreamed of." He added, "Warfare, perforce, at once becomes dispersed, leading to a wide open, fluid battlefield. Mass, in the old sense of concentrating units and material to achieve a breakthrough or to mount an assault, becomes suicidal." He noted that the use of atomic weapons might be as "commonplace" on future battlefields as "heavy artillery is today."[69]

Such views of the future tended to bring into question many concepts that had provided the foundation for ground combat methods for centuries. Given the potential of the new weaponry, the Army had little choice but to reconsider its methods. Yet it chose to move incrementally and to avoid risking organizational and doctrinal chaos by hasty, wholesale changes.

When the 1954 Field Service Regulations were published, the envisioned atomic battlefield was a clear descendant of World War II and Korea. Although the manual discussed atomic weapons,[70] the tactics were not dramatically different from those used in the past. As for the offense, the manual noted that chemical, biological and radiological agents could be used "to reinforce the effects of the attack," but it did not alter the basic methods previously used.

Greater changes occurred in the Army's doctrine for the defense, but they did not necessarily reflect the anticipated effects of atomic weapons. In contrast to earlier manuals which had envisioned only one type of defense, the 1954 edition of the field service regulations stated that there were two

basic types of defense—the position defense and the mobile defense.

The position defense was clearly a descendant of previous methods, for it relied on a "zone of resistance" with a number of mutually supporting defense areas organized for all-around defense. The majority of the forces were placed forward, and a reserve, rarely larger than one-third of the force, was retained to counterattack, to occupy blocking positions, or to replace or reinforce troops in defensive areas. The emphasis on a defense in depth also resulted in a downplaying of the idea of a main line of resistance and its replacement by the idea of a forward edge of the defensive position. Yet decisive combat was expected to take place in front of or within the forward battle positions.[71]

In the mobile defense, the bulk of the defending force was retained as a "mobile striking force" while the remainder occupied the forward defensive position. In this fluid defense, the forward positions could consist of islands of resistance, strongpoints or observation posts. They were, nevertheless, not completely static positions since they were not expected to halt the enemy. The idea was for the forward forces to canalize the attacking forces and delay or disorganize their attack while the mobile force was "employed in offensive action to destroy the enemy at the time and place most favorable to the defender." The armored division was ideally suited for the mobile defense, but the infantry division could employ it only under special circumstances.[72]

Although the origins of the mobile defense are not entirely clear, the methodology resembled some of the counterattacks or active defenses of World War II. It also bore some resemblance to the defensive operations in Korea when mass attacks had been bled by defensive fires from successive positions until the time was ripe for a counterattack by massed fires or tank-infantry teams.

More importantly, there had been a resurgence of enthusiasm for armor in the US Army, following the success of North Korean tanks in 1950 and the growing threat of masses of Russian tanks in Europe. In July 1948, there had been only one armored division in the 10 divisions in the active force structure, and this division had only one combat command. In 1949, the division was expanded to its full size, but severe personnel shortages persisted. Similarly, there was a cavalry division stationed in the Far East in 1948, but, by 1949, that division was little more than a weakened infantry division.[73] The early and mid-1950s witnessed a clear growth of American armor. In March 1951, a second armored division was activated,[74] and, by 1956, there were four armored divisions out of a total of 20 divisions.[75]

Following the shock of the North Korean tanks in the summer of 1950, intensive efforts were devoted to developing tanks. In a remarkably short period, the Army produced the *M41*, *M47*, and *M48* tanks, and it soon produced the *M59* armored personnel carrier and began developing the *M113*. Such vehicles and units were considered ideal for operating on the atomic battlefield and for conducting a rapid and violent strike against a numerically superior enemy.

At the same time, armored units were "best suited for the mobile defense or for use as the mobile reserve for a larger force."[76] Given the specter of a dispersed atomic battlefield in which mobility provided the extra ingredient for rapid strikes and counterstrikes, the mobile defense—for the moment—seemed to provide a logical solution to the perplexing and difficult problem of balancing the need for dispersion against the need for mass.

Changes to the 1954 Field Service Regulations appeared in 1956 and 1958, but they did not dramatically alter existing practices. The major thrust of the changes, from the viewpoint of atomic warfare, was to emphasize that an artificial separation between atomic fires and maneuver was not possible. If the maximum effect was to be gained from each, the commander had to consider their employment concurrently in order to obtain their complete and proper integration. In that sense, atomic fires could complement conventional fire support by assisting maneuver, or the maneuver plan could be

tied to the use of atomic fires.[77]

* * *

Despite the appearance of the mobile defense and the envisioned employment of mass destruction weapons, the concepts for the atomic battlefield included in the 1954 Field Service Regulations and amended in 1956 and 1958 resembled wars previously fought. Very different ideas, however, were being discussed and soon came to the forefront. American thinkers recognized that the US monopoly on tactical nuclear weapons would end at some undetermined date and force major changes in ground combat doctrine.

Although the movement toward the new ideas in the early 1950s may have been initiated or at least accelerated by forces outside or above the Army, a significant portion of the Army was sympathetic to or supported the move. After being appointed chief of staff in 1953, General Matthew B. Ridgway strongly emphasized that on future battlefields American forces "must expect to be outnumbered" and the Army had to multiply its effective strength by increasing its mobility and firepower.[78] There was no doubt that atomic weapons provided the preponderant part of the new firepower.

In 1954, General Maxwell D. Taylor, Lieutenant General Bruce C. Clarke and a number of other senior officers studied the possibility of reorganizing the American division and thereby changing fundamental tactical concepts.[79] During the same period, Major General James M. Gavin, while commander of the US VII Corps in Germany, ran exercises on tactics for the atomic battlefield and noted that World War II-type organizations could not "adapt themselves to nuclear tactics. The one exception was our armored divisions." Gavin concluded that it was necessary to redesign the infantry division into relatively autonomous and widely dispersed "battle groups, each one capable of sustained combat on its own."[80] Interestingly enough, Colonel Reinhardt and Lieutenant Colonel Kintner had reached the same conclusion in their 1953 book on atomic warfare.[81]

The official Army study was entitled "Atomic Field Army-1 1956 (ATFA-1)." The formal field tests began in 1954 with the 1st Armored Division at Fort Hood, Texas, and the 47th Infantry Division at Fort Benning, Georgia. The extensive tests were designed to determine what changes in organization and tactics were necessary for fighting in atomic warfare and for improving "the Army combat potential-to-manpower ratio."[82] The ATFA-1 study was followed by the PENTANNA study which placed an even greater emphasis on the atomic battlefield.

The major results of the tests were suggested by Major General Gavin in a news conference in February 1955 when he explained that the new concepts envisioned a "cellular rather than linear" battlefield. Gavin also explained that the new standard divisions would be prepared for atomic or nonatomic warfare, but the nonatomic war was more likely.[83] The tests also indicated that improved communications permitted a division commander to control more units than the traditional three regiments, and that the "optimum number of subordinate units" was probably five.[84]

In September 1956, the newly activated 101st Airborne Division was reorganized in consonance with the concepts emerging from the several tests. In December 1956, the Army recommended to the secretary of defense and the president that they approve the reorganization of all the Army's divisions. The announcement stated, "It is felt that this new division structure will raise the combat effectiveness of the Army by exploiting to a maximum modern technology for the improvement of firepower, mobility, and control."[85]

Full plans for the new "pentomic" division—a term General Maxwell D. Taylor later described as a "Madison Avenue adjective" used to add glamor to ground combat in the era of massive retaliation[86]—were publicly unveiled at the annual meeting of the Association of the United States Army in October 1956. General Taylor, who was then chief of staff of the Army, opened the

meeting by explaining that the Army could not maintain two sets of forces, one for fighting atomic wars and the other for fighting nonatomic wars. He stated that a "basic necessity for Army forces" was to possess "the built-in capability to use atomic and non-atomic weapons in any combination."[87]

Lieutenant General C. D. Eddleman, the deputy chief of staff for military operations, emphasized that the Army must "be capable of participating successfully in any type of war, in any area in which we may be called upon to engage, ranging from sustained operations with major forces to smaller scale operations in varied terrain." Yet he also stated, "The most significant factor affecting the future Army is the introduction of atomic weapons to the battlefield."[88] When the concepts for employing the pentomic infantry division were announced, there is no doubt that the new division was primarily oriented toward the atomic battlefield—despite a clear consensus among Army leaders that this was the least likely type of war.

* * *

The new division consisted of five "battle groups" which were relatively self-contained and semi-independent units including many of the support elements previously found in the regimental combat team. The basic component of the division was the infantry battle group which was larger than the previous battalion but smaller than a regiment. Each battle group contained five rifle companies, a combat support company (including a mortar battery), and a headquarters and service company. The battle group was directly controlled by the division commander though special task forces of two or more battle groups could be formed under an assistant division commander.

The division also included an armor battalion of five tank companies, a cavalry squadron of three troops, five direct support artillery battalions and one general support artillery battalion. Armored personnel carriers were maintained under the centralized control of the transportation battalion.

All the Army's divisions were affected by the pentomic reorganization. The infantry division was affected the most, however, since the numerous changes resulted in a reduction of about 3,000 men in each infantry division. The reduction came primarily at the expense of command and control and combat service support since one of the guiding principles of the division restructuring had been to increase the relative "foxhole strength" of the division. The personnel eliminated from the old division were supposed to be absorbed by a larger support base outside the new division.

The armored divisions were only slightly affected by the pentomic reorganization, for they retained the earlier combat command organization and were reduced only a few hundred men. The primary changes in the armored division included the addition of an atomic capability, more nonatomic firepower and a stronger aviation detachment.

Greater emphasis was placed on strategic mobility. With the exception of the tanks, a division's equipment was supposed to be transportable by long-range aircraft. Such mobility was essential given the emerging concept of rapid employment of ground forces throughout the world in "limited" engagements. In many ways, the emphasis on strategic mobility made the late 1950s the golden age of the airborne units which were also organized under the pentomic concept.

According to the Army's new concept, the combat zone in an atomic war would be vastly larger in width and depth than those of previous wars. Army leaders concluded that many more ground troops would be required on the extended nuclear battlefield than on the comparatively smaller conventional battlefield.

Army leaders also believed that large massed troop concentrations could not remain in an area for an extended time without becoming an extremely lucrative target for the enemy. Combat units must be dispersed and must be organized in "checkerboard" fashion with considerable gaps between units. Each pentomic battle group was

designed to operate and sustain itself on this "cellular" battlefield, and each was capable of all-around defense. An atomic strike might damage a battle position or cause some disruption, but it would not result in a complete "fracturing" of the entire position.

As for tactical mobility, units were to be rapidly shifted from one position to another within a battlefield. Indeed, small, highly mobile tactical units were one of the most important elements in the pentomic concept. The division's tactical mobility ranged from foot mobility to the use of trucks, armored personnel carriers and aircraft. Army units were designed to converge rapidly from dispersed formations in order to make an attack, exploit the effects of atomic weapons or to destroy enemy forces. Then, they were to disperse rapidly to minimize their vulnerability to enemy counteraction.

Being able to concentrate or disperse quickly was the key to success and survival on the atomic battlefield. In the offense, atomic weapons could destroy major enemy concentrations while highly mobile infantry and armor forces could rapidly exploit deep into the enemy's position. In the defense, some penetration between the dispersed defensive positions by the enemy was unavoidable. However, once his attack was disrupted by the series of battle positions, he would be vulnerable to the defender's atomic weapons or to counterattacks on his flanks or rear. General C. D. Eddleman explained, "Flexibility and rolling with the punch, rather than rigidity, will be the keynote of the defense."[89] Flexibility was also the keynote of the offense.

* * *

Ripples from the sudden impact of these new ideas were quickly felt throughout the Army as existing methods came into question or were changed. The intellectual adjustment required by the officer corps is suggested by the sweeping changes that occurred at the CGSC. Prior to academic year 1957-58, almost all of the college instruction portrayed general war in Europe, often in a World War II-type environment. In 1957-58, however, the college instruction included the study of tactical problems in settings throughout the world. Similarly, prior instruction had seen the conventional battlefield as the standard battle and the atomic battlefield as the exception. In 1957-58, the concept was reversed, and the atomic battlefield became the standard while the conventional became the exception.[90]

These changes forced a complete reversal of many established practices. The Army probably has never experienced a more radical change during peacetime in its thought, doctrine and organizations.

Yet the changes were not accomplished easily, and many were not successful. The concept for the employment of the pentomic division was based on a wide variety of new equipment, much of which did not appear until the late 1950s. The new equipment included communications, radar or sensing devices, and aircraft which were not initially available but which were essential for the maneuver and control of the new division.

Mobility problems were especially acute. Great difficulty was encountered in making all the division's equipment air transportable. Similarly, the Department of Defense agreement of 1957 between the Army and Air Force giving the Army authority to expand its numbers and employment of aircraft also included the stipulation that as the Army increased its airlift capability "compensatory reductions" would be made in "other forms of Army transportation."[91]

Firepower problems also were evident since the delayed delivery of some of the new conventional weapons caused the new division to lack the destructive capability and staying power required against an enemy armed with modern weapons. In short, the difficulties encountered in making the transition from a linear to a porous battlefield were far more complex than was usually admitted, and the new units and doctrine could only have been employed on a conventional battlefield with difficulty.

The entire pentomic concept was further jeopardized by reductions in the Army's size

as the Eisenhower administration placed an even greater emphasis on strategic and tactical nuclear weapons in the late 1950s. Even though the Army's leaders believed an atomic battlefield required more men and equipment because of its greater dimensions, the Army was reduced from 1,025,778 to 861,964 soldiers between 1956 and 1959.

While greater emphasis was placed on the use of the Reserves, the National Guard and allied forces, many of the personnel reductions came from Active ground combat units. The pentomic infantry divisions were 3,000 men smaller than previous divisions, and the number of divisions was reduced to 15.[92] The Army did not believe that increased firepower could replace some of its active manpower. However, dependence on the atomic weapon and reduced budgetary resources combined to result in a smaller Army whose doctrine was primarily oriented toward the nuclear battlefield.

In the final analysis, the pentomic concept and the Army's infatuation with the atomic battlefield may have been ideas that appeared before their proper time, but they were also ideas that were incompletely applied. The Army undoubtedly overreacted, as well as being shoved too far, without actually having the weapons and equipment that were essential for the proper application of the new doctrine.

The resulting unpreparedness of the Army illustrates the dangers of a strategic concept dictating tactical doctrine without consideration of the technical and intellectual capability to follow the doctrine. Similarly, the Army's subsequent problems with the pentomic concept illustrate the dangers of making too rapid changes in doctrine and organizations without possessing the requisite weapons and equipment. In short, the technology lagged behind the doctrine, and strategic concepts raced ahead of tactical realities.

V. THE ROAD CONCEPT

By 1959, the Army was well aware of the shortcomings of the pentomic organization. When the pentomic concept was approved in 1956, the Army decided that its retention or modification would be subject to evaluation within five years, but numerous studies had been conducted throughout the late 1950s. Neither the studies nor the pentomic organization provided answers to the complex problems facing the Army.

In January 1959, the commanding general of the US Continental Army Command (USCONARC), General Bruce C. Clarke, ordered preparation of a study entitled the "Modern Mobile Army 1965-1970 (MOMAR I)." An initial draft of that study was completed in July 1959, and a final draft was published in February 1960. The objective of the study was to develop the operational and organizational concepts for the Army in the field during the time frame 1965-70.[93]

The basic premise of MOMAR I was that the Army had to be capable of conducting combat operations throughout the world in either a nuclear or nonnuclear environment and against a variety of enemy forces. Consequently, units had to be capable of independent or semi-independent operations under a variety of conditions. The conventional firepower of the units had to be upgraded over that of the pentomic division, and tactical mobility and maneuverability had to be enhanced by armor-protected vehicles and aircraft.

There were only two divisions under the initial MOMAR concept—a heavy and a medium division. While the heavy division was strong in armored tanks, artillery and personnel carriers, the medium division was equipped for "sustained mobile combat," but with fewer heavy vehicles. The emphasis on mechanization undoubtedly reflected General Clarke's own preferences. The imprint of General Clarke was apparent throughout the MOMAR concept, from the seven-man infantry squads, to the revitalized combat commands, to the heavy emphasis on mechanized forces. As USCONARC commander, this renowned armor officer's tactical and organizational concepts could

not be ignored.

Some of the precepts for the pentomic organization were retained under MOMAR I, but more flexible features were also added. For example, the future MOMAR division would consist of five combat commands which were self-sustained combined arms forces similar to the World War II combat commands. Five, rather than three, intermediate control headquarters were now possible because improved communications and command and control enabled commanders to have a greater span of control than was possible during the World War II and Korean era. The increased span of control had been tried with the pentomic reorganization and was retained under the MOMAR I concept. The new combat commands could be tailored by attachment or detachment of subordinate units. Since the combat commands were interchangeable, the composition of a division could be altered by the exchanging of heavy or medium combat commands.

The MOMAR I field army directly controlled the division, for the corps was eliminated under the MOMAR concept. The field army would also have air-transportable combat brigades for rapid reaction on either the strategic or tactical level.[94]

In April 1960, the CGSC was designated the coordinating agency for the continued development of the MOMAR concept.[95] The college was to "fill in, expand and refine" the MOMAR I concept before it was approved by the Department of the Army (DA). When the new study was completed by the CGSC, it strongly emphasized that the Army had to be capable of operations in a wide variety of tactical circumstances ranging from a limited war without nuclear weapons to a general war with nuclear weapons.

Since a standard division organization could not function in all the widely varying possibilities of operational environment and terrain, the Leavenworth study group suggested the creation of divisions which could be tailored or custom-made to fit various operational needs. Whether the need was for infantry, armor or airborne units, a "building block approach" could be used to organize a division to operate in any terrain or against any enemy.

The building block approach was certainly a forerunner of later concepts, but it was also a logical descendant of the World War II combat command and the MOMAR concept, as well as other concepts developed after the Korean War.[96] The concept of external and internal tailoring had become widely accepted in the Army before MOMAR I appeared. Perhaps more importantly, the building block approach strongly supported the theory of a spectrum of conflict, with variations in enemy, terrain and mission adding a third dimension pertaining to different types of organizations and tactics. Yet the initial Leavenworth study suggested only two major types of battalions—a battalion designed primarily for dismounted combat and another designed for mounted combat.

Meanwhile, DA was not receptive to some of the ideas included by MOMAR I. In a letter dated 16 December 1960, General C. D. Eddleman, the vice chief of staff, wrote to the commanding general of USCONARC and stated: "While MOMAR is useful as a reference, it does not provide the simplicity, homogeneity, versatility, and flexibility required by the Army for its diverse, worldwide tasks in the coming decade."[97] Although Army thinking had not yet been redirected by the threat of guerrilla warfare or combat against irregular forces, it was clear that the heavily mechanized forces of MOMAR I were unsuited for many areas of the world.

General Eddleman then provided guidelines for a new study. These included having divisions capable of effective operations in both nuclear and nonnuclear war, analyzing the retention of the battle group versus a return to the battalion, considering the use of a combat command or similar organization, and concentrating on infantry, mechanized and armored divisions. While the initial MOMAR I concept did not meet the needs established by DA, some of the

considerations in the ongoing Leavenworth study did. Much of the theoretical work suggested in the vice chief of staff's December 1960 letter had already been accomplished by the Leavenworth study group and by the combat development groups at the various service schools.

In the next phase, USCONARC produced a study entitled "Reorganization Objectives Army Division (ROAD) 1965," which was based upon the earlier studies done at Fort Leavenworth and the various service schools. The ROAD 1965 study was presented to DA in March 1961 and quickly approved by the chief of staff, General George H. Decker. Following approval by the secretaries of the army and defense, the president publicly announced in May 1961 his approval of the reorganization of the Army's divisions which would commence in early 1962.

As Robert S. McNamara later explained, the Kennedy administration had wanted to "separate the problem of strategic nuclear warfare from all other kinds of war." This goal was based upon a belief that strategic nuclear forces could not constitute a "credible deterrent to the broad range of aggression" and that tactical nuclear weapons could not be substituted for conventional forces in the most likely types of conflict envisaged for the 1960s.[98]

This position had been supported by the Army since the early 1950s, but it took changing world events and the entrance of a new presidential administration to bring it finally to the forefront of national security policy. Fortunately for the Army, a series of excellent staff studies provided the conceptual basis for the resurrection of a powerful conventional force capability and for the shift of emphasis from nuclear to nonnuclear warfare.

* * *

The thrust of the new changes was suggested during a presentation by Major General Harold K. Johnson in May 1961 at the CGSC. He explained, "The basic fighting structure to which we are returning is one with which most of us have a reasonable degree of familiarity."[99] The Reorganization Objectives Army Division, commonly known as the ROAD division, represented a logical extension of the armored division and its combat commands which had evolved from World War II through the post-Korean War years. The ROAD concept was initially applied to infantry, mechanized and armor divisions, but the airborne division was soon added. The ROAD mechanized division was the first such organization in American military history though the number of armored personnel carriers had increased significantly in the late 1950s.

The basic feature of the new ROAD division was a common division base to which a varying number of basic combat maneuver battalions could be attached. While the exact makeup of the division depended upon the types of maneuver battalions added in a building block fashion, an infantry division usually consisted of eight infantry and two tank battalions. A mechanized division normally had seven mechanized infantry and three tank battalions, and an armor division had six tank and five mechanized infantry battalions. Combined arms task forces could be formed by the cross-attachment of tank and infantry companies.

The new division also included three brigade (rather than the infantry "regiment" or armor "combat command") headquarters which primarily had a tactical function and which could control from two to five tactical battalions. The division also had three 105mm howitzer battalions and two 155mm howitzer battalions. Both of the 155mm battalions had one battery of 8-inch howitzers which provided the division a nuclear capability. When development of the *Davy Crockett* weapon system was completed, it was placed with the maneuver battalions and thus augmented the already existing nuclear capability.

Another important change was an increase in aviation assets; the ROAD divisions had approximately double the aviation assets of the pentomic divisions. Finally, the division

included a support command and a support command commander, somewhat similar to the already existing division artillery commander. For the first time, the division had a logistics commander.

Perhaps the major advantage of the new division was the capability to tailor a unit for an operation. With the ability to vary the organization of a division, brigade or battalion, the Army had created the most flexible organizational structure it had ever had. The new division organization was not without its critics who claimed that it weakened Army traditions and implicitly belittled the need for matual confidence between units from previous associations. Despite these criticisms, the new organization provided a simple but versatile answer to the problem of the wide variety of terrain and missions the Army might face.

Many of those who criticized the ROAD concept were quick to note their even greater dislike of the pentomic concept. For example, General Garrison H. Davidson said, "Ground commanders everywhere breathed a sigh of relief when they were no longer faced with the grim possibility of having to employ it [the pentomic division] in combat."[100] In spite of the criticisms, most observers agreed that the Army was returning to an organizational structure that had already stood the test of combat.

* * *

Under the ROAD concept, Army forces were designed to operate in either a nuclear or nonnuclear environment. While ground units had theoretically been organized to do the same thing under the pentomic concept, the previous doctrine had placed greater emphasis on the nuclear battlefield and units were designed to transition from the nuclear to the nonnuclear environment. This capability responded to what was then perceived as the greatest threat.

In contrast, ROAD units placed the greatest emphasis on the nonnuclear battlefield and were designed to transition from the nonnuclear to the nuclear environment. Although problems had been encountered in the pentomic division's capability to wage nonnuclear warfare, similar difficulties were not anticipated with the ROAD's capability to wage nuclear warfare. The greater adaptability and flexibility of the ROAD division promised an increased capability to make the difficult transition.

The change was not made without some doubts. The commander of the 8th Infantry Division, for example, on the eve of its transition to a ROAD mechanized division, stated, "Although the armored personnel carriers offer significant protection against atomic weapons, commanders should recognize that their units will be easier to locate, and therefore, attract heavy atomic and non-atomic fire."[101]

Much of the tactical doctrine for the ROAD division was similar to that existing before the pentomic revolution, and perhaps the most remarkable feature of the new doctrine was the return to the methods of the past. The methods for conducting offensive operations were not significantly different from those envisioned in the 1954 Field Service Regulations.

One change, however, resulted from a greater emphasis on vertical envelopments, especially by helicopters, even though significant advances for employing the helicopter had already been made in the pentomic era. Changes also occurred in the conduct of the defense, for the fundamental types of defense became the mobile and the area defenses. Although the mobile defense was normally conducted by division and larger units, ROAD doctrine also envisioned it being conducted by the brigade, including the infantry brigade.[102]

The terminology change from the "position" to the "area" defense signaled the need for a defense in depth, as well as emphasizing that key terrain did not necessarily have to be occupied since enemy nuclear weapons might easily eliminate defenses on such obvious positions. In the area defense, nonetheless, there was a subtle increase in the emphasis placed on destroying or ejecting the enemy from the defender's position. The great fluidity of the pentomic defense

was replaced by more rigid methods reminiscent of, but somewhat more flexible than, those in the 1954 Field Service Regulations.

There were other changes in terminology. The area where the main defensive effort would take place was called the "main battle area" before the Korean War, the "forward defensive area" after that war, the "battle area" in the pentomic concept and once again the "forward defensive area" under the ROAD concept. The "reconnaissance and security line," a term which had endured from the late 1940s through the 1950s, now became the "general outpost" and "combat outpost" lines. The term "main line of resistance" completely disappeared, and the term "forward edge of the battle area," or FEBA, was retained from the pentomic concept. For the offense, the major terminology change was to replace the earlier "secondary attack" with the new "supporting attack." While the changes may seem minor, each was designed to emphasize the greater dispersion and mobility of the ROAD units.

One of the major changes under the ROAD concept was the creation of mechanized infantry units of division, brigade and battalion size. Under this concept, mechanized units mounted their fighting elements and supporting weapons in fully tracked, lightly armored vehicles (the *M113* armored personnel carrier). The vehicles provided a high degree of cross-country mobility, protection from small arms and fragmentation, and substantial protection from the effects of nuclear weapons.

Mechanization permitted the rapid massing or dispersal of units, as well as enabling them to maneuver under enemy fire and to exploit the effects of supporting fires. Because the typical mechanized division had three tank battalions, it possessed a significant offensive as well as antitank capability, and the mechanized elements were better able to "complement and enhance" the capabilities of tank elements.

However, the mechanized division was distinctly different from the armor division. The mechanized division placed the greatest emphasis on the infantry while the armored division placed the greatest emphasis on the tank. This was clearly evident in FM 7-20, *Infantry, Airborne Infantry, and Mechanized Infantry Battalions*, which stated: "[A]mechanized infantry battalion in an armored division is normally employed to support the advance of tank elements. In the infantry and mechanized divisions, the reverse is true—armored elements are used primarily to support the advance of infantry elements."[103] While this might vary within normal operations since brigades could be tailored to be infantry or armor-heavy, the title "infantry" or "armor" usually suggested the focus of the operations.

Although all the combat arms were affected by the adoption of the ROAD concept, the doctrine for the employment of tank forces was the least affected by these changes. The artillery was only slightly affected since it had already made important steps toward increased mechanization. The infantry was the combat arms branch most affected by the new ROAD concepts which included increases in mobility and mechanization of the infantry. The formation of mechanized infantry units forced the infantry to adopt many of the practices and thinking of the armor and irrevocably linked a significant portion of its resources and intellectual energies to the mechanized battle. Tactical doctrine, nevertheless, stressed continuity rather than change.

When FM 7-20, the manual on the different types of infantry battalions, discussed the characteristics and capabilities of the various battalions, its major point was that the mechanized infantry battalion had a "sustained capability for rapid movement" while the airborne infantry battalions had the "capability to conduct frequent airborne assaults."[104] Once dismounted, infantry techniques theoretically remained similar to those of the past two decades. To accomplish its mission, the infantry was still required to dismount from its vehicles which primarily were viewed as a means of allowing the soldier to enter combat faster and

better prepared to fight. Little or no emphasis was placed on the infantry fighting from its armored vehicles. A 1965 manual on the mechanized infantry battalion, for example, noted that the infantry should not remain mounted too long because of the danger of "group destruction by short-range weapons."[105]

The increases in mobility and firepower supposedly did not change the basic function of the infantryman; they only improved his ability to accomplish that function. Yet important doctrinal questions appeared that were not directly associated with traditional infantry doctrine. The debate over the proper dismount point for mechanized infantry units in a tank-infantry attack illustrates the increasing complexity of accomplishing infantry functions in the traditional fashion. Changes in mobility made the responsibilities of the infantry commander much broader and much more complex, forcing him to consider his "traditional" problems in an entirely different manner. The entire realm of mechanized warfare, with all its complexities, was now added to an already long list of infantry tactical skills which would become even more complex when airmobile operations captured the attention of the Army.

* * *

Prescribed frontages or densities for ROAD units differed greatly from those of the past. The changes can be seen most clearly in the conduct of the defense. During and immediately after World War II, the standard infantry division of approximately 13,207 men was expected to defend a front of about 7,000 meters, and a defense along a broad front was defined as a distance of about 15,000 meters.[106] In the Korean War, an infantry division consisted of about 17,629 men and usually defended a front of about 21,000 meters. While this front was considered extremely broad, there were not enough ground units to reduce it significantly. Fortunately, the difficult Korean terrain strengthened the defenses of the thinly stretched troop line. With the pentomic division of about 12,191 men, the "normal" front was about 24,000 meters. This was considered acceptable because of the need for greater dispersion and depth on the atomic battlefield.

When the ROAD mechanized infantry division was created, it usually had about 13,512 men and was expected to defend along a front of about 20,000 meters. Interestingly enough, two ROAD mechanized infantry battalions were expected to defend a front almost equal to that of the World War II division, and the "normal" front of a ROAD division was about 5,000 meters greater than that of a World War II division defending along a broad front.[107] Thus, the greater dispersion appearing in the Korean War was continued through the 1950s and early 1960s.

The reasons for the greater dispersion are complex, but several can be identified. Following the Korean War experience with defenses on broad fronts, the US Army focused on the defense of Europe, and ground commanders became accustomed to thinking of broader fronts because of the shortage of NATO forces. The tendency to accept larger frontages was reinforced by armor commanders who tended to think in terms of a more mobile and extended battlefield.

Increases in mobility and mechanization of the infantry also supported the extension of fronts. With the increased use of the helicopter and armored personnel carrier, the infantryman was no longer bound by the distance he could walk in a single day. Similarly, with improved weapons, in terms of range and effect, the area controlled by an infantry unit was greatly expanded.

Finally, under the ROAD concept, the main tenet of defending against nuclear attack remained dispersion, and manuals often used the term "fluid" to characterize the nuclear battlefield. The greater mobility of ROAD units supposedly increased their ability to mass and also to disperse rapidly. The combination of all of these factors led to a significant expansion in the distance that was accepted as the "normal" front.

Subtle but important change also occurred in the American perception of the purposes of the defense. Whereas previous doctrine had focused on the retention of terrain, the ROAD concept placed greater emphasis on the destruction of enemy forces. The 1949 Field Service Regulations, for example, stated, "Defensive doctrine contemplates the selection and organization of a battle position which is to be held at all costs."[108] The 1962 Field Service Regulations included five purposes of the defense, three of which were traditional in the sense of using the defense to prepare for offensive action. Yet the list of purposes also included to "destroy or trap a hostile force" and to "reduce the enemy capability for offensive action."[109] While these two purposes were by no means new to military history, they did reflect the increasing focus of the 1950s on the destruction of enemy forces.

The American doctrine of the offense was also affected. The offense was no longer considered the primary means of destroying the effectiveness of the enemy forces.

Ironically, the doctrinal changes inherent in the ROAD concept did not result in a greater emphasis on the offense even though ROAD units possessed a greater capability for offensive action than did pentomic units. While many tactical methods remained very similar to those of World War II, the postwar emphasis on the offense had dissipated.

Important alterations had also occurred in the Army's perceptions of concentration and dispersion. During the decade between the early 1950s and early 1960s, the Army's thinking had changed as a result of its experiences during the Korean War, the greater emphasis on the defense in Western Europe, the long-term focus on attrition rather than maneuver and the habitual tendency to assume that tactical nuclear weapons would be available to employ against massed, attacking enemy forces. While these changes were based upon technological advances, they were also the result of increasing confidence in the power of the defense.

VI. COUNTERINSURGENCY

THROUGHOUT the 1950s, a basic theme of Army policy was the need to be prepared to operate anywhere along the spectrum of conflict—from a show of force to general nuclear war. Although "limited" war (meaning less than total) was discussed in detail, especially in the late 1950s, counterinsurgency doctrine suffered from neglect and misunderstanding throughout most of that decade.

Following the North Korean employment of guerrillas in the Korean War, a momentary blossoming of interest in unconventional warfare had occurred which resulted in the creation of the 10th Special Forces Group at Fort Bragg, North Carolina, in June 1952. The Special Forces, however, concentrated on unconventional warfare behind enemy lines, and Army doctrine linked guerrilla warfare to conventional warfare objectives.[110] As for defense against guerrilla forces, the model provided by the defense against North Korean guerrillas prevailed. Little or no attention was paid to the problem of combating guerrilla forces in an insurgency.

As the Army became more and more concerned with nuclear warfare in the late 1950s, its interest in counterinsurgency and unconventional warfare waned. By the beginning of the 1960s, the US Army was not prepared in doctrine or equipment for conducting counterinsurgency operations. One of the first official studies in the early 1960s on counterinsurgency concluded, "The tactical doctrine for the employment of regular forces against insurgent guerrilla forces has not been adequately developed, and the Army does not have a clear concept of the proper scale and type of equipment necessary for these operations."[111]

Although a slow revival of interest in counterinsurgency had begun somewhat earlier amid changing perceptions of the threat and emerging convictions that nuclear parity between the superpowers made other

forms of warfare more likely, the interest in counterinsurgency increased tremendously after President John F. Kennedy's election. Interest further increased when Nikita Khrushchev proclaimed in January 1961 that the Communists should avoid world and limited wars but that "wars of liberation" were necessary and inevitable. The 1962 Field Service Regulations reflected the increasing importance of insurgency, for it included a chapter on military operations against irregular forces.[112]

Perhaps the most difficult obstacle facing the Army as it attempted to prepare for counterinsurgency operations was the mental redirection and re-education required of its officers and soldiers, most of whom had only been exposed to nuclear or conventional tactical doctrine. In undertaking the effort to change thinking, a variety of short courses was conducted on a crash basis throughout the Army school system. The president directed that "guerrilla warfare libraries" be established for the use of officers and soldiers. Attempts to redirect thinking, however, were hampered by the absence of any clear doctrine. The Army paid for its lack of interest in counterinsurgency in the 1950s with the diffuse and often hastily constructed crash programs of the early 1960s.

The lack of preparation by the Army can be seen in the confusion which existed over terms. A variety of publications attempted to explain the difference between unconventional guerrilla, counterguerrilla, counterinsurgency and special warfare, as well as between indigenous, irregular, partisan and guerrilla forces.[113] The confusion over terms was exceeded only by the confusion over the proper methods to employ in the various types of warfare. The conceptual problem was made even more complex by the simultaneous adoption of the ROAD organization and the wholehearted movement into counterinsurgency. It was compounded by the need to search simultaneously for the best weapons and organizations.

Unfortunately, the crash nature of the new entry into counterinsurgency caused the Army to focus much of its initial efforts on tactical methods. The elusive ideal of identifying the goals of military action within counterinsurgency was thus overwhelmed by the more immediate task of developing tactical organizations, equipment and doctrine. Where there should have been clarity, confusion reigned.

If there was any hesitation by the Army about the importance of counterinsurgency, it was soon overcome by President Kennedy's personal interest in guerrilla warfare. The president became particularly interested in the Special Forces which he considered to have immense potential as a counterinsurgency force. Ironically, the sudden interest in counterinsurgency completely reversed the main function of the Special Forces. They reverted from fomenters of rebellion to combatants against rebellion. Yet their techniques did not drastically change, for they continued to concentrate on the organization and employment of indigenous forces.

Considering the enormous scope of the problem, the Army responded rapidly, and numerous doctrinal publications soon appeared. The dominant theme of some of the initial publications on special warfare was the need for offensive operations. FM 31-15, *Operations Against Irregular Forces*, for example, stated, "A defensive attitude. . .permits the guerrilla to concentrate superior forces, inflict severe casualties, and lower morale."[114] A handbook on the suppression of guerrilla operations, published by the Special Warfare Division, also stressed maintaining the initiative through prompt offensive action.[115]

The tactics usually consisted of small-unit operations, and meeting engagements, attacks, ambushes, raids and pursuits were often described. Very different tactics, such as provoking the guerrilla to attack or conducting searches, were also mentioned. Yet most tactics for counterinsurgency remained extensions of, or resembled, small-unit tactics for a conventional battlefield.

If there were benefits from the war in

Southeast Asia in the early 1960s, it was the ability of the Army to learn from ongoing combat operations. Following the official request from South Vietnam in 1961 for immediate help, President Kennedy increased the number and expanded the role of American advisers. The Army subsequently extracted ideas from combat operations, gained practical experience with advisers to the South Vietnamese and tested new equipment in a combat environment. The experience and knowledge gained by the Army were invaluable, and, without them, the transition from conventional warfare to counterinsurgency would have been immensely more difficult.

* * *

By the early 1960s, the Army recognized the potential of the helicopter in counterinsurgency operations since its mobility promised immediate response to the swift guerrilla. Yet the Army's development of the helicopter during the 1950s had not taken place within the framework of guerrilla warfare. The Korean War had demonstrated the potential of the helicopter, but further impetus for Army aviation was provided in the 1950s by a growing Army perception that the Air Force was primarily interested in strategic bombardment and had very little interest in tactical transport and close air support. The helicopter was thus developed within the framework of the Army placing greater emphasis on air transport and support for ground operations, and the number of Army aircraft continued to increase until there were about 5,500 aircraft in 1961.[116]

When Major General James M. Gavin published an article in April 1954 entitled "Cavalry, and I Don't Mean Horses," he identified himself as one of the earliest helicopter enthusiasts.[117] His vision of a "sky cavalry" unit provided much of the conceptual basis for doctrinal development of the helicopter in the 1950s.

Some of the most important and earliest work was done at the US Army Aviation School at Fort Rucker, Alabama, under Brigadier General Carl I. Hutton. After USCONARC instructed the Aviation School to develop "highly mobile task forces with an improved ratio of firepower to manpower for employment on the nuclear battlefield," Colonel Jay D. Vanderpool directed most of the requisite combat development efforts. The doctrinal effort was extremely complex, and, when the first doctrinal pamphlet on the fledgling sky cavalry unit was written, Colonel Vanderpool, in his own words, "plagiarized the last field manual written for horse cavalrymen in 1936."[118] As further experiments and field tests were conducted, the potential of the helicopter became even more apparent, and more sophisticated concepts emerged.

In early 1956, Major General Hamilton H. Howze, the new director of Army aviation, became the leading spokesman for the helicopter. General Howze's major point concerned the need for air movement of troops in the atomic era. With dispersed troop formations on the atomic battlefield, helicopters could be used to shift combat power rapidly.[119]

In opposition to those arguing for a simple "thinning out of the battlefield" in the atomic era, Army aviators insisted that the soldier's effectiveness could be increased by providing him greater mobility. Following an atomic attack, a highly mobile force could conduct a rapid and deep exploitation. The exposure time, or time in which troops might be subjected to atomic attack, was described as a "direct function" of the soldier's speed; thus, greater mobility reduced his vulnerability. Since heavy combat equipment could not be transported easily, a substantial portion of the fire support for such units had to come from Army aviation or the Air Force—if not from missiles with atomic warheads. Therefore, the greater dispersion of the atomic battlefield seemingly provided an ideal operating environment for the helicopter and helicopter-borne forces.

As for nonatomic wars, aviators considered mobility the key to the Army's operations. Given the dispersal and mobility of partisans and irregulars, no major change

in Army doctrine, equipment or organizations was foreseen if the Army had to fight a nonatomic or limited war. A 1957 study at the Aviation School concluded: "The required forces, then, for the small war appear to be much the same as those for the atomic war against the Soviet Union."[120]

Helicopter enthusiasts followed the French employment of helicopters in North Africa in the mid-1950s with interest. However, given the great emphasis in the US defense establishment on atomic warfare and the rather tenuous position of the Army helicopter, aviation enthusiasts continued to place the greatest emphasis on possible employment of aircraft on the atomic battlefield and made no clear-cut distinction between atomic and nonatomic methods. The controversial nature of Army aviation was later made clear by Lieutenant General John J. Tolson when he described the clash between the Army and Air Force over the *Caribou* and *Mohawk* airplanes. He explained, "More time was devoted to these systems than to the entire airmobility concept itself."[121]

An opportunity for improvement appeared in early 1960, when the chief of staff established the Army Aircraft Requirements Review Board, headed by Lieutenant General Gordon B. Rogers. Following a detailed analysis of Army requirements, the Rogers Board made a number of recommendations which concentrated on improving the technical design and capability of Army helicopters. It also recommended a formal study to determine "whether the concept of air fighting units was practical."[122] The recommendations of the board were, nonetheless, limited and did not signal a new wave of helicopter development. By the end of 1960, the basic objective of the Army's airmobile program was for "each division to have the capability of moving at least a company of infantry by its organic airlift."[123] Much remained to be done.

Beginning in 1961, a number of important events accelerated development of the helicopter. In December 1961, two US helicopter transportation companies arrived in South Vietnam and were employed successfully in their first airmobile combat action before the end of that month.

The helicopter was also affected by the Kennedy administration's greater emphasis on counterinsurgency. Following his initial proposal to cut back the Army aviation programs, Secretary of Defense Robert S. McNamara and his staff conducted a thorough study of Army aviation requirements in late 1961. Much to the Army's amazement, the secretary of defense sent a memorandum to the secretary of the Army in April 1962 in which he described the Army's program as being too conservative. The secretary of defense believed the Army was not exploiting the potential of aviation and needed to take another look at aviation requirements for land warfare.[124]

Within a week after McNamara's April memorandum, Major General Hamilton H. Howze was appointed president of an ad hoc board to re-examine the role of Army aviation. In the following months, elaborate tests were conducted to analyze the capabilities of Army aircraft against an enemy force of irregulars, and the final report of the Howze Board was submitted on 20 August 1962.

The Howze Board's most important recommendation concerned the formation of an air assault division consisting of more than 450 aircraft. The suggested air assault division followed the example of other ROAD divisions; it had three brigade headquarters, to which combat battalions and support elements could be assigned according to the mission and terrain. The division's organic aircraft could transport one-third of the ground assault elements at a time. The Howze Board also recommended formation of an air cavalry combat brigade whose functions were the traditional ones for cavalry—reconnaissance, security and economy of force actions. Unlike the air assault division, however, it did not have organic infantry units for ground combat. The board concluded, "Adoption by the Army of the airmobile concept . . . is necessary and desirable. In some respects, the transi-

tion is inevitable, just as was that from animal mobility to motor."[125]

During the next two years, the Army continued to conduct intensive studies of airmobile organization, equipment and tactics. In February 1963, the 11th Air Assault Division (Test) was activated at Fort Benning, Georgia, to test the Howze Board concepts in a mid-intensity environment.

At the same time, US Army pilots in South Vietnam were learning how to employ helicopters effectively in a counterinsurgency environment. Many airmobile concepts were tested under combat conditions before they became part of American tactical doctrine. For example, the Army Concept Team in Vietnam tested the effectiveness of the armed helicopter company in late 1962 and early 1963 though the rules of engagement precluded the tests of any tactical concepts involving "offensive" employment.[126] The long process of study and experiment culminated on 1 July 1965 when the 1st Cavalry Division (Airmobile) was activated.

When the first US Army ground units entered combat in the summer of 1965, airmobile or counterguerrilla tactics had not yet been perfected. But the Army had made excellent progress since the special warfare study in January 1962 had concluded that the Army's tactical doctrine for counterguerrilla warfare had not been "adequately developed." In contrast to the Korean War, American units were much better prepared when they entered combat in South Vietnam. Doctrinal and equipment problems persisted, but they were neither as acute nor numerous as they would have been if US Army units had been committed in 1961.

Between 1953 and 1965, the Army had suffered through a number of dramatic changes in its tactical doctrine. These abrupt shifts in the focus of its doctrine forced the Army to reconsider every aspect of its tactics, organization and equipment. Considering the sweeping nature of the changes, the ability of the Army to respond to counterinsurgency needs was remarkable. When the decade of doctrinal chaos ended, the Army entered one of the most difficult and complex wars in its history.

VII. THE VIETNAM WAR

ALTHOUGH the United States contended that counterinsurgency operations should be combated through a combination of military operations and social reform, the demands of tactical operations in the Vietnam War remained the most important concern of the US Army. The focus on combat action was especially true from the middle of 1966 when US forces launched their first prolonged offensive, through late 1968 when "Vietnamization" of the war began in earnest. During the intervening period, South Vietnamese troops emphasized pacification duties while US units carried the brunt of the major fighting. In late 1968, South Vietnamese units began assuming an increasing responsibility for military operations. This responsibility continued to increase until the last US ground troops withdrew in August 1972.

Because of strategic and political considerations, the ground strategy remained that of a gigantic mobile defense. The strategy sought to defeat the North Vietnamese Army (NVA) and Vietcong (VC) forces and to permit the people of South Vietnam to manage their own affairs. Tactical operations within the mobile defense were predominately offensive, for the essential idea was to find and destroy the enemy. Such operations theoretically enabled the government of South Vietnam to extend its control over the people within an area. Military operations were thus an inherent part of the pacification effort even though their contribution to the pacification effort was often not immediately apparent at the local or village level.[127]

From the moment the US Marines first entered South Vietnam in March 1965, the war was characterized by its nonlinear and multidirectional nature. Following the arrival of the 173d Airborne Brigade in May 1965, American tactical operations concentrated on defeating or destroying the enemy

within an area rather than capturing terrain features or conventional objectives. Consequently, tactical methods were usually very different from those previously envisioned for a limited war, especially one similar to the Korean Conflict. Although tactical methods intended for a general war in Europe were often not applicable to combat operations in South Vietnam, the American movement toward a more dispersed battlefield in the 1950s proved to be a fortunate development.

By the early 1960s, major advances had been made in tactical communications, and when this was coupled with the great mobility of the helicopter, larger unit commanders were able to control their subordinate units in a fashion heretofore impossible. The improved communications, greater flexibility in command and control, increased American mobility and the nature of the enemy ensured that tactical operations in South Vietnam often bore little resemblance to those of the past.

There were some exceptions to the fighting in South Vietnam being very different from that of the past, for the shifting intensities and scale of combat sometimes included variations of conventional war. The invasion of Cambodia in April-June 1970, the South Vietnamese operation in Laos in February-April 1971 and the North Vietnamese offensives in March-April 1972 and March-April 1975 are clear examples of conventional operations. But the majority of the fighting remained nonconventional. The dilemma for American commanders was the continued threat of large-scale operations in an environment where relatively small-scale operations were the rule. Neither extreme of the possible scale of operations could be ignored.

* * *

When US forces entered combat in 1965, the VC and NVA forces had recently changed their tactics from small-unit to larger unit operations. They were enjoying a considerable degree of success, and, as General William C. Westmoreland said, "The South Vietnamese government—already exhausted by a decade of struggle—was thus faced with defeat."[128] Consequently, the initial phase of fighting by the Americans stressed "arresting the losing trend, stifling the enemy initiative, protecting the deployment of our forces, and providing security to populated areas to the extent possible."[129]

The "fire brigade" approach extended throughout 1965, and, according to General Westmoreland, "Attacks by air and artillery fire constituted the bulk of our offensive operations in early 1966 until our ground strength reached appropriate and effective levels." During the early phase of the war, ground operations were thus launched only against enemy forces constituting "an immediate and grave threat."[130] By the spring of 1966, the possibility of an immediate enemy victory had disappeared, and, according to Lieutenant General Richard G. Stilwell, "the initiative began to pass to the allies."[131]

From the Battle of the Ia Drang Valley in October-November 1965 through Junction City in February-May 1967, US Army commanders sometimes employed division or multidivision-sized forces to destroy larger VC and NVA units.[132] Division or larger size units were also used after 1967 such as in the area around Khe Sanh in early 1968 or following the Tet offensive in January 1968.

Large units frequently conducted spoiling attacks or reconnaissances in force into enemy base areas. The focus on semiconventional, large-unit operations came at the expense of the local pacification effort.[133] From the Army's view, however, such a focus was essential given the circumstances of the US entry into the war. General Westmoreland explained, "We had learned . . . that we had to take the fight to the enemy if pacification was ever to succeed." The threat of enemy main force units attacking local security forces had to be eliminated.[134]

Despite the number of large-unit operations in the initial phases of American involvement, tactical operations by brigades,

battalions and companies comprised the bulk of the American effort throughout the war. Since allied units were scattered widely in order to control large areas and to increase chances of finding the enemy, aggressive and competent leadership for smaller units remained essential for all tactical operations.

Operation by units smaller than the division (or even brigade) were the key to the pacification effort and the key to finding the enemy. In jungle operations, small-unit tactics were essential, for heavy vegetation and broken terrain provided ideal concealment for the enemy. If a commander expected to find the enemy, he had to disperse his subordinate units even though reinforcement became extremely difficult when contact was made with the enemy.[135] The need for small-unit operations also applied to mechanized infantry, and one former battalion commander stated, "As I saw the war in Vietnam, it belonged to the company commander. He was the key to success—a planner, a doer, an independent operator, and a leader of men."[136]

After the end of the US ground role in Vietnam, two general officers noted that they had initially thought the best combat results were obtained from larger engagements rather than smaller ones. After smaller unit operations received greater emphasis, they discovered that the number of enemy casualties increased and that the great majority of these losses came in small contacts.[137] Larger unit operations, however, were necessary to provide a protective shield for smaller unit operations and to destroy large enemy concentrations.

In the initial phases of US participation, the helicopter emerged as one of the most important innovations of the war. Its great mobility and carrying capacity provided the essential ingredient for operations in the diverse terrain of Southeast Asia against the enemy's light infantry. As a carrier of supplies, ammunition, equipment and wounded personnel, its functions ranged far beyond that of simply being a combat vehicle. Only the helicopter could accomplish the variety of tactical tasks ranging from the insertion of a long-range patrol to the vertical assault of an entire division.

Employment of the helicopter enabled the free world forces to mass men and equipment in a fashion fundamentally affecting tactical methods. Helicopters could transport units to a battle area and could also enable them to maneuver or to reinforce, displace or withdraw combat power during the battle. Helicopters could also be used to concentrate forces quickly. The dominant characteristic of the development of infantry organizations and tactics during the war was the increasing application of air-mobile concepts and tactics.[138]

Before US troops entered the war, the Army had developed the operational terminology to describe the three basic types of operations conducted. The terms signaled the difference between the Vietnam War and previous American wars.

The first type of operation was "search and destroy."[139] As is obvious from its title, operations of this type sought to locate the enemy and destroy him, and variations could be conducted from company to multidivisional level though the norm was probably a multibattalion operation. No fixed model existed for such operations. "Horseshoes" could be formed by placing units in blocking positions, and ground thrusts could drive into the center of the horseshoe. Or, in a "hammer and anvil" operation, a blocking position could be occupied, and an attacking force could move toward it. Another variation included the emplacement of ambushes along likely avenues of escape. When an allied force moved into the area, escaping enemy units were ambushed as they attempted to flee. Straightforward attacks were also used. Ground forces often moved into enemy base areas, seeking contact and hoping to inflict heavy casualties on the enemy before he escaped.

In April 1968, the Army dropped the term "search and destroy" since it was, as General Westmoreland noted, "equated in the [American] public mind with aimless searches in the jungle and destruction of

property."[140] Other terms, such as combat sweep, reconnaissance in force and spoiling attack, replaced the term "search and destroy." But the original term was sometimes carelessly used in a blanket fashion to describe almost any kind of offensive operation.

Although "clearing" operations resembled search-and-destroy operations, they usually placed a greater emphasis on pacification. While search-and-destroy operations chased the enemy from an area or destroyed him, clearing operations kept him off balance and allowed the South Vietnamese government to extend its influence into the area.

Reconnaissances in force, combat sweeps or other offensive operations continued to be conducted, but the greatest emphasis in clearing operations was placed on eliminating local or main force enemy resistance and destroying his support base. Local commanders and political authorities, for example, often used cordon-and-search operations[141] to "clear" a village or area. Thus, clearing operations usually lasted longer than search-and-destroy operations.

The final type was the "securing" operation. These operations protected pacification accomplishments, but concentrated on eliminating local guerrilla units and the enemy's political infrastructure and support base. Although multibattalion offensive sweeps could be used to secure an area, the norm was probably saturation patrolling and cordon and searches of hamlets. With effective Vietnamese police assistance, these efforts emphasized thorough interrogation and identification of the civilian populace. They also included an intense civic action program and such things as medical assistance.[142] Such efforts demonstrated the commitment of the South Vietnamese government and the free world forces to protect the civilian population and to maintain control within an area.

Theoretically, the proper sequence of operations was search and destroy, clear and secure, with the final phase being dominated by the South Vietnamese Regional and Popular Forces and the police. While search-and-destroy operations engaged the enemy's main force and provincial battalions, the remaining smaller elements were rooted out with clearing and securing operations.

The ideal models for types of operations, however, often resembled actual operations only in their purpose rather than in their specific techniques. Given the wide diversity of terrain, weather and enemy throughout South Vietnam, commanders who unimaginatively applied ideal models to less than ideal conditions were more likely to meet failure than success. Innovation and diversity were the rule rather than the exception, and orthodox procedures were often revised in Vietnam's nonconventional environment.

From the perspective of most ground commanders, the primary purpose of ground tactical operations was to defeat enemy forces. Consequently, "find, fix, fight, and finish" the enemy became a much-repeated slogan during the Vietnam War. The goal of destroying enemy forces eventually assumed a greater importance than the theoretical sequence of search-and-destroy, clear and secure operations. An underlying reason for this focus on attrition was the nature of the enemy. His great mobility and unpredictability frequently forced the free world forces to conduct search-and-destroy operations or fight major battles in areas that had supposedly been freed from most enemy influence.

* * *

The tactics employed by American ground troops in South Vietnam were heavily influenced by the enemy's organization and tactics. The enemy's armed forces essentially consisted of three major groups—local and provincial VC guerrillas, main force VC units and members of the regular North Vietnamese Army.

The local VC guerrillas usually operated as part-time soldiers who blended into the civilian population by day and became effective fighters at night. They operated in small units (usually squad, platoon or company).

The provincial Vietcong (usually organized into battalions) consisted of forces recruited from local villages. They normally operated in the province from which the unit's members were drawn.

Main force VC units were organized into battalions and regiments, but could also be organized into divisions for operations throughout South Vietnam. They were better equipped and trained than the local and provincial VC units and were fully capable of relatively large-scale and violent operations. Yet they could also break down into squads and platoons and could operate in the same fashion as the local Vietcong.

Because of their detailed knowledge of local terrain, extensive combat experience in guerrilla warfare and often intense dedication to their cause, the VC soldiers were formidable opponents throughout the war. One American officer described the Vietcong as "a fanatically dedicated opponent who would take on tanks, if necessary, armed only with bow and arrow."[143]

The NVA units were better equipped than the VC units and usually operated as battalions, regiments or even divisions. The NVA units possessed greater combat power than the Vietcong, as is illustrated by their eventual employment of heavy artillery and tanks, particularly in the latter phases of the war. Except for the greater firepower and usually larger units, NVA methods of operation resembled those of main force Vietcong.

At times, the NVA units also conducted light and highly mobile guerrilla operations, similar to those of the local Vietcong, but such operations were often not as successful as those conducted by local forces. Because of his lack of familiarity with South Vietnam and relatively easy identification as a foreigner, the NVA soldier sometimes could not blend into the local population. By mid-1967, large-scale offensive operations by free world forces had flushed the enemy's larger units from many of their base camps and sanctuaries near large urban areas in South Vietnam. Thenceforth, NVA units often operated in border areas where they could elude pursuing free world units by fleeing across the Vietnamese border into relatively safe sanctuaries.

Despite the variety of units, the enemy's forces operated in an interdependent fashion. There was no notion of each type unit fighting in its own way without regard to the methods or mission of other units. Local force Vietcong, for example, provided important logistics support for main force units while continuously harassing allied troops. Similarly, main force units bore the brunt of the heaviest fighting in the larger operations, but, without the intelligence, preparation and assistance of the local forces, their successes would have been extremely limited.

The Vietcong and North Vietnamese Army used essentially infantry tactics, and mobility was the key to all operations, from the small actions of the local forces to the larger actions of the regular forces. The enemy rarely accepted battle in unfavorable situations and only accepted decisive contact under exceptional circumstances. His operations were usually ruled by the maxim: "When the enemy advances, withdraw; when he defends, harass; when he is tired, attack; when he withdraws, pursue. . . ."[144] If unexpected developments prevented an operation from being executed according to plan, the enemy often broke contact and awaited more favorable circumstances. Yet the Tet offensive of February 1968 demonstrated that the enemy was more than willing to accept massive casualties if he deemed it necessary, and his tough defense after the offensive of March-April 1972 demonstrated that he was willing to stand and fight.

The enemy's tactics attempted to compensate for his relatively weak firepower. Since his light infantry units did not possess the same firepower and staying power of most of the allied units, he sought to inflict the most casualties with his rifles and automatic weapons in the early minutes of an engagement. The VC and NVA forces often employed the ambush with excellent results. Whether in the jungle or along routes of movement, no patrol or column was safe.

Various techniques of ambush were often used effectively. For example, the "lure and ambush" sometimes drew pursuing soldiers into carefully prepared traps. Another variation often accompanied a sharp, violent attack on an installation or unit. When a relief column rushed forward to assist or relieve the threatened position, it sometimes found itself to be the real prey. The Vietcong were especially adept at harassment. Sniper fire, booby-traps, mines and mortars constantly harassed free world forces.[145]

The enemy also employed rapid strikes against allied weak points. An example of such tactics occurred on 10-11 March 1975 when Banmethuot was captured. According to General Van Tien Dung, the NVA chief of staff, his troops avoided defensive positions on the outer perimeter of the city and struck the command and control centers of the South Vietnamese inside the city. After capturing the command centers, NVA troops moved outward to capture perimeter positions. Such tactics enabled the North Vietnamese Army to capture Banmethuot in just over 32 hours.[146]

NVA and VC units also used mass assaults, sometimes supported by heavy supporting fires. Rapid, violent attacks against carefully selected objectives enabled the Vietcong and North Vietnamese to maximize the combat forces of their infantry and to inflict casualties on the defender. Such attacks were minutely planned, meticulously prepared and frequently rehearsed, but weak tactical communications often forced the enemy to adopt highly inflexible plans. Regardless of the method used, the enemy normally sought to inflict casualties and then escape.[147]

VC and NVA units used several other techniques to weaken the effects of the allied firepower. One of the most important of these was night fighting. Their ability to operate at night under the concealment of darkness often served to nullify an overwhelming firepower advantage of an American unit.

If the Vietcong or North Vietnamese Army were forced to defend or were to remain immobile for a period, they built elaborate networks of trenches, bunkers and tunnels which provided protection against the firepower of attacking allied units. The enemy also engaged allied units at very close distances, especially in jungle fighting. By "hugging" an opposing unit, the VC and NVA units could limit the allied use of artillery, air strikes and helicopter support. Their stress on surprise and mobility also enabled them to strike and escape before allied firepower could be concentrated against them.

The individual soldiers, nevertheless, remained vulnerable, and the VC and NVA units often suffered casualties—even in favorable circumstances—far beyond those of their opponents. Such losses inevitably affected the quality of the enemy forces as a whole, for many superbly trained and well-motivated soldiers fell victim to superior allied firepower. But the enemy's willingness to accept heavy casualties and ability to strike without warning forced the free world forces to approach every movement and action as if it were a combat operation.[148]

* * *

Because of the enemy's light, highly mobile and unpredictable nature, finding him emerged as one of the most important but frustrating parts of any operation. A former brigade commander explained, "The brigade that cannot find the enemy has no successful operations."[149] Since that dictum applied to units of any size, allied units placed a special premium on intelligence. The methods employed included traditional means such as the use of informants, interrogation of prisoners and exploitation of captured documents. They also included more sophisticated methods such as "pattern activity analysis" which involved plotting patterns of enemy activity over extended periods of time.[150] Exotic technological devices, such as "people sniffers," were employed, as well as ground radar, side-looking airborne radar, active and passive night vision devices, a variety of sensors and imagery interpretation from photographic,

infrared and electronic equipment. But the purpose of each method remained very simple—to locate an elusive enemy.

As for their effectiveness, Lieutenant General W. O. Kinnard noted, after considering the range of equipment and methods for collecting combat intelligence, "Our ability to find the enemy did not match our battlefield mobility and firepower."[151] The intelligence effort, nevertheless, often succeeded in determining where an enemy force or base camp might be located. When this occurred, an operation was usually launched to exploit that information as rapidly as possible.[152]

To enhance chances of finding the enemy, a number of semiguerrilla tactics were employed by ground units. The "checkerboard" tactic was a method of searching an area by covering alternate squares with small units ranging from platoon to squad size. The areas of operations were analogous to the squares of a checkerboard, and units within the squares sought to move continually (especially at night) in order to saturate an entire area and preclude any enemy movement.

The "bushmaster" tactic sought to interdict known enemy communications-liaison routes. Since it was normally used in areas where the enemy was strong, units were usually not broken down into elements smaller than platoon size. Small units occupied blocking, defensive or ambush positions in prescribed areas, but all the platoons of a company, for example, remained close enough so they could reinforce one another. Although the bushmaster tactic was primarily a nighttime operation, it could also be used during the day.[153]

Another tactic involved saturation patrolling. By inundating an area with patrols operating in a "cloverleaf" fashion, for example, detailed searches could be conducted and enemy activity sharply curtailed. Long-range patrols were especially valuable for penetrations deep into enemy-controlled territory. "Stay-behind" forces were also used. When the main body of troops departed at the end of an operation, small forces sometimes concealed themselves and hid in the area where the operation had been conducted. When enemy forces returned, they were ambushed or destroyed with artillery fires.

Some of the most successful techniques for finding the enemy involved the helicopter. Air assaults struck suspected enemy locations, and a series of successive assaults often checked a number of areas for possible enemy presence. The "Jitterbug" was a variation of this, for it emphasized the insertion of small assault forces into a number of potential areas where the enemy might be located. The enemy's description of the "Jitterbug" as "Hawk Tactics" aptly described its purpose of "swooping" down on unsuspecting targets.[154]

The helicopter also provided an easy method for reconnoitering large areas. Decoy helicopters could be used to draw enemy fire, and "Eagle Flights" consisting of approximately one heliborne infantry platoon could develop the situation.[155] The helicopter's mobility permitted commanders to extend their influence over areas vastly greater than they otherwise would have been.

Mechanized forces also provided an additional capability to find the enemy. Movement by mechanized units often forced the enemy to keep moving and thus made him vulnerable to ambush or discovery by aerial or ground observers. Their great firepower and capability for rapid reaction enabled mechanized units to control about twice as much terrain as an infantry battalion.[156]

The rapid and wide-ranging sweeps of tanks and armored personnel carriers permitted commanders to search large areas for the enemy. While such operations usually could not be conducted in mountainous terrain, tanks could be used in a "jungle-busting" role and could sometimes move more rapidly in such terrain than foot soldiers. Commanders considered the resulting maintenance problems and damage to suspension systems as small costs for the benefits derived.[157] Tanks were also used for "thunder runs." In these operations, small

groups of tanks dashed down roads, often late at night, to surprise unsuspecting enemy troops or to preclude the enemy from mining important communications routes.

Another method of finding the enemy was to lure him from his hidden camps. By offering the "bait" of supposedly vulnerable forces, the allied forces could deceive the enemy and lure him into an area where he could be found. For example, fire support bases or special forces camps were sometimes placed in areas where they invited attack, or convoys were dispatched when they appeared vulnerable.[158] Other techniques were used, but the main idea was to deceive the enemy into thinking he could inflict casualties without suffering inordinate losses.

After enemy contact was established, mobile US units reinforced the unit in contact and encircled the enemy's position. These were the first steps in what came to be called "pile on" tactics. If there was any maneuver, it usually occurred before contact was made or during the "pile on" of additional troops and equipment.[159] Every unit not in contact was considered to be in reserve. Colonel George S. Patton noted that after a unit made contact the commander had to act "by literally throwing forces together from all directions in order to first encircle or fix, then compress, and finally, destroy the enemy."[160] Using the great mobility of heliborne or mechanized forces, units occupied peripheral blocking or ambush positions in order to destroy fleeing enemy forces. According to the size of forces and area involved, such encircling methods were sometimes called "rat hole" or "bull's-eye" tactics.[161]

During and following the concentration of US forces, attacks were usually conducted by fire rather than by ground assault. Under normal circumstances, an infantry assault was avoided or it was delayed until after the enemy had been virtually destroyed by supporting fires. The high density of automatic weapons among the enemy caused high loss rates in assaulting and exposed allied troops. The function of ground forces (especially the infantry) thus became the "finding" and "fixing" of the enemy, but the "fighting" and "finishing" were most often accomplished by massive artillery and air firepower.

Such tactics minimized American casualties and made maximum use of the overwhelming US advantage in firepower. The standing operating procedure for most units became, "Save lives, not ammunition."[162] The main idea remained to find the enemy, to fix him with small arms or immediate supporting forces, to encircle him with other units and to destroy him by an overwhelming mass of artillery and air support. These "pile on" tactics represented a new high in the US Army's emphasis on firepower and enemy attrition.[163]

* * *

The coordination and employment of supporting fires became one of the central features of US Army tactics. Artillery support was especially important, for ground units rarely operated outside its firing range. Because ground units were widely scattered, artillery units also had to be dispersed, and this resulted in single batteries occupying separate fire support bases. Commanders usually located these bases so they could be mutually supporting. Thus, most artillery support came from single batteries rather than battalions, and the capability to mass fires from more than one or two batteries often did not exist. Instead of firing a few rounds from many tubes—as in the Korean War—artillery units fired many rounds from a few tubes.[164]

The need to provide adequate fire support clearly affected the conduct of ground operations. The establishing of fire support bases often became the first step in major operations. While this sometimes revealed an upcoming operation to the enemy, the deceptive emplacement of fire support bases tended to keep the enemy guessing about allied intentions. An interesting variation was the artillery raid. This involved rapidly inserting artillery into a new fire support base, firing quantities of ammunition into

suspected enemy locations and then evacuating the fire support base before the enemy had time to prepare an attack against it.

Most fire bases contained 105mm howitzers which were effective against personnel targets but which lacked the power to destroy bunkers and fortifications. Medium and heavy artillery functioned effectively against such targets, and 155mm howitzers often accompanied the 105mm tubes into newly established fire bases. The heavy artillery (8-inch and 175mm) was not moved very often and usually provided harassing and interdiction fires from base camps.[165] The emphasis on operating from and defending these bases, however, led to what General Westmoreland described as a "fire base psychosis."[166] American commanders were reluctant to operate beyond the support of their artillery and to risk fighting on near-equal terms with VC or NVA units. While this excessive caution detracted from the maneuver and offensive capabilities of US units, it minimized American casualties.

Armed helicopter and aerial rocket artillery also provided important support to ground units. Helicopters armed with machineguns, rockets and grenade launchers provided light fire support which was particularly effective against enemy troops in the open or without fortifications. Aerial rocket artillery units provided heavier fire support, often in areas beyond the range of a unit's direct support artillery. Such aerial rocket units normally operated in a general support role and provided immediately responsive fires. The highly mobile aerial rocket artillery units could answer calls for fire over extremely large areas, and along with armed helicopters provided especially important support in air assault operations. Their ability to furnish responsive and discriminating fires proved invaluable in many frenzied air assaults.[167]

No mention of fire support for ground troops would be complete without mentioning the US Air Force. In many ways, the Vietnam War represented the highest point in liaison and cooperation between ground and air units. The heavy bombs and napalm of the Air Force were especially suited for employment against enemy fortifications, and tactical air support often proved invaluable to ground operations.

The Air Force's *AC47* gunship, which was dubbed "Puff the Magic Dragon" or "Spooky," provided a different type of ground support. When the *DC3* transport aircraft was armed with three miniguns capable of firing 6,000 rounds a minute, it had the capability of remaining above an area for long periods of time and delivering devastatingly effective fire against exposed enemy troops. When *B52* strategic bombers began striking targets of high tactical value, the entire spectrum of airpower was made available to assist the ground commands. It was not uncommon to have *B52s* drop their bombs on targets to "prepare" them for ground assault. The responsiveness, mobility and effect of Air Force support for ground operations was undoubtedly due to the nature of the war being fought in Southeast Asia. But it was also due to more than two decades of effort to improve the ability of the Army and Air Force to work together.

If there was any criticism of aerial operations in support of combat operations, it revolved around their inability to halt infiltration of enemy units into South Vietnam. In that sense, aerial interdiction of the battlefield was about as successful (or unsuccessful) as that of the Korean War. When the newly developed "smart" bombs were employed against targets in North Vietnam, however, a single airplane often accomplished a mission that previously had taken many more aircraft. This success indicates that future interdictory rules against difficult targets might be immensely more successful than those of the past.

Naval gunfire added the final dimension of possible sources of support for ground operations. During an operation, a ground unit may have been supported by mortars, artillery, armed helicopters, aerial rocket artillery, tactical aircraft, *AC47* gunships, strategic bombers or naval gunfire. Coordinating these sources of fire support

proved to be extremely taxing and would not have been possible without the numerous innovations of the previous 20 years.

Gaining clearance to fire emerged as one of the most persistent problems of fire support coordination. Since the war was being fought in and around population centers, commanders would not fire without permission of local authorities. Assigning tactical areas of responsibility (TAOR) partially eliminated this problem, for a separate brigade or division habitually controlled a specific area of influence for long periods. In contrast to TAORs, areas of operation were assigned for specific operations or short periods. But within their TAOR, units became more accustomed to clearance procedures, as well as becoming more familiar with the terrain and enemy.[168] Although fire support coordination problems were reduced somewhat, they still remained a major concern of all commanders. The employment of massive firepower remained one of the most important features of US Army tactical operations.

Mechanized forces added significantly to the fighting capability of ground units. Although there were some initial reservations about the ability to employ mechanized infantry or armored forces in South Vietnam, such forces more than proved their worth after being committed. The principal features of mechanized forces which enabled them to contribute significantly were their mobility, firepower and protection. Mobile units could usually traverse much larger areas than foot soldiers, and, when contact was made with the enemy, mechanized units possessed an overwhelming amount of firepower. Their armor protection enabled them to assault heavily armed enemy units.

Since the enemy did not possess sophisticated antitank weapons, the *M113* armored personnel carrier was often employed as if it were a tank. Similarly, the armored cavalry squadron and regiment were assigned missions previously assigned to tank and infantry battalions. These were in addition to their traditional missions of reconnaissance, security and economy of force. When mechanized units reinforced infantry maneuver units, they added a significant degree of offensive assault capability and mobility.[169] The ability to support mechanized formations with supplies transported by helicopters added substantially to their operational capability.

* * *

In summary, firepower became the dominant characteristic of American operations. Maneuver was used primarily for locating and fixing the enemy. By de-emphasizing the infantry assault and concentrating massive firepower against the enemy, American commanders minimized their losses while maximizing the strength of their forces. Such tactics, however, relied on their ability to counter the enemy's mobility, and this was not always successful. Lieutenant General Bernard W. Rogers explained, "It was a sheer physical impossibility to keep him from slipping away whenever he wished if he were in terrain with which he was familiar—generally the case."[170]

The operational mobility of American forces was far greater than that of the enemy since US commanders could shift battalions, brigades and divisions over long distance with relative ease. Similarly, heliborne troops moved effortlessly throughout the battlefield as long as they remained in their helicopters. Yet the ground mobility of US units usually did not equal that of the lightly equipped enemy units. Heavy equipment and reliance on firepower hampered US tactical mobility. A former brigade commander stated, "We are too noisy, clumsy, awkward, and slow to catch the wary, elusive guerrilla."[171] The analogy of "elephants chasing jackrabbits" suggests the dilemma faced by US tacticians. While American commanders maximized their advantages with firepower, helicopters and mechanized forces, the enemy continued to emphasize surprise, mobility and intense, sharp clashes.

Analyses of Army doctrine during the Vietnam War, nevertheless, concluded that the tactical doctrine was "generally sound"

even though "expansion and emphasis" were required to take advantage of the Vietnam experience.[172] Numerous combat after-action reports emphasized techniques rather than major tactical changes, and each unit modified basic doctrinal methods to fit the mission, enemy and terrain in its tactical area of responsibility. If there was a consistent call for change, it concerned the need for an additional rifle company in the infantry battalion. The primary thrust of most suggestions for doctrinal change was to "expand" current doctrine to incorporate the "lessons learned" in Vietnam.

A number of criticisms have been made against US tactics in South Vietnam. Colonel Dave R. Palmer has criticized the reliance on "fire tactics to the all but absolute exclusion of shock tactics." He suggests that "shock tactics" should have been used more widely.[173] While his suggestion is appealing, it overlooks the fact that the infantry assault has become progressively difficult and costly throughout the 20th century. It also underestimates the lethality of the enemy's infantry weapons and the strength of his defensive positions which often resembled World War I positions with their labyrinth of trenches and tunnels. Despite these qualifications, Colonel Palmer is probably correct in his implicit suggestion that maneuver by units in contact with the enemy should have been used more aggressively. The use of maneuver, however, does not require a frontal assault.

Lieutenant Colonel David H. Hackworth became one of the most persuasive critics of American tactics. He argued: "Perhaps the most important lesson to be drawn from the war in Vietnam is that a lightly equipped, poorly supplied guerrilla force cannot easily be defeated by the world's most powerful and sophisticated army, using conventional tactics alone. . . .To defeat the guerrilla, we must become guerrillas."[174]

In another publication, Colonel Hackworth stated: "As I see it, in Vietnam our country has tried to kill a fly with a sledgehammer—a sledgehammer made of gimmicks and gadgets. We have tried to wear down the enemy by a massive outpouring of bombs, bullets and materiel from the nation's great assembly lines."[175] Thus, Colonel Hackworth argued that the allied forces should have employed guerrilla tactics and should not have placed such an emphasis on technology and firepower.

In response to Colonel Hackworth's charges, Lieutenant Colonel Zeb B. Bradford Jr. argued that the US Army is "inherently unsuited for producing substantial numbers of soldiers" with the qualities necessary to function effectively as guerrilla fighters. While American soldiers could function effectively as guerrilla fighters in the United States, their capabilities would be limited in different environments.[176]

Other responses can be made to Colonel Hackworth's charges. Although the Army was clearly infatuated with technological devices, for example, US commanders would have sacrificed their greatest asset if they had avoided the use of massive firepower. Also, the employment of guerrilla tactics would almost invariably have resulted in increased casualties, and, in an increasingly unpopular war, such losses would obviously have been unacceptable.

At the same time, there is no evidence to suggest that guerrilla tactics would have been any more successful than the semiconventional tactics employed against the enemy. As the war progressed, VC losses exceeded their capability to recruit. By the end of American involvement in the war, the North Vietnamese comprised the bulk of the enemy forces, and the battles they fought often bore little resemblance to guerrilla engagements. American units, nevertheless, inflicted terrible casualties on the enemy, and, as numerous military leaders have noted, US units were not defeated on the battlefield.

Given the eventual outcome of the war, however, one cannot help but experience lingering doubts about the validity of American tactics. One should not assume US techniques were correct simply because North Vietnam had not yet triumphed when the American ground role ended. US forces

fought in South Vietnam from March 1965 until August 1972, a period of seven years and five months. During that time, the enemy suffered many losses, and the allies won many victories. Those victories, however, did not prevent South Vietnam's defeat, and the unbridled use of firepower often detracted from the pacification program.

The root of the failure probably resides more in the realm of strategy than tactics. One observer noted, "Our forces won every battle, but this country lost the war. . . . The cause was a senseless strategy that foiled us for 14 straight years." He added, "Body counts on the battlefield never meant as much as the battle for men's minds." He concluded that "indiscriminate" firepower strengthened the insurgency and that a better strategy would have focused on counterinsurgency and pacification rather than conventional combat.[177] Given the strategic and political situation, however, viable alternatives to the actual *tactical* methods used in South Vietnam are no more apparent today than they were from 1965 to 1972. Just as winning the battles did not ensure the winning of the war, improved tactical methods probably would not have changed the final outcome of the war.

The Vietnam War greatly affected the US Army. General Hamilton H. Howze observed, "Our troops fought very well indeed through the first three or four years, exhibiting commendable individual skill and devotion to duty." In the latter phase of the war, the Army's performance changed. "Some units," according to General Howze, "turned against their officers, in some instances trying to kill them; drug abuse and racial difficulties became widespread and units rapidly lost combat efficiency."[178] While such problems are partially attributable to the nature of the fighting in Southeast Asia, they also reveal fundamental problems with leadership, morale and training.

The US Army's tactical thinking was also greatly influenced by the long war in Southeast Asia. For almost a decade, the Army's attention remained riveted on the infantry-intensive war in Vietnam, and the Army became accustomed to small-unit operations and to enjoying a massive superiority over the enemy on the battlefield. The emphasis on firepower and enemy attrition also reached new heights in this war. Ironically, the great effort to redirect thinking into counterinsurgency in the early 1960s was now repeated as the Army focused on conventional operations.

VIII. THE RETURN TO THE CONVENTIONAL

BY LATE 1972, the environment was favorable for fundamental changes in US Army tactical doctrine. The major thrust of these changes revolved around the shift of the Army's focus from South Vietnam to Europe. As the US military began withdrawing from Southeast Asia, the Army staff began devoting increased efforts to restructuring the Army.

After examining potential areas of conflict, the Army's leadership concluded that the United States might face two types of wars—a mechanized war in Western Europe or a light infantry war in another part of the world. Even though a mechanized war in Western Europe seemed the "least likely" of the two potential types of war, it represented the greatest threat to the national security and might involve the United States' "strongest and most dangerous enemy."[179] General Donn A. Starry, commander of the US Army Training and Doctrine Command (TRADOC), noted, "So, we decided to begin with developing operational concepts to cope with our most difficult problem, the mechanized war."[180]

The early 1970s were also a time when the Army clearly returned to the fundamentals of military operations. Major General John J. Hennessey, commandant of the CGSC, stated in 1972, "The Army faces serious problems of manpower, morale, strategy and leadership. It has entered a period of searching inquiry, of readjustment and redirection."[181]

Part of the "searching inquiry" was related to the ending of conscription and the establishing of the Volunteer Army. Another aspect was a feeling of malaise engendered by the complexities of the Vietnam War and relating to ongoing problems with personnel and morale. While these factors did not directly influence the development of doctrine, they did convince the Army's leadership that the Army could not rest on its laurels. The Army needed a period of hard work and retraining in which some of the problems of the Vietnam experience could be left behind.

In that sense, the Middle East War of October 1973 was an opportune occurrence. The combatants in that war came from relatively sophisticated and technical societies, employing modern weaponry in a mid-intensity environment. The startling violence and consuming nature of that war served to accelerate the transition from the previous focus on counterinsurgency to the new focus on conventional warfare. Few doubted that a concerted effort was necessary if the US Army was to be prepared for such a war.

The October War was revealing in several aspects. Modern weaponry demonstrated itself to be immensely more lethal than in the past. The war acted as a "proving ground" for some of the new weapons (especially antitank weapons) which had been introduced in the past decade. While such weapons had been used in Vietnam, they had not been employed in the numbers or with the same effect as they had been in the Middle East. The unexpected level of violence in that war convinced many observers that future wars would be remarkably more violent and lethal than those of the past and that the successful outcome of the war would depend on the results of the first crucial and violent battles.

At the same time, the combined arms team increased in importance. Following its study of the 1973 October War, the Army concluded that while most armies based their land combat power on the tank that weapon system could not survive without assistance from other members of the combined arms team. The cohesive combined arms team was the most lethal instrument on the battlefield.[182]

The "lessons" of the 1973 Middle East War were reinforced by the common belief that as General William E. DePuy explained, "Because of the cost of and preoccupation with the Vietnam War, the Army lost a generation of modernization."[183] During the period from 1965 to 1972, substantial forces had remained in Western Europe, but no major changes had been made in weapons, equipment or doctrine. In contrast, the USSR had substantially modernized and strengthened its forces while the United States was involved in Southeast Asia. Although the size of the Soviet Union's forces had remained relatively stable over the past decade, qualitative improvements in force structuring and weapons had substantially improved their combat capability. Perceptions of a need to improve American ground combat power were also reinforced by the recognition (stemming from the 1973 Middle East War) that the United States did not have to face a modern world power to encounter modern weapons in vast numbers.

With the appearance of a battlefield of unparalleled lethality and violence, with the absolute necessity to employ all advanced weapons of the complex combined arms team, with the crucial requirement for readiness and with the possibility of fighting outnumbered or at a disadvantage, the US Army faced what it considered to be a completely new situation. The new FM 100-5, *Operations*, analyzed these factors and concluded, "This circumstance is unprecedented. . . ." The manual added, "Today the US Army must above all else, *prepare to win the first battle of the next war.*"[184]

The threat of the "come-as-you-are war" modified many of the previous assumptions upon which tactical doctrine had recently rested. Since the Army was "historically unprepared for its first battle," it had to concentrate on winning the first battle of the next war. In Europe, the Army faced a much

larger enemy employing blitzkrieg-type tactics. If it lost the first battle, the chance of winning subsequent battles was slim at best.

These circumstances increased the need for a clear, coherent and rigorous doctrine which could contribute to the combat efficiency and power of American forces by ensuring that each weapons system was employed in the best possible fashion. The new doctrine would be erected on the possibility of an exceptionally violent, intense war in a European-type environment. While some criticized this as a short war concept, it was more clearly a "rejection of the old mobilization concept" that the United States had the time "to mobilize and train forces to go into combat."[185] The US Army had not ruled out the possibility of a series of battles, but it placed its greatest emphasis on the first of those battles.

The 1976 doctrine also envisioned a different approach to the problem of nuclear warfare. In the late 1950s, there had been a fixation on the nuclear battlefield, and the changes of the early 1960s had envisioned a clear dichotomy between nuclear and conventional operations. In contrast, the new doctrine rested upon the implicit assumption that a war might begin with a conventional battle, move into "a combined conventional-nuclear phase of uncertain length" and, finally, return to a conventional battle. In sharp contrast to the generally held view of the late 1950s and 1960s that nuclear weapons would invariably be used (especially in Europe), Army commanders concentrated on fighting without nuclear weapons.

Although tactical nuclear weapons had previously been considered essential for halting a mass enemy attack, the 1976 FM 100-5 stressed the employment of nuclear weapons against second-echelon or reserve forces. The manual stated: "Tactical advantage may be gained by neutralizing lead elements in the second echelon, and by eliminating his committed echelon's support and supporting fire systems. This can defeat the enemy's tactic of echelonment by destroying the follow-up reserves for the breakthrough, and by weakening enemy support. This will reduce pressure on friendly units in contact so they can contain engaged forces by conventional means and control the battle."[186] Thus, nuclear warfare was treated as ancillary to the major concern—the conventional battle against the enemy's first-echelon forces.[187]

* * *

In preparing the new doctrine, the Army recognized that much had changed since the early 1960s when the doctrine for the ROAD division had been established. The changes had been primarily technological and included (among others): the introduction of accurate, long-range antitank weapons; the development of greater ranges for artillery by the use of rocket-assisted projectiles and larger calibers; the introduction and improvement of the helicopter; the increased coverage and range of air defense weapons; the increased number and availability of automatic weapons; and the development of more accurate and lethal tank weapons. Improvements had also been made in communications, for the new family of radios introduced in the early 1960s had become widely available by the mid-1960s.

Despite these numerous technological advances, doctrine for tanks, armored cavalry and mechanized infantry had changed little during the past decade. And that doctrine had essentially been derived from World War II and had been modified in the late 1950s and early 1960s. Given the technological improvements, there was a clear need for improvement in tactical doctrine.

Attempts to improve Army doctrine occurred in several areas. The Infantry School offered what it called the "force-oriented defense" which was based upon the principle of offering "a degree of resistance appropriate to the existing combat power ratio." If confronted with overwhelming enemy combat power, friendly forces did not attempt to hold terrain, but occupied "attrition areas" and destroyed enemy forces as they entered these areas. Rather than at-

tempting to halt the enemy immediately, small infantry units inflicted maximum casualties and then withdrew to the next attrition area before becoming decisively engaged. After the enemy forces had been depleted to the point where they no longer possessed an overwhelming superior combat power ratio, friendly armor was committed in a decisive counterattack.[188]

Instead of trading space for time, the force-oriented defense traded space for enemy casualties. Although it was strongly supported by the Infantry School, the new tactic never became an official part of US Army doctrine.

Another effort centered on the formation of the "TRICAP" division which had a "triple capability" based upon its three major elements—armor, airmobile infantry and air cavalry with attack helicopters. Lieutenant General John Norton explained, "Technically, we are combining an airborne tank-destroying force with a ground armored force."[189] The test organization capitalized upon the helicopter's mobility and attempted to combine airmobility and tanks in something other than a low-intensity environment. As the Army withdrew from Southeast Asia, the new organization also provided a convenient place to put some of the returning units and equipment. As with the force-oriented defense, however, the TRICAP division did not survive.

The new concepts, which were to form the basis of a new doctrine, began appearing in small bits and pieces after 1973. Most of them came from the US Army Training and Doctrine Command under the driving leadership of General William E. DePuy. The framework of the new doctrine was scheduled to appear in a new edition of FM 100-5, *Operations*.

When the CGSC completed an initial draft of the new manual, it was submitted to TRADOC Headquarters but was deemed unacceptable. The manual writers of TRADOC then wrote another edition, and General DePuy took personal and careful interest in the project. Major General Donn A. Starry, commandant of the US Army Armor School, also made important contributions. When the new manual was published in July 1976, it became one of the most controversial field manuals ever published by the US Army.

The focus of the manual was apparent in the first chapter which emphasized that the Army must prepare its units to fight outnumbered and win. According to the manual, the major factor influencing the employment of modern weapons on the battlefield was a great increase in lethality. It derived from a large number of destructive weapons with increased range, rate of fire, probability of hit and killing power.

The 1976 manual recognized that the battlefield was also affected by changes in mobility, night-fighting capability, electronic warfare developments, etc. For example, the manual stated in bold type, "The airmobile concept is the most dramatic organizational advance in the US Army."[190] Nevertheless, it stressed the effects of firepower by devoting much more space to a discussion of its effects.

Despite the emphasis on technological advances favoring firepower, the manual did not reject maneuver whether on the offense or defense. According to the doctrine, the key to success lay in concentrating combat power. Such concentration could not occur without mobile formations that could move from one position to another on the battlefield.

For example, the doctrine envisioned "battle positions" rather than "kill zones" or "attrition areas." While the former stresses flexibility, mobility and fighting in depth, the latter two suggest a static defensive position with little flexibility. Yet the new doctrine stressed maneuver predominantly in the sense of moving to deliver firepower or to increase combat power. Using maneuver to strike at the enemy's will to fight was not an inherent part of the doctrine.

* * *

Given the abrupt transition from

Southeast Asia to Western Europe, and from low-intensity to mid to high-intensity war, some of the operational priorities of the Army changed in the early 1970s, especially those relating to a focus on the offense or defense. Such changes were essential in the transition from a war in which US forces had almost always been on the offensive to a potential conflict in which the US forces would probably be on the defensive.

Consequently, the Army placed more emphasis on defensive operations between 1973 and 1977 than it previously had. By 1977, however, an increased emphasis was being placed on the offense. Though this was still not as great as that placed on the defense, it represented an increase over that of 1973.

Despite public assurances from TRADOC Headquarters that offensive action was usually the "preferred form of combat," such a preference was stated explicitly in almost every manual but FM 100-5, *Operations*. The manual on the tank and mechanized infantry team, for example, stated, "Even though defensive operations are often necessary and admittedly preferred, the outcome of battle is ultimately determined by offensive operations."[191]

The absence of such an explicit statement in the 1976 FM 100-5 was probably the result of the initial emphasis placed on the defense, and the presence of such a statement in later manuals suggests that a greater emphasis was placed on the offense. Unfortunately, some observers perceived what they considered to be too great an emphasis on the defense, and analyses of the viability of the tactical doctrine were often obscured by emotional debates over the relative merits of the offense and defense. Such debates were further complicated by objections to the strategic doctrine suggested in FM 100-5, especially its obvious focus on the defense of Western Europe.

Contrary to the perception of some critics, the 1976 FM 100-5, *Operations*, did not state that the new lethality ensured the "superiority" of the defense over the offense.[192] Rather, it stated that the advantages of the defender enabled him to conduct a successful defense against an attacker "superior in combat power by a ratio of about 3:1." The attacker could not employ his weapons as effectively as the defender, and he needed a much higher combat power ratio. If the attacker was to succeed, he needed a combat power ratio of "at least 6:1 at the point of decision."[193] While the assumed ratio of 6-to-1 was greater, the ratio of 3-to-1 was similar to that of the past.

One of the most important changes was the assumption that the US Army would conduct a counterattack only if it resulted in "decisively greater enemy losses" or in the capture of objectives crucial to the outcome of the larger battle."[194] The manual clearly rejected the notion of a ceaseless offensive spirit, untrammeled and unaffected by the realities of the new lethal weaponry.

When the 1976 FM 100-5 and other new manuals addressed the offense, they envisioned no fundamental changes in its conduct. FM 71-100, *Armored and Mechanized Division Operations*, for example, repeated a theme frequently emphasized in Army manuals: "Envelopment is usually the preferred form of maneuver. . . ." The manual also stated, "Attacks are aimed at weak points in the enemy defense. If no weak point can be found, then one must be created."[195]

Some modifications, nevertheless, occurred. The new doctrine strongly stressed the need to mass forces along a narrow front to break through enemy defenses. The requisite amount of combat power was greater than that considered necessary in the past, and the appropriate frontage for the attack was much narrower.

Another important change concentrated on control measures. Given the increasing amount and longer range of firepower and the greater ability to move units because of enhanced mobility and improved command and control capabilities, traditional boundaries seemed to preclude or hamper larger unit commanders from massing fires or units in order to increase combat power in a particular area. Consequently, increasing latitude was given to subordinate com-

manders for firing across or shifting boundaries.

The perception soon emerged that the zone of attack, which had heretofore been considered the control measure giving the greatest freedom to commanders, actually limited the ability of higher commanders to concentrate combat power. Thus, the axis of advance emerged as the preferred control measure for providing greater flexibility in the conduct of offensive operations. Such changes seemed to accord with previous methods and encountered little resistance.

The discussion of the defense in FM 100-5, *Operations*, became the most controversial aspect of the new tactical doctrine. When the manual writers considered the defense in the early 1970s, they were convinced the previously accepted mobile and area defenses were not completely applicable to the more lethal, modern battlefield. They were also convinced that commanders often employed the two defenses without adequately analyzing whether they were appropriate for the situation faced at that time. Hence, the 1976 manual avoided a name for the new defense and stressed the following fundamentals: "understand the enemy," "see the battlefield," "concentrate at the critical times and places," "fight as a combined arms team" and "exploit the advantages of the defender."[196]

In its list of purposes of the defense, the 1976 FM 100-5, *Operations*, added a purpose which had not heretofore been included in such lists. The new one was to "force the enemy to mass so that he is more vulnerable to our firepower."[197] The concept suggested in this purpose of the defense provided the foundation for the new methods, which soon came to be called the "active defense."

In the active defense, the commander organized his forces into three areas—the covering force area, the main battle area and the rear area. In addition to gaining time, inflicting casualties and deceiving the enemy as to the location and size of the main defensive forces, the covering forces attempted to "force the enemy into revealing the strength, location, and general direction of his main attack."[198]

Once the enemy entered the main battle area, the friendly commander concentrated much of his combat power against the enemy's main thrusts by taking risks or conducting economy-of-force operations in other areas. The defending forces fought a "succession of advantageous actions" but sought to "maintain coherence along the FEBA or in the zone just behind it."[199]

The defense was thus elastic rather than brittle, and it concentrated on destroying the mechanized forces of the enemy by employing tanks and antitank guided missiles. It did not envision giving up terrain so easily as had the force-oriented defense.

More detailed information on the active defense appeared in later manuals. FM 71-100, *Armored and Mechanized Division Operations*, stated: "The concept of the active defense is to defeat the attacker by confronting him with strong combined arms teams fighting from battle positions organized in depth. As the enemy attack moves into the defended area, it encounters fires of increased intensity delivered from the front and especially the flanks. The defender constantly shifts forces to take maximum advantage of the terrain, and to put himself in a favorable posture to attack."[200]

For control measures, the active defense relied upon battle areas, battle positions and strongpoints. Each method represented a method for controlling the movement, fires and degree of resistance from units as they maneuvered against the enemy forces. Carefully selected counterattacks were an integral part of the active defense, but every manual warned that an attacker forfeited the advantages of the defense.

By the early 1970s, the Army's leadership had apparently concluded that the firepower improvements fundamentally affected maneuver on the battlefield. This can be seen in the evolution of the defense from a defense in depth over an area, to a mobile defense or an area defense, to an active defense relying on the concentration of com-

bat power in the area of a penetration.

In the earlier forms, a large reserve was retained to counter mass attacks or blitzkrieg-type tactics. In the active defense, however, the preponderant portion of the forces were kept forward so that all their firepower could be brought to bear against the enemy. When a commander decided to concentrate his forces, the high mobility of armored and mechanized forces permitted him to reinforce rapidly by committing reserves from the rear or by moving units from less-threatened flanks.

Such tactics assumed the firepower of the defender would retard the mobility of the attacker. While the active defense rests upon the capability to move units, its perception of maneuver is different from that of 1949 when maneuver was primarily associated with the offense.

As with any major change, criticisms of the tactical doctrine continued. Critics of the tactical doctrine concentrated on three major areas—intelligence, communications and the ability to concentrate. As for intelligence, the success of the active defense rested on the ability of the commander to detect the main enemy thrusts. The commander then had to communicate his desires to his subordinates, especially as he attempted to maneuver his forces for the battle in depth. Finally, he had to move his forces, sometimes in a lateral direction, to concentrate their combat power. To the critics, each of these seemed vulnerable to disruption by the enemy or by the increasingly urbanized terrain of Western Europe.[201]

In the final analysis, the active defense was exactly what it purported to be: a method US ground forces could use for fighting outnumbered and for accomplishing their primary mission—winning the land battle. Interestingly enough, the active defense was similar to the "fight and roll" defense used by the US I Corps in the Korean War except that tactic had been employed against massed infantrymen rather than massed mechanized forces. In general terms, the active defense also resembled the "pile on" tactics of Vietnam with their emphasis on concentration, massive firepower and movement to increase relative combat power ratios.

Despite their similarity to some previous tactical methods, the active defense and the other new doctrinal methods appearing after 1973 were the first attempts to obtain the maximum from some of the new weapons which had been entering the arsenals of the world since the early 1960s. The doctrine for employing US mechanized forces had changed only slightly since 1945, and the new tactics represented a major effort to provide more advanced and modern doctrine. At the same time, the new tactics stressed technological developments and represented the zenith of emphasis on firepower during the three decades since World War II.

IX. CONCLUSION

EVEN though all of America's military conflicts since World War II have been outside Europe, the Army and the nation have invariably refocused their concerns after these conflicts upon the defense of Western Europe. And doctrine for the postwar Army has centered on a European-type battlefield. Considerable changes in doctrine, nevertheless, occurred in the late 1950s, early 1960s and early 1970s.

During the first period, the Army radically changed its doctrine and organization to contend with the nuclear battlefield. In the early 1960s, the Army consciously moved away from a pre-eminent focus on nuclear operations and erected several doctrines concentrating on counterinsurgency or on a conventional or nuclear battlefield in a European-type environment. In the early 1970s, the Army began to move out of counterinsurgency and to concentrate on a conventional-nuclear battlefield in Europe. Each of these periods brought wide-sweeping changes throughout the Army.

No single factor "drove" the development of Army doctrine, but changes in national security policy lay at the basis of the sweep-

ing changes in the late 1950s, early 1960s and early 1970s. When the focus of national security policy shifted in these periods, profound changes occurred in the Army's doctrine, organization and equipment. For that reason, the development of doctrine has not been propelled solely by technical concerns. While the doctrine has been affected by technological advances (for example, helicopters, antitank weaponry, communications), the selection of types of technology has depended upon the initial decision—which was usually made outside the Army—on where a future battle might be fought.

This initial decision has provided the parameters (such as types of mission, enemy, terrain, etc.) within which the Army has structured its forces for fighting. The erection of an offensive doctrine for the European theater, for example, has never been a possibility for the US military. Thus, the selection of the "superior arm" and the development of how it will be employed has generally depended upon the selection of the possible future battlefield and the conditions under which a battle might be fought.

While such a system is eminently supportable in our democratic society, one should recognize that the restructuring of forces for other battlefields or other conditions cannot be easily accomplished. In each of the three periods of major change, one of the most difficult tasks has been the changing of the Army officers' and soldiers' thinking.

One would suppose such changes can occur with ease in a hierarchical system. The experience of the past three decades, however, amply demonstrates that one cannot simply erect a new doctrine, organize new formations and procure new equipment without an intense effort to redirect the thinking of individuals in the Army. If the three major periods of doctrinal change have a consistent theme, it is the earnest and sincere objection by individuals in and out of the system that the envisioned changes were tampering with the sacrosanct and should be halted or greatly modified.

The experience of the past also demonstrates that a doctrine constructed for one theater cannot be projected easily to another theater. In some instances, the focus on a previous doctrine has retarded attempts to evolve a more viable doctrine for a different environment. In the Korean and Vietnam Wars, the previous focus on the European theater initially affected the Army's ability to respond to the very different needs of those areas.

While major changes in doctrine did not occur in either war, the establishing of new techniques could not be divorced from the Army's previous experiences. The problems of fighting a delaying action in Korea in 1950, for example, were compounded by the Army's lack of experience with and emphasis on such an operation. When special techniques or methods evolved for those wars, short rotation tours ensured that the process of retraining individuals was never-ending.

In short, intellectual changes can sometimes be more difficult to achieve than materiel changes. One of the purposes of doctrine is to ensure common thinking, but, when changes are necessary, that common thinking can become an obstacle for needed modifications or improvements. When the major components of a doctrine are established, military leaders must recognize that attempts to operate in a different manner, even on an emergency basis, can only be accomplished with great difficulty.

During the period under study, tactical doctrine became more complex as potential enemies approached or exceeded US ground forces in size and technical capability. As the American technological advantage was reduced, the Army placed an increased emphasis on doctrine in order to improve its relative combat capability. Yet Army doctrine was caught between two conflicting trends. Admitting the existence of a spectrum of war called for variegated and flexible doctrine while fighting outnumbered or at a disadvantage called for a more specific and less flexible doctrine.

Over the long term, the Army has placed a greater emphasis on the development of new weapons than on the development of how

the new weapons should be employed. In some instances, this has resulted in new weaponry being grafted onto existing tactical concepts. Despite its greater capabilities, the *TOW* antitank weapon, for example, was initially employed in the same manner as the 106mm recoilless rifle.

The helicopter provides another example. While some advances were made in the 1950s in concepts for its employment, major innovations did not occur until the early 1960s. Until then, many Army officers viewed the helicopter as nothing more than a vehicle for ferrying men and supplies on the battlefield.

Only in recent years has the creation of new tactical concepts and development of doctrine received the same emphasis as the development of equipment. If the present system continues to prosper and is further improved, a much-needed emphasis on the formulation and promulgation of doctrine should continue. The Army should never forget that the best weapon can be rendered useless by improper employment, and that materiel and organizational developments cannot occur without doctrinal development.

In comparison to the other combat arms, infantry doctrine changed the most in the three decades following World War II. With the introduction of mechanized infantry, counterinsurgency and airmobile operations, infantry doctrine became broader and more complex than it previously had been. Other modifications included the creation of the fire team in the infantry squad, the addition of new infantry weapons and the deletion of the World War II cannon company in the infantry regiment. Yet, within these changes, much remained the same. Once dismounted, the infantry fought in essentially the same manner throughout this period, using methods reminiscent of those employed in World War II.

In comparison to the infantry, doctrine for the armor and artillery branches seems almost static. For most of the period under study, both performed in essentially the same fashion they had in World War II. For armor, the major changes included the redirection of armored cavalry doctrine toward a clear offensive and defensive role, as opposed to its traditional reconnaissance, security and economy of force roles. Another important change concerned the creation of mechanized infantry formations which worked in close cooperation with tank formations. As for the artillery, the major changes involved the adoption of longer range and larger caliber weapons and the perfection of techniques for massing fires.

All branches were affected relatively equally by the changes in the early 1970s. But the infantry witnessed a much greater emphasis being placed on its mechanized formations.

The greatest changes in offensive doctrine occurred in the 1960s and early 1970s. The most important innovation in offensive operations was the development of airmobile operations. In the low or mid-intensity environment of Southeast Asia, the helicopter added significantly to the offensive capability of infantry units. In a mid to high-intensity environment, the helicopter added a new dimension for vertical envelopment which had not previously existed. Its ability to survive in such an environment, however, remained controversial.

Additional changes in offensive doctrine in the early 1970s stressed the requirement for concentrating forces. Traditional views of control measures had to be modified slightly to permit commanders to use to the maximum their greater mobility, improved command and control, increased amounts of firepower and longer ranges of weapons.

Major changes occurred in defensive doctrine—an area which absorbed large amounts of resources and intellectual energies from 1946 to 1976. Relatively speaking, the Army was much more concerned with the defense rather than the offense during this entire period. The increasing focus on the defense was obviously rooted in the progressively greater emphasis placed on the defense of Europe. The operations in South Vietnam were the major exception.

The most controversial periods were the

mid-1950s when the mobile defense was created and the early 1970s when the active defense was created. In both instances when fundamental changes were made, the new defenses concentrated on a European-type battlefield in which the US Army engaged well-equipped, mechanized forces. Sweeping changes in offensive and defensive doctrines also occurred when the pentomic division was created, but these changes lasted only a few years.

Within the numerous changes, major alterations occurred in firepower and maneuver. The addition of the armored personnel carrier, the improvement in tank agility and mobility, the creation of mechanized artillery and the adaption of the helicopter added significantly to tactical and operational mobility. The improvements in tactical mobility, however, came at the expense of strategic mobility. US forces became progressively heavier and more difficult to transport.

Major improvements also occurred in firepower. The addition of the nuclear weapon to the Army's arsenal promised to provide vast amounts of firepower to the battlefield. But, as the years passed, restraints on the potential employment of such weapons, plus doubts that they would ever be employed, altered the Army's thinking on nuclear weapons. Additional conventional firepower was added to every echelon of the Army. From the infantry squad with the *M79* grenade launchers and *M16* rifles, to the more accurate and lethal tank and antitank guns, to the more powerful artillery weapons, Army units acquired significantly greater firepower than their World War II counterparts.

The US Air Force's firepower also increased and slowly began to contribute more directly to the ground battle. In sharp contrast to the late 1940s and 1950s, close air support received greater emphasis in the early 1970s from the Army and Air Force. In terms of its potential impact on tactical operations, the increased emphasis on close air support is the most important characteristic of the development of US Air Force doctrine.

Although the evolution of doctrine since World War II has been affected by a variety of influences, the emphasis on firepower, the defense and attrition has slowly and progressively increased until they have become the primary characteristics of US Army tactical doctrine. The greater amounts and types of firepower available on the battlefield have created extraordinary problems of fire support coordination. They also have brought into question the entire relationship between firepower and maneuver.

For a number of reasons, Army doctrine progressively placed a greater emphasis on attrition of the enemy. Combat in Korea and South Vietnam, the long-term focus on the defense of Western Europe and the perceived impact of tactical nuclear weapons reinforced and accentuated the emphasis on attrition. This focus was reinforced by the adoption of improved conventional weapons with their greater range, rate of fire, probability of hit and killing power. When one considers the long-term development of US Army doctrine after World War II, the amount of firepower has increased—relatively speaking—much more than mobility. And the emphasis on attrition has increased at the expense of maneuver.

Despite the several cycles of change, Army doctrine has become much more important in recent years. Its study and formulation presently receive greater emphasis and consume more resources and intellectual energies than at any time in recent history. Doctrine, nevertheless, cannot perform the impossible. It can only provide guidelines for action; it cannot provide final answers. Given the infinitely varied situations on the battlefield due to changing missions, enemy, terrain, weather and troops available, the application of doctrine requires judgment. While doctrine is important for providing models for adaptation, the prime factors remain the imagination, the inventive genius and the will to fight of the American soldier.

Those who write doctrine cannot conceive

of every possible situation, and those who fight cannot be expected to remember every possible answer. In that sense, too many doctrinal changes or too much doctrine can weaken the soldier's understanding and reliance on doctrine. When that happens, doctrine no longer accomplishes its most important purpose. As Brigadier General S. L. A. Marshall once observed, reiterations of doctrine cannot transform human nature or "change cockroaches into butterflies."[202]

END NOTES

[1] General Joseph W. Stilwell, *Report on War Department Equipment Board*, 19 January 1946, p 10, US Army Command and General Staff College (USACGSC) 12960.
[2] General Omar N. Bradley, "Creating a Sound Military Force," *Military Review*, May 1949, pp 3-6.
[3] Field Manual (FM) 100-5, *Field Service Regulations, Operations*, Department of the Army, Washington, D.C., August 1949, p 60.
[4] *Ibid.*, pp 231-33.
[5] Colonel C. C. Blanchard, "General Discussion of Gunnery Changes," *Report of Artillery Conference, 6-10 December 1948*, Office of the Commandant, Artillery School, Fort Sill, Okla., 20 January 1949, p 3, USACGSC 16896.1.
[6] Captain Charles L. Sartain, "Fire Support Coordination," and Colonel Frank Q. Goodell, "Responsibilities of the Fire Support Coordination," *Report on Artillery Instructors' Conference, 27-31 August 1951*, Office of the Assistant Commandant, Artillery School, Fort Sill, Okla., 1 October 1951, pp CF-1-1 and CF-2-1, USACGSC 16896.4.
[7] FM 31-35, *Air-Ground Operations*, War Department, Washington, D.C., 1946.
[8] Goodell, *op. cit.*, p CF-2-3.
[9] Lynn Montross, *Cavalry of the Sky: The Story of U.S. Marine Combat Helicopters*, Harper & Brothers, N.Y., 1954, p 6.
[10] Stilwell, *op. cit.*, p 55.
[11] *Lectures and Demonstrations*, Infantry Conference, Fort Benning, Ga., June 1946, Tab D-3, p 46, USACGSC 13561.
[12] Quoted in Lieutenant General James M. Gavin, *War and Peace in the Space Age*, Harper & Brothers, N.Y., 1958, pp 109-11.
[13] Montross, *op. cit.*, pp 162-65 and 167-71.
[14] Stilwell, *op. cit.*, p 12.
[15] *Report of Committee "A" on Tactics and Technique*, Infantry Conference, Fort Benning, Ga., June 1946, Tab T-7, p 5, USACGSC 13558 A.
[16] Lieutenant Colonel A. B. Sundin, "Lecture on Field Artillery," *Lectures and Demonstrations, op. cit.*, p 6.
[17] *Organization, Equipment, and Tactical Employment of the Infantry Divison*, General Board, US Forces, European Theater, p 6, USACGSC 13032.15.
[18] *Ibid.*
[19] Stilwell, *op. cit.*, p 10. For a detailed analysis of tank destroyers in World War II, see Major Charles M. Bailey, *Faint Praise: The Development of American Tanks and Tank Destroyers During World War II*, Unpublished Ph.D. Dissertation, Duke University, Durham, N.C., 1977.
[20] *Organization, Equipment, and Tactical Employment of the Infantry Division, op. cit.*, p 8.
[21] FM 100-5, *Field Service Regulations, Operations, op. cit.*, pp 6 and 256-57.
[22] *Types of Divisions—Post-War Army*, General Board, US Forces, European Theater, p 8, USACGSC 13032.17. For an in-depth description of infantry organizations after World War II, see John K. Mahon and Romana Danysh, *Infantry, Part I: The Regular Army*, Office, Chief of Military History, Washington, D.C., 1972, pp 70-121.
[23] FM 100-5, *Field Service Regulations, Operations, op. cit.*, p 80.
[24] *Ibid.*, pp 84-85.
[25] *Ibid.*, p 123.
[26] *Ibid.*, pp 120-40.
[27] General Matthew B. Ridgway, *Soldier: The Memoirs of Matthew B. Ridgway*, Harper & Brothers, N.Y., 1956, p 191.
[28] General Matthew B. Ridgway, *The Korean War*, Doubleday & Co. Inc., N.Y., 1967, p 11.
[29] *The Korean Campaign, September to October 1950*, Report of the Artillery School Representative Army Field Forces Observer Team Number 2, 27 November 1950, p 17, USACGSC 17055.7.
[30] Training Bulletin Number 2, *Lesson Learned*, Office, Chief of Army Field Forces, Fort Monroe, Va., 9 November 1950, pp 5-8, USACGSC 17055.1.
[31] *Enemy Tactics, Techniques, and Doctrine*, IX Corps, September 1951, USACGSC 17055.40; and *Chinese Tactics and Lessons Learned*, Office, Assistant Chief of Staff, G2, Headquarters, 2d Infantry Division, APO 248, 13 November 1952, USACGSC 17048.13.
[32] Training Bulletin Number 8, *Combat Information*, Office, Chief of Army Field Forces, Fort Monroe, Va., 16 November 1951, p 16, USACGSC 17055.1.
[33] *Lessons From Korea, 1954*, Infantry School, Fort Benning, Ga., p 5, USACGSC 17055.138. A good summary of infantry tactics is included in S. L. A. Marshall, *Notes on Infantry Tactics in Korea*, Operations Research Office, The Johns Hopkins University, Baltimore, Md., ORO-T-7, 28 February 1951, USACGSC 16454.58.
[34] Extract of Letter, Commanding General, I Corps, 24 September 1951, USACGSC 17055.1.
[35] Ridgway, *The Korean War, op. cit.*, p 116.

[36] Training Bulletin Number 1, *Combat Information*, Office, Chief of Army Field Forces, Fort Monroe, Va., 20 March 1953, p 3, USACGSC 17055.1.

[37] *Special After-Action Report, Hill 395 (White Horse Mountain)*, Headquarters, IX Corps, APO 264, 6-15 October 1952, pp 39 and 53, USACGSC 17056.9.

[38] *Enemy Tactics*, Headquarters, Eighth US Army, Korea, APO 301, 26 December 1951, pp 76-78, USACGSC 17055.72.

[39] *Defense Against Mass Attack*, Headquarters, I Corps, Korea, 18 June 1952, p 5, USACGSC 17055.56

[40] *The Communist First Spring Offensive*, Headquarters, I Corps, Korea, April 1951, pp 40-41, USACGSC 17055.96.

[41] Requested comments to General Maxwell D. Taylor by Major General Lionel C. McGarr, May 1954, Part 2, Section 5, USACGSC 17048.13.

[42] Lieutenant General Edward M. Almond, *Conference on Battle Employment of Artillery in Korea*, Army War College, Carlisle Barracks, Pa., 11 February 1952, pp 2 and 6, USACGSC 17055.73.

[43] *Tactical Observations of the Commanding General*, Eighth US Army, Korea, May 1951, p 1, USACGSC 17055.1.

[44] Training Bulletin Number 4, *Combat Information*, Office, Chief of Army Field Forces, Fort Monroe, Va., 2 July 1953, p 6, USACGSC 17055.1. For other information on tanks in Korea, see *The Employment of Armor in Korea*, Operations Research Office, The Johns Hopkins University, Baltimore, Md., Far East Command, ORO-R-1, 8 April 1951, Volumes I and II, USACGSC 16454.114; *Employment of Armor in Korea*, Headquarters, 2d Infantry Division, APO 248, 1 August 1951, USACGSC 17055.31; Lieutenant Colonel George B. Pickett Jr., "Tanks in Korea: 1950-1951," *Armor*, November-December 1951, pp 12-16; *Employment of Armor in Korea—The First Year*, Armor School, Fort Knox, Ky., May 1952, Volumes I and II, USACGSC 2146.119; and *Employment of Armor in Korea—The Second Year*, Armor School, Fort Knox, Ky., April 1953, USACGSC 2146.22.

[45] *Tactical and Logistical Employment of the M-39 and T18E1 Armored Personnel Carriers During the Battle for Outpost Pork Chop, Vicinity Chorwon, North Korea, 6-11 July 1953*, Headquarters, 7th Infantry Division, APO 7, 9 August 1953, USACGSC 17048.11.

[46] See requested comments to General Maxwell D. Taylor by Major General Lionel C. McGarr, May 1954, Part 2, Section 4, Tab B, pp 16-19, USACGSC 17048.13.

[47] Cited in Robert Frank Futrell, Brigadier General Lawson S. Mosley and Albert F. Simpson, *The United States Air Force in Korea 1950-1953*, Duell, Sloan & Pearce, N.Y., 1961, p 643.

[48] General Maxwell D. Taylor, *Swords and Plowshares*, W. W. Norton & Co. Inc., N.Y., 1972, p 158; and Ridgway, *Soldier: The Memoirs of Matthew B. Ridgway, op. cit.*, pp 75-76, 186, 191 and 244.

[49] Training Bulletin Number 8, *Combat Information, op. cit.*, p 1.

[50] *Lessons From Korea, 1954, op. cit.*, p 1.

[51] Training Bulletin Number 8, *Combat Information, op. cit.*, p 1.

[52] FM 100-5, *Field Service Regulations, Operations*, Department of the Army, Washington, D.C., 27 September 1954, p 4. This phrase was deleted in FM 100-5, Change 2, 27 July 1956.

[53] Quoted in G. C. Reinhardt, *Nuclear Weapons and Limited Warfare: A Sketchbook History*, Rand Corporation, Santa Monica, Calif., P-3011, 1964, p 4.

[54] Major General Leslie R. Groves, "Atomic Energy," *Lectures and Demonstrations, op. cit.*, Tab L-6, p 23.

[55] Cited in "Atomic Warfare," *Analysis of Military Assistance Program*, Operations Research Office, The Johns Hopkins University, Baltimore, Md., ORO-R-3, 21 January 1950, Part III, Appendix B, p 167, USACGSC 16454.19-L.

[56] Major General James M. Gavin, "The Tactical Use of the Atomic Bomb," *Combat Forces Journal*, November 1950, pp 9-11.

[57] "Devers Valedictory: Atom Is a Ground Aid," *The New York Times*, 29 September 1949, p 7.

[58] Gavin, *War and Peace in the Space Age, op. cit.*, pp 129-35; Hanson Baldwin, "Experts Urge Tactical Air Might," *The New York Times*, 5 June 1952, p 13; and David Lilienthal, *In the Matter of J. Robert Oppenheimer: Transcript of the Hearings Before the Personnel Security Board*, Superintendent of Documents, US Government Printing Office, Washington, D.C., 1954, *passim*.

[59] Reinhardt, *op. cit.*, pp 3-4. See Colonel George C. Reinhardt, "Notes on the Tactical Employment of Atomic Weapons," *Military Review*, September 1952, pp 28-37.

[60] Colonel G. C. Reinhardt and Lieutenant Colonel W. R. Kintner, *Atomic Weapons in Land Combat*, The Military Service Publishing Co., Harrisburg, Pa., 1953, p 224.

[61] Gavin, *War and Peace in the Space Age, op. cit.*, pp 147-48.

[62] *Project Attack: Hypothetical Use of A-Bombs on Massed Armor Illustrated by Operation "Totalize," Phase I, 7-8 August 1944*, Operations Research Office, The Johns Hopkins University, Baltimore, Md., ORO-T-137, p 3, USACGSC 16454.105.

[63] Colonel Theodore C. Mataxis and Lieutenant Colonel Seymour L. Goldberg, *Nuclear Tactics, Weapons, and Firepower in the Pentomic Division, Battle Group, and Company*, The Military Service Publishing Co., Harrisburg, Pa., 1958, pp 32-33.

[64] Hanson W. Baldwin, "Atom's Role in Tactics," *The New York Times*, 13 June 1950, p 16.
[65] "Pace Hails Army's Atomic Gun," *The New York Times*, 9 May 1952, p 1.
[66] *Defense Against Mass Attack*, Headquarters, I Corps, Korea, 18 June 1952, p 3, USACGSC 17055.56.
[67] Harold B. Hinton, "Ammunition Ample to Repel Reds in Korea, Says Wilson," *The New York Times*, 7 March 1953, p 2; and "Van Fleet Said to Favor 'Limited' Atomic Attacks," *The New York Times*, 9 March 1953, p 8.
[68] Taylor, *Swords and Plowshares, op. cit*, p 134.
[69] Speech made by General Charles L. Bolte, Vice Chief of Staff, US Army, to the Infantry School, Fort Benning, Ga., 14 September 1954, p 3, USACGSC M506/G4/A.73.
[70] FM 100-5, *Field Service Regulations, Operations, op. cit.*, 1954, pp 40, 103, 123, 130-31 and 162.
[71] *Ibid.*, pp 117 and 119-20.
[72] *Ibid.*, pp 117 and 120.
[73] *Second Report of the Secretary of Defense for the Fiscal Year 1949*, Superintendent of Documents, US Government Printing Office, Washington, D.C., 1950, pp 142-43.
[74] Major General Bruce C. Clarke and Brigadier General L. L. Doan, "The New Armored Division Organization," *Armor*, November-December 1952, p 42.
[75] *Semiannual Report of the Secretary of Defense, January 1 to June 30, 1956*, Superintendent of Documents, US Government Printing Office, Washington, D.C., 1957, pp 86-87.
[76] FM 100-5, *Field Service Regulations, Operations, op. cit.*, 1954, p 16.
[77] FM 100-5, *Field Service Regulations, Operations, op. cit.*, 1954, Change 2, 27 July 1956, pp 2-3.
[78] Quoted in William P. Murden Jr. and Lieutenant Colonel John R. Yakshe, *Evaluation of Procedures Employed in Tests of the 1956 Field Army (ATFA-1)*, Combat Operations Research Group, Operations Research Office, US Continental Army Command (USCONARC), Fort Monroe, Va., ORO-T-4, October 1956, p 8.
[79] Taylor, *Swords and Plowshares, op. cit.*, p 152; and General Bruce C. Clarke, "The Designing of New Divisions for Our Army," *Armor*, May-June 1955, pp 22-25.
[80] Gavin, *War and Peace in the Space Age, op. cit.*, pp 137-39.
[81] Reinhardt and Kintner, *op. cit.*, pp 201-11.
[82] "Begin Tests," *Military Review*, September 1954, p 63; and Murden and Yakshe, *op. cit.*, p 3.
[83] "New Divisional Organizations," *Army-Navy-Air Force Register*, 12 February 1955, pp 1 and 21.
[84] Taylor, *Swords and Plowshares, op. cit.*, p 152.
[85] "Smaller 'Pentomic' Divisions on the Way," *Army-Navy-Air Force Journal*, 29 December 1956, p 3.
[86] Taylor, *Swords and Plowshares, op. cit.*, p 171.
[87] General Maxwell D. Taylor, "'Safety Lies Forward' — Technologically and Tactically," *Army*, December 1956, p 21.
[88] Lieutenant General C. D. Eddleman, "Men, Missiles, and Atomics on the Futurarmy Battlefield," *Army*, December 1956, p 24.
[89] *Ibid.*, p 25. For a detailed analysis of tactics on the atomic battlefield, see Mataxis and Goldberg, *op. cit.*; Major General Hamilton H. Howze, "Combat Tactics for Tomorrow's Army," *Army*, October 1957, pp 24-30; Lieutenant Colonel Mitchel Goldenthal, "Corps in the Mobile Defense," *Military Review*, September 1957, pp 14-24; Major John H. Cushman, "Pentomic Infantry Division in Combat," *Military Review*, January 1958, pp 19-30; Lieutenant Colonel William L. Boylston, "Armor on the Atomic Battlefield," *Armor*, May-June 1957, pp 24-29; Major E. B. Moore Jr. and Lieutenant Colonel Edwin C. Gibson, "The Infantry Battle Group in the Offense," *Infantry*, July-September 1959, pp 14-20; Lieutenant Colonel Edwin C. Gibson and Major E. B. Moore Jr., "The Infantry Battle Group in the Defense," *Infantry*, October-November 1959, pp 4-8; and Lieutenant Colonel James W. Hungate, "ROCID Battle Group: Tactics for Defense," *Infantry*, October 1957, pp 12-19.
[90] Major General Lionel C. McGarr, *Special Report of the Commandant, 1 January 1959*, USACGSC, Fort Leavenworth, Kan., 1959, USACGSC 13423.178.
[91] The text of the agreement is included in "DOD Gives Army Aviation New Charter Replacing Agreement With USAF," *Army-Navy-Air Force Journal*, 30 March 1957, p 11.
[92] *Annual Report of the Secretary of Defense, July 1, 1958 to June 30, 1959*, Superintendent of Documents, US Government Printing Office, Washington, D.C., 1960, p 8.
[93] Dr. E. F. Fisher Jr., *Relationships of the ROAD Concept to Moral Considerations in Strategic Planning*, Office, Chief of Military History, Washington, D.C., OCMH Monograph Number 1065, pp 59-63, USACGSC 16436.121. See General Bruce C. Clarke, "Some Thoughts on Military Tactical Organization," *Armor*, May-June 1963, pp 4-7.
[94] Colonel George T. Metcalf, "The MOMAR Field Army," *Army*, September 1960, pp 55-59. See "Board Briefing—MOMAR Study," Colonel Metcalf's presentation to the Combat Developments Logistical Conference, Headquarters, USCONARC, Fort Monroe, Va., 29 April 1959, USACGSC 18662.1-A-7.
[95] Letter from Headquarters, USCONARC, Fort Monroe, Va., Subject: Study, Modern Mobile Army, 1965-1970, 10 March 1960, USACGSC 18662.1-B.

[96] Fisher, *op. cit.*, pp 63-68.
[97] Department of the Army, Office, Chief of Staff, General C. D. Eddleman to Commanding General, USCONARC, Fort Monroe, Va., Subject: Reorganization of Infantry and Armored Divisions and Creation of a Mechanized Division, 16 December 1960, USACGSC 18662.13-A.3.
[98] Robert S. McNamara, *The Essence of Security: Reflections in Office*, Harper & Row, N.Y., 1968, p 69.
[99] Major General Harold K. Johnson, "ROAD Briefing, 27 May 1961," USACGSC 18662.13-G.
[100] "General 'Gar' Davidson's Censored Comments on Shortcomings of Army ROAD Division," *Army-Navy-Air Force Journal and Register*, 16 May 1964, p 10.
[101] Major General Edward C. Doleman, Commanding General, 8th Infantry Division, *Preparation for Mechanization*, 9 October 1961, p 2, USACGSC 12524.17. For an excellent analysis of small-unit operations, see Training Pamphlet Number 525-1, *Combat Operations: Small Unit Tactics in Nuclear Warfare*, Headquarters, US Army, Europe, 15 July 1966, USACGSC N-17848.241.
[102] FM 7-30, *Infantry, Airborne, and Mechanized Division Brigades*, Department of the Army, Washington, D.C., 19 May 1965, pp 82-85.
[103] FM 7-20, *Infantry, Airborne Infantry, and Mechanized Infantry Battalions*, Department of the Army, Washington, D.C., 28 May 1965, p 81.
[104] *Ibid.*, pp 6-7.
[105] *Ibid.*, p 125.
[106] Lieutenant Colonel E. M. Postiethwait, "Corps Defense on a Broad Front," *Military Review*, July 1949, p 50.
[107] See Major William A. Brown, "ROAD Doctrine: Battalion in the Defense," *Infantry*, March-April 1962, pp 32-39.
[108] FM 100-5, *Field Service Regulations, Operations, op. cit.*, 1949, p 120.
[109] FM 100-5, *Field Service Regulations, Operations*, Department of the Army, Washington, D.C., 1962, p 74.
[110] Colonel Francis J. Kelly, *U.S. Army Special Forces, 1961-1971*, Department of the Army, Washington, D.C., 1973, pp 3-5.
[111] Lieutenant General Hamilton H. Howze, *Special Warfare Board, Final Report*, Headquarters, USCONARC, Fort Monroe, Va., 28 January 1962, p 12, USACGSC 18662.18.
[112] FM 100-5, *Field Service Regulations, Operations, op. cit.*, 1962, pp 136-43.
[113] See Brigadier General William B. Rosson, "Accent on Cold War Capabilities," *Army Information Digest*, May 1962, pp 2-9; and "Cold War Terminology," *Army Information Digest*, June 1962, pp 53-54.
[114] FM 31-15, *Operations Against Irregular Forces*, Department of the Army, Washington, D.C., May 1961, p 25.
[115] *Counter Insurgency Operations: A Handbook for the Suppression of Communist Guerrilla/Terrorist Operations*, Office, Director of Strategic Plans and Policy, Special Warfare Division, Office, Deputy Chief of Staff for Operations and Plans, Department of the Army, Washington, D.C., 1 March 1962, p 43.
[116] Richard P. Weinert, *A History of Army Aviation, 1950-1962, Phase II: 1955-1962*, Historical Office, US Army Training and Doctrine Command (TRADOC), Fort Monroe, Va., November 1976, pp 182 and 244, USACGSC 18668.146-B.
[117] Major General James M. Gavin, "Cavalry, and I Don't Mean Horses," *Harper's Magazine*, April 1954, pp 54-60.
[118] Colonel Jay D. Vanderpool, "We Armed the Helicopter," *United States Army Aviation Digest*, June 1971, p 29.
[119] Among his many articles, see Major General Hamilton H. Howze, "Helicopters in the Army," *Ordnance*, January-February 1958, pp 634-38.
[120] *1957 Estimate of the Situation*, Department of Combat Aviation, US Army Aviation School, Fort Rucker, Ala., p 11, USACGSC 18184.8.
[121] Lieutenant General John J. Tolson, *Airmobility, 1961-1971*, Superintendent of Documents, US Government Printing Office, Washington, D.C., 1973, p 13.
[122] *Ibid.*, p 9. See also Lieutenant Colonel John W. Oswalt, "Report on the 'Rogers' Board," *United States Army Aviation Digest*, February 1961, pp 15-17.
[123] Tolson, *op. cit.*, p 14.
[124] *Ibid.*, p 18.
[125] Quoted in *Ibid.*, pp 22-24. See also J. B. S., "Irwin School's Summer Term: How the 'Howze Board' Did Its Work," *Army*, September 1962, pp 74-78.
[126] Tolson, *op. cit.*, p 30. For examples of such studies, see *Airmobile Company in Counterinsurgency Operations*, Army Concept Team in Vietnam, APO 143, San Francisco, Calif., 25 July 1964, USACGSC 5849.6; and *Mechanized Rifle Troop (M-113), Interim Test Report Number 10, 1 November to 31 December 1963*, Army Concept Team in Vietnam, APO 143, San Francisco, Calif., 25 May 1964, USACGSC 5849.55.
[127] See General Harold K. Johnson, "The Army Chief of Staff on Military Strategy in Vietnam," *Army Digest*, April 1968, pp 6-9.

[128] Address by General W. C. Westmoreland, Chief of Staff, US Army, Brazilian National War College, Rio de Janerio, Brazil, 24 September 1968, "Vietnam—A Recapitulation," in *Addresses by General W. C. Westmoreland*, Washington, D.C., Volume I, p 41.

[129] General William C. Westmoreland, "Report on Operations in South Vietnam, January 1964-June 1968," *Report on the War in Vietnam*, Superintendent of Documents, US Government Printing Office, Washington, D.C., 1969, Section II, p 100.

[130] *Ibid.*, p 117.

[131] Lieutenant General Richard G. Stilwell, "Evolution in Tactics—The Vietnam Experience," *Army*, February 1970, p 18.

[132] See Lieutenant General John H. Hay Jr., *Tactical and Material Innovations*, Department of the Army, Washington, D.C., 1974, pp 10-23; and Lieutenant General Bernard William Rogers, *Cedar Falls—Junction City: A Turning Point*, Department of the Army, Washington, D.C., 1974, *passim*.

[133] Robert W. Komer, "Clear, Hold, and Rebuild," *Army*, May 1970, pp 16-24; and Robert W. Komer, "Pacification: A Look Back . . . And Ahead," *Army*, June 1970, pp 20-29.

[134] Westmoreland, "Report on Operations in South Vietnam, January 1964-June 1968," *Report on the War in Vietnam, op. cit.*, p 91.

[135] *What a Platoon Leader Should Know About the Enemy's Jungle Tactics*, Headquarters, US Military Assistance Command, Vietnam, 12 October 1967, p 37, USACGSC 18745.691.

[136] Lieutenant Colonel William E. Klein, "Mechanized Infantry in Vietnam," *Infantry*, March-April 1961, p 21.

[137] Lieutenant General Julian J. Ewell and Major General Ira A. Hunt Jr., *Sharpening the Combat Edge: The Use of Analysis to Reinforce Military Judgment*, Department of the Army, Washington, D.C., 1974, p 83.

[138] Tolson, *op. cit., passim.*

[139] The three types of operations are described in *Evaluation of U.S. Army Combat Operations in Vietnam (Short Title: ARCOV): Basic Report*, US Army, Vietnam, 25 April 1966, Volume 1, pp II-4 through II-7, USACGSC 19090.4; and Westmoreland, "Report on Operations in South Vietnam, January 1964-June 1968," *Report on the War in Vietnam, op. cit.*, p 91.

[140] *Ibid.*

[141] The US Marines referred to this type of operation as a "County Fair."

[142] *Lessons Learned No. 75, Cordon and Search Operations*, Headquarters, US Military Assistance Command, Vietnam, 20 January 1970, USACGSC 18745.838.

[143] Colonel David H. Hackworth, "Our Great Vietnam Goof!," *Popular Mechanics*, June 1972, p 73.

[144] *ARCOV: Basic Report, op. cit.*, Volume 1, p I-12.

[145] See Herbert L. Smith, *Landmine and Countermine Warfare: Vietnam, 1964-1969*, Engineer Agency for Resources Inventories, for Office, Chief of Engineers, Department of the Army, Washington, D.C., June 1972, USACGSC 19217.3.

[146] General Van Tien Dung, *Our Great Spring Victory: An Account of the Liberation of South Vietnam*, Monthly Review Press, N.Y., 1977, pp 31-70.

[147] *Order of Battle Study No. 66-45, VC Withdrawal Tactics*, Headquarters, US Military Assistance Command, Vietnam, 9 May 1966, USACGSC 18745.188.

[148] For general works on the Vietcong, see Douglas Pike, *Viet Cong: The Organization and Techniques of the National Liberation Front of South Vietnam*, The M.I.T. Press, Cambridge, Mass., 1966; Colonel Jack Samson, "Viet Cong Tactics: 'Ten Against One,'" *Military Review*, January 1967, pp 89-93; Lieutenant Colonel David H. Hackworth, "The Battlefield, the Enemy, and You," *Army Digest*, April 1968, pp 51-56; and "Viet Cong: The Hidden Enemy," *Army Digest*, October 1968, pp 45-48.

[149] Colonel Sidney B. Berry Jr., "Observations of a Brigade Commander: Part I," *Military Review*, January 1968, p 6.

[150] Rogers, *op. cit.*, p 17.

[151] Lieutenant General Harry W. O. Kinnard, "Narrowing the Combat Intelligence Gap," *Army*, August 1969, p 23.

[152] For a detailed analysis of combat intelligence in South Vietnam, see Major R. L. Platt, *Intelligence and Vietnam Operations*, Unpublished Master of Military Arts and Science Thesis, USACGSC, Fort Leavenworth, Kan., 1967, USACGSC 19052.80; and Major General Joseph A. McChristian, *The Role of Military Intelligence, 1965-67*, Department of the Army, Washington, D.C., 1974.

[153] Ewell and Hunt, *op. cit.*, pp 117-19.

[154] *Ibid.*, pp 109-10 and 144.

[155] Tolson, *op. cit.*, pp 38-39.

[156] Rogers, *op. cit.*, p 77.

[157] For critical comments on the employment of mechanized forces, see Colonel Hugh J. Bartley, "Some Critical Notes," *Armor*, November-December 1969, pp 36-37.

[158] Westmoreland, "Report on Operations in South Vietnam, January 1964-June 1968," *Report on the War in Vietnam, op. cit.*, p 121.

[159] For an analysis of the "pile on" tactic and examples of combat actions in which it was employed, see *Lessons Learned No. 55, The Battle of Annihilation*, Headquarters, US Military Assistance Command, Vietnam, 15 March 1966, USACGSC 18745.16-7.

[160] Colonel George S. Patton, "Black Horse Operations," *Armor*, July-August 1969, p 37.

[161] Lieutenant Colonel John R. Galvin, "Three Innovations: Prime Tactical Lessons of the Vietnam War," *Army*, March 1972, p 19.

[162] Brigadier General Willard Pearson, "Find 'em, Fix 'em, Finish 'em," *Army Digest*, December 1966, p 19. One of the earliest descriptions of the changing role of the infantryman occurs in John B. Spore, "The U.S. Army in Vietnam: Professionally Competent, High Spirited, Confident," *Army*, May 1966, pp 28-32 and 80-86. For an analysis of fire and maneuver in Vietnam, see *Report on Dynamics of Fire and Maneuver (FIRMA III)*, US Army Combat Developments Command, Fort Belvoir, Va., 15 August 1969, pp 25-27.

[163] For further analysis of these tactics, see Lieutenant Colonel Zeb B. Bradford Jr., "US Tactics in Vietnam," *Military Review*, February 1972, pp 63-76. The most extreme example of the emphasis on firepower at the expense of maneuver occurs in Lieutenant Colonel William L. Hauser, "Firepower Battlefield," *Military Review*, October 1971, pp 21-27.

[164] Hay, *op. cit.*, pp 53-54; and *ARCOV: Firepower, op. cit.*, Volume 4, p C-7-5.

[165] *Ibid.*, p C-7-4.

[166] Quoted in Dave Richard Palmer, *Summons of the Trumpet: U.S.-Vietnam in Perspective*, Presidio Press, San Rafael, Calif., 1978, p 48.

[167] Hay, *op. cit.*, pp 32-33; and *ARCOV: Firepower, op. cit.*, Volume 4, p C-7-2.

[168] *ARCOV: Basic Report, op. cit.*, Volume 1, pp II-2 and II-4.

[169] For analyses of the employment of mechanized forces in Southeast Asia, see *Evaluation of U.S. Army Mechanized and Armor Combat Operations in Veitnam (Short Title: MACOV)*, US Army, Vietnam, 28 March 1967, Volumes 1-7, USACGSC 19090.15; Brigadier General James M. Gibson, "A Case for Mechanized Infantry," *Military Review*, September 1970, pp 56-70; and Colonel Donn A. Starry, "A Report on the 11th Armored Cavalry in Southeast Asia—1969-1970," *Armor*, January-February 1971, pp 14-20.

[170] Rogers, *op. cit.*, p 157.

[171] Pearson, *op. cit.*, p 16.

[172] *ARCOV: Basic Report, op. cit.*, Volume 1, p II-43.

[173] Palmer, *op. cit.*, p 140.

[174] Lieutenant Colonel David H. Hackworth, "Your Mission—Out Guerrilla the Guerrilla," *Army Digest*, July 1968, p 61.

[175] Hackworth, "Our Great Vietnam Goof!," *Popular Mechanics, op. cit.*, p 72.

[176] Bradford, *op. cit.*, pp 73-76.

[177] John M. Collins, "Vietnam Postmortem: A Senseless Strategy," *Parameters*, March 1978, pp 8 and 10.

[178] General Hamilton H. Howze, "Vietnam—An Epilogue," *Army*, July 1975, pp 15-16.

[179] General Donn A. Starry, "A Tactical Evolution—FM 100-5," *Military Review*, August 1978, p 4.

[180] *Ibid.*, pp 3-4. For a further elaboration of this theme, see Secretary of Defense Melvin R. Laird, *Annual Defense Department Report, FY 1973*, Superintendent of Documents, US Government Printing Office, Washington, D.C., 1972, p 86; Brigadier General Dan G. Loomis, "FM 100-5, *Operations*: A Review," *Military Review*, March 1977, pp 66-69; and Colonel Zeb B. Bradford and Colonel Frederic J. Brown, "Implications of the Modern Battlefield," *Military Review*, July 1977, pp 3-11.

[181] Major General John H. Hennessey, "A Look Ahead," *Military Review*, February 1972, p 113.

[182] See General Donn A. Starry, "Combined Arms," *Armor*, September-October 1978, pp 21-22; and General Donn A. Starry, "TRADOC's Concentration, 1978: Focus Is 'Central Battle,'" *Army*, October 1978, pp 30-33.

[183] General William E. DePuy, "The U.S. Army: Are We Ready for the Future?," *Army*, September 1978, p 24.

[184] FM 100-5, *Operations*, Department of the Army, Washington, D.C., 1 July 1976, p 1-1.

[185] "TRADOC's Reply," *Armed Forces Journal*, October 1976, p 27.

[186] FM 100-5, *Operations, op. cit.*, 1976, p 10-8.

[187] One critic concluded, "In essence, the US Army does not have what can appropriately be called an authoritative 'tactical nuclear warfighting' doctrine for tactical nuclear weapons and forces." Major John Paul Rose, *United States Army Nuclear Doctrinal Developments: The Nuclear Battlefield, 1945-1977*, Unpublished Ph.D. Dissertation, University of Southern California, Los Angeles, Calif., 1978, p 299.

[188] See Lieutenant Colonel Robert Carmichael and Major Joseph Keyes, "Defense Requires Mobility," *Infantry*, March-April 1972, pp 40-42; Lieutenant Colonel Robert Carmichael, "Force-Oriented Defense," *Infantry*, May-June 1972, pp 20-22; Major Joseph Keyes, "Tactics for the Force-Oriented Defense," *Infantry*, July-August 1972, pp 23-27; and Captain Robert B. Killebrew, "Force-Oriented Defense," *Infantry*, May-June 1973, pp 40-43.

[189] Lieutenant General John Norton, "TRICAP," *Army*, June 1971, p 15.

[190] FM 100-5, *Operations, op. cit.*, 1976, p 2-30.

[191] FM 71-1 (HTF), *The Tank and Mechanized Infantry Company Team (How to Fight)*, Department of the Army, Washington, D.C., 30 June 1977, p 4-1. One of the most extreme examples of emphasis on the defense occurs in Lieutenant Colonel Steven L. Canby, "Regaining a Conventional Military Balance in Europe: Precision Guided Munitions and Immobilizing the Tank," *Military Review*, June 1975, pp 26-38.

[192] See William S. Lind, "Some Doctrinal Questions for the United States Army," *Military Review*, March 1977, pp 54-56.

[193] FM 100-5, *Operations, op. cit.*, 1976, p 3-4.

[194] *Ibid.*, p 4-3.

[195] FM 71-100, *Armored and Mechanized Division Operations*, Department of the Army, Washington, D.C., 29 September 1978, pp 4-11 through 4-13.

[196] FM 100-5, *Operations, op. cit.*, 1976, p 5-2.

[197] *Ibid.*, p 5-1.

[198] *Ibid.*, p 5-10.

[199] *Ibid.*, p 5-13.

[200] FM 71-100, *Armored and Mechanized Division Operations*, *op. cit.*, p 5-2. See Lieutenant Colonel David L. Tamminen, "How to Defend Outnumbered and Win," *Armor*, November-December 1975, pp 39-44.

[201] Lind, *op. cit.*, pp 54-65; Lieutenant Colonel John W. Burbery Jr., *How Stable the Stool?: The Active Defense Revisited*, paper presented at the Inter-University Seminar on Armed Forces and Society/Symposium on Tactics and Military Posture, US Army Combined Arms Center, Fort Leavenworth, Kan., 30 March-1 April 1978; and Archer Jones, "The New FM 100-5: A View From the Ivory Tower," *Military Review*, February 1978, pp 27-36.

[202] Brigadier General S. L. A. Marshall, "Group Shock and the Future Battle," *Army*, May 1957, p 49.

☆U.S. GOVERNMENT PRINTING OFFICE: 1988-554-001/82058

STUDIES IN PROGRESS

"The Lebanon Intervention, 1958: A Case Study"

•

"The Development of Combat Service Support Forces in the United States Army, 1860-1975"

•

"Selected Operations of the Russo-Finnish War of 1939-1940"



Major Robert A. Doughty
US Army

Major Robert A. Doughty is currently the S3, 3d Squadron, 8th Cavalry, US Army, Europe. A graduate of the USMA, he received an M.A. in history from the University of California at Los Angeles and a Ph.D. from the University of Kansas. His previous assignments include a tour with the Military Assistance Command, Vietnam, as an adviser to the Vietnamese 4th Armored Cavalry Regiment. He has served as an assistant professor with the Department of History, USMA, and as an instructor with the Department of Unified and Combined Operations, USACGSC, and assisted with the establishment of the Combat Studies Institute.

SYNOPSIS OF LEAVENWORTH PAPER I

The United States Army's tactical doctrine in the generation following the Second World War owed its character to the influence of a number of factors, not all of which were consonant with one another or calculated to produce a fighting doctrine which reflected battlefield realities. Among these factors, national security policy, a new and more importunate technology, service and branch parochialism, and actual battlefield experience were the most effective arbiters of what the Army's doctrine would be.

"Even though all of America's military conflicts since World War II have been outside Europe, the Army and the nation have invariably refocused their concerns after these conflicts upon the defense of western Europe," the author writes. While "no single factor 'drove' the development of Army doctrine" during this period, changes in national security policies profoundly affected the Army's doctrine, as well as its organization and equipment. As the Army attempted to respond to the shifts in mission required by policy, Army doctrine-makers attempted to capitalize upon the new potentials for firepower and mobility provided by technological advances. Doctrinal trends during this period indicate, therefore, that doctrine is often a compromise between national security policy and military realities. Seen in this light, the author writes, "the great value of doctrine is less the final answers it provides, than the impetus it creates toward developing innovative and creative solutions for tactical problems on future battlefields."



COMBAT STUDIES INSTITUTE

Mission

The Combat Studies Institute was established on 18 June 1979 as a separate, department-level activity within the United States Army Command and General Staff College, Fort Leavenworth, Kansas, for the purpose of accomplishing the following missions:

1. Conduct original, interpretive research on historical topics pertinent to the current doctrinal concerns of the United States Army in accordance with priorities established by the Commander, United States Army Training and Doctrine Command, and to publish the results of such research in a variety of useful formats;
2. Prepare and present instruction in military history at the United States Army Command and General Staff College and to assist other College departments in integrating applicable military history materials into their instruction;
3. Act as the proponent agency for development and coordination of an integrated, progressive program of military history instruction in the United States Army Training and Doctrine Command service school system.