Evolution and Endurance

The U.S. Army Division in the Twentieth Century

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Prepared for the United States Army

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PREFACE

The U.S. Army is undergoing a period of intense self-examination as it grapples with the post–Cold War strategic environment and changes in the assumptions governing the use of military force. These assumptions have changed because of both transformations in national politics and the global environment and advances in military capabilities. In this context, some advocate abandoning the time-tested division structure as a hierarchical artifact unnecessary in a future in which more quickly deployable forces would better serve the nation's interests. Such forces would incorporate new technologies and leadership standards to attain greater levels of combat effectiveness. The Army has recently indicated its intent to study and field rapidly deployable, medium-weight brigade-size units that meet new requirements for lethality and sustainability.

This report would be of interest to those who are concerned with the Army's history and its future combat organizations. As the Army considers alternative organizational concepts, it is useful to look at the history of the division, one of the Army's most stable and enduring organizations. This report briefly describes the evolution of the division and explores why and how its designs have evolved since its inception. The most important and tangible factors contributing to the division's endurance and change are identified to help the Army study and improve organizational designs for the twenty-first century.

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Resources Program. The Arroyo Center is a federally funded research and development center sponsored by the United States Army.

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SUMMARY

The division, the U.S. Army's preeminent fighting organization throughout the twentieth century, has proven to be a very robust, flexible, and adaptable formation, successfully absorbing and exploiting new technologies and doctrinal concepts. Fundamental changes to the division reflect the character of the national military strategy, national resources, force structure, and contemporary battlefield conditions. A few specific factors, derived from organizational goals and capabilities, have been prime determinants of division design: operational flexibility, firepower, agility (timeliness, mobility, and deployability), sustainability, and economy (manpower, money, and other resources). Technological advances—in weaponry, information systems, transportation, and protection—have greatly affected these factors, while human capabilities have also concerned force designers.

Today, some practitioners and scholars are calling for the retirement of the division from the Army organizational hierarchy. Most prominently, noted military theorist Colonel Douglas Macgregor argues that the division is too large and cumbersome to undertake missions that require quick overseas deployments. He argues that only new brigade-size organizations can take full advantage of the latest technologies and advancements, yielding a quantum leap in combat effectiveness, thus permitting the division's demise. In this context, it is helpful to determine why the division has endured and changed. Through examination of the major division designs, some principal historical factors can be illuminated.

The division was first established as a peacetime Army organization in 1911, while the first permanent division was formed in 1917. The Maneuver Division of 1911 aided the training of men and the testing of new equipment, convincing Army leaders to reorganize the Army into four divisions whose triangular design favored mobility and maneuver. During World War I, the experience of French and British forces convinced U.S. Army leaders to design the square division for purposes of greater control and sustainable combat power, intended to break through the stalemated trench warfare in Europe.

During the interwar period, although careful studies suggested flexible and mobile triangular designs, internal disagreements delayed the reorganization of divisions until war was again imminent. Although first officially proposed in 1929, it would not be until 1939 that Army infantry would adopt triangular divisions, with each based on three regimental combat teams and a field artillery regiment. At that time, Army leaders also sought to improve the division's command and control, incorporate new technologies, and streamline support. The infantry division's triangular design remained throughout World War II, postwar occupation, and the Korean War with only minor modifications. Perhaps the most significant organizational development of the twentieth century, the armored division of 1942—a direct forerunner of today's heavy divisions—had flexibility incorporated into its design. Its combat commands task organized fighting groups for specific missions.

The Pentomic division emerged in the late 1950s as the Army's response to the nuclear age. The Army expected nuclear weapons to be an important part of future battle and thus imposed the Pentomic design on its infantry divisions with the hope that they could undertake both conventional and nuclear missions, employing tactical nuclear weapons while also surviving the enemy's own nuclear strikes. As a result of technological and other materiel limitations, the Pentomic division proved to be neither capable of conventional offensive action nor survivable on the nuclear battlefield.

Acknowledging the inadequacies of the Pentomic design and the new national strategy of "flexible response," the Army introduced the triangular ROAD (Reorganization Objectives, Army Divisions) divisions in 1961. With them, Army leaders sought to regain a true conventional warfighting capacity and improve flexibility. These tri-

angular divisions benefited from the innovation of making battalions nearly identical and thus interchangeable. Flexible brigade headquarters would task organize these battalions as armored division combat commands had done in the past. The airmobile variant ROAD division introduced in 1965 differed basically only in tactics and equipment and lacked organic armor and artillery. As the Army was leaving Vietnam in the early 1970s, it experimented with the TRICAP design, which incorporated armor, infantry, and air cavalry assets. Although TRICAP was deemed inadequate for fighting heavy armor forces, its air cavalry combat brigade became a model for future corps-level attack aviation.

Contemporary division designs have not strayed far from the ROAD model and are modifications of it for a variety of purposes, including specialization, integration of new technologies, deployability objectives, and economy. The Army of Excellence (AOE) division that exists today grew out of the Division 86 study, putting primary organizational design emphasis on the probable enemy (the Warsaw Pact countries) and the new AirLand Battle doctrine and incorporating significant new weapons. Introduced in the early 1980s, the light infantry division (LID) was intended to be a highly deployable, highly trained force that could handle low- to mid-intensity contingencies and still be useful against heavy forces in Europe. To meet deployability guidelines, the LID was stripped of much support, limiting sustainability. In 1998, the Army unveiled Division XXI, a "digitized" version of the AOE design that greatly enhances each unit's knowledge of the battlefield through real-time intelligence sharing that increases each combat unit's area of coverage and improves its combat effectiveness. Reserve component integration and improved logistics are notable changes.

Over the span of the twentieth century, the firepower, mobility, and flexibility of Army divisions improved steadily to the benefit of ever increasing combat effectiveness and coverage area. Nevertheless, some claim that the time has come when the division's size and basic organization no longer maximize—and perhaps hinder—the Army's overall combat effectiveness and efficiency in the Army's most likely contemporary missions. Such expressions of doubt raise many important policy questions that should be examined. Has the division, in its current form, outlived its usefulness? Does the division's size hinder quick deployment and optimal combat effectiveness?

Has the strategic environment changed so much that alternative organizational designs would be more appropriate than divisions? Serious and intense experimentation should be undertaken to determine the size and organization of those units that will best serve the Army and the nation.

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GUIDE TO SYMBOLS

Unit Types

 Infantry

 Armor

 Armored Cavalry

 Antitank

Military Police

 Medical

Medical

 Artillery

 Cavalry Reconnaissance

 Self-propelled Artillery

 Engineer

Aviation

 Supply

 Signal

Unit Sizes

××	Division
×	Brigade
| | |	Regiment
| |	Battalion
|	Company

Chapter One

INTRODUCTION

The history of the U.S. Army division is one of viability maintained. It should first be recognized, however, that the Army divisions that existed at the end of the twentieth century were very different from those that were around in its early years. That said, the division should be considered not just as the name of a specific organization but also as a concept around which to organize and as a repository of tradition. Organizations—and organizational names—can live on for any number of reasons. Such institutions remain viable because they are perceived to succeed in fulfilling pertinent goals or needs, whether these be financial, social, moral, bureaucratic, educational, symbolic, sentimental, military, or otherwise. Institutions can also endure because decisionmakers cannot envision or implement a better alternative, and this applies to the Army division, as well. As the Army seriously considers significant redesigns and restructuring of its primary combat units, it is helpful to examine the history of the division to illuminate the more relevant rationales and arguments that determine force design.

Why has the division succeeded and endured as the most prominent Army organizational unit throughout most of the twentieth century? It will be argued that it has remained because the division is an inherently flexible organizational concept, able to absorb new ideas and technologies while evolving with requirements.[1] Indeed, thou-

[1]Aside from the arguments presented in this report, it is entirely possible that the division has remained in large part because the Army has developed as an institution around it. After the division became a permanent part of the Army during World War I, the Army may have shaped its practices to support the division-based structure to

sands of factors have spurred alterations to it. The product of combat requirements and experience, resource constraints, tradition, experimentation, institutional influences, personal preferences, contemporary trends, and political struggle, the U.S. Army division has proven to be a potent and resilient instrument of ground combat power. As a permanently organized fighting force, the division has maintained its robustness, flexibility, and utility throughout modern times. It has adapted to advances in firepower, transportation, information systems, and protection, as well as to corresponding changes in doctrine and the quality of soldiers and their leaders.

The name "division" is important to the Army, but a term not possible to define precisely. Considering the amount of change that the division has undergone, its endurance implies a semantic tradition (i.e., the division remains because the word "division" is held in high regard). The Army's history is inextricably tied to it, therefore it would be difficult to discard. Despite drastic changes in size, shape, and capability throughout its history, the division remains. No hard and fast rules govern the organization of a fighting force that carries the word "division": one can add or subtract any components and resources from the design to meet battlefield or peacetime needs. Nevertheless, during the twentieth century, the division has generally been an independent unit commanded by a major general consisting of all of the combat arms and combat support assets necessary for a sustained effort to destroy an enemy in ground combat.

This report is intended to illuminate the most tangible and salient factors in division force design, in particular, battlefield needs, technology, economy, and national strategy. Some nonoperational factors are also discussed. Important contextual factors, such as Army force design experimentation, the institutional environment, and key leaders, have also had significant roles in studying, validating, and promoting force designs since the 1930s. However, an in-depth exploration of these issues falls beyond the scope of this research and is therefore reserved for more extensive study elsewhere.[2]

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the extent that any significant change made to the Army would have ramifications for the division and vice versa. This suggests that the fates of the Army and the division have been intertwined.

[2]For a more complete discussion of Army force design experimentation, see Glen R. Hawkins and James Jay Carafano, *Prelude to Army XXI: U.S. Army Division Design Ini-*

As much as the division has endured in name and function, fundamental changes to its design have been made to address certain needs and constraints. Internal command arrangements have been modified, and amounts and types of support have been added and subtracted as technologies and leadership capabilities have improved or as matters of economy have mandated. Authorized personnel levels have fluctuated in line with these changes (see Appendix A of this report for a selected summary of authorized personnel strengths for various division designs). Most qualitative and quantitative changes have been made to address specific prominent and critical combat factors: operational flexibility, firepower, agility (timeliness, mobility, and deployability), sustainability, and economy (manpower, money, and other resources). Technological advances in weaponry, information systems, transportation, and protection have all had significant influences on division reorganization and redesign, while human limitations have determined the span of control. Doctrinal prerogatives and expected battlefield conditions have greatly influenced the shape of divisions. When sustainable firepower held a premium over mobility and maneuver as in World War I, the duo-based square division emerged. Conversely, after maneuver regained its prominence in U.S. military minds just prior to World War II, as it has for most of the twentieth century, the tri-based division design has predominated. In the late 1950s, when survivability was a priority as a response to the nuclear age, the penta-based division design was the result.

The global security environment and the national military strategy indicate likely adversaries and challenges, providing the overarching context in which the Army and the other services conduct planning and shape their forces. National strategy and the resulting force structures subsequently influence the ultimate size and capabilities of large field organizations, such as the division. The Army must design its forces within these parameters to best address likely high-intensity and less intense—but perhaps more delicate—challenges

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tiatives and Experiments, 1917–1995 (Washington, D.C.: U.S. Army Center of Military History, 1997). For a comprehensive study of Army division history, see John B. Wilson, *Maneuver and Firepower: The Evolution of Divisions and Separate Brigades* (Washington, D.C.: Center of Military History, 1998). Wilson's work is the preeminent scholarly examination of the U.S. Army division and should be consulted for a fuller treatment of this subject.

that the nation expects it to undertake and overcome. In the twentieth century, the Army has tailored its forces in support of national strategy in light of specific enemies, battlefields, and other conditions and purposes—sustained breakthroughs in trench warfare in World War I; motorized, mechanized, and island warfare in World War II; survivability and relevance in the early years of the nuclear age; aerial mobility in Vietnam; and the highly lethal armored warfare foreseen versus the Soviet Bloc in Europe. In the post–Cold War period, however, uncertainty has subsequently made strategy—and thus appropriate force design—a complex, contentious, and slippery issue to grasp.

The twentieth century has witnessed many astounding technological innovations that continue to have great ramifications for military operations. In particular, communications and information technologies have made tremendous gains in the past 20 years, while improvements to mobility and precision lethality continue apace. Riding on the heels of such recent rapid advancements are the advocates of a radical restructuring and redesign of the Army's hierarchy of combat organizations. For the first time since 1900, serious discussion and study are being undertaken that contemplate—and often advocate—eliminating the division echelon from the organizational hierarchy. Some argue that the time has come to make a great leap in combat capability by embracing the reorganization phenomenon that has swept through the business community—using information technology to "flatten" organizations—to establish a brigade-size independent fighting unit (5,000–6,000 personnel) as the preeminent U.S. Army fighting force and structuring block. Tremendous technological advances have come about in all spheres of military activity, forever changing how to fight while intensifying and broadening the battlefield environment. Would-be division eliminators argue that, with the current state of military technology and human capital, now is the time to make the next great progression in warfighting, by designing new combat and support organizations to take full advantage of existing capabilities and potential synergies. They assert that a fighting force of the division's size is no longer necessary to achieve high levels of firepower and destructiveness; in fact, the large, layered command structure and logistical needs of such an immense organization may hinder the achievement of the full combat potential of its component parts. Finally, they say,

the division's unwieldy size hampers the Army from having what it really needs: agile and responsive forces, able to deploy quickly to the world's trouble spots and halt aggression in its critical early stages.

Among the appeals to redesign and reorganize the Army's combat formations, none has been more prominent or debated than that of Douglas Macgregor, as presented in his 1997 book, *Breaking the Phalanx*. Simply put, Colonel Macgregor advocates eliminating the division echelon from the Army. Taking advantage of information technologies, leadership quality, and yet-undeveloped firepower technologies and other efficiencies, Macgregor would have the Army create a corps structure consisting of several brigade-size maneuver units each capable of extended independent field operations. John R. Brinkerhoff has also presented a proposal to restructure to a brigade-based army, while Colonel David Fastabend has argued against elimination of the division, instead positing that span-of-control problems would result. Instead, Fastabend advocates increased pooling of support assets, as modern information processing would now permit timely and efficient allocation of these resources to those combat units that need them, and only when they need them.[3]

Are Macgregor and other advocates of division elimination correct? Has the division reached the end of its useful life at the end of the twentieth century? Is the division design no longer capable of getting the most out of available technologies and modern leaders and soldiers? Have the capabilities of today's soldiers and technologies surpassed the threshold that would enable smaller organizations to outperform the venerated division in the most relevant missions? A major force redesign might be appropriate sometime in the near future, but Army leaders must be able to recognize the moment if and when that time comes. When considering whether to redesign the Army's fighting units, or in rationalizing their retention, it is advisable to consider why the Army should or should not change. As

[3]For a full elaboration of their arguments, see Douglas A. Macgregor, *Breaking the Phalanx: A New Design for Landpower in the 21st Century* (Westport, CT: Praeger, 1997); John R. Brinkerhoff, "The Brigade-Based New Army," *Parameters* (Autumn 1997), pp. 60–72; and David Fastabend, "An Appraisal of 'The Brigade-Based New Army,'" *Parameters* (Autumn 1997), pp. 73–81.

important as weaponry and information, organization—and the efficiencies that it can bring—can yield great combat effectiveness because of the increased speed and decisive power that are focused through the efficient allocation and ordering of resources and personnel. In short, organizational design matters. History provides us with the rationales and lessons of past changes, and change has occurred in Army force design often enough—albeit within certain parameters—to provide a plethora of examples for current force planners and decisionmakers.

Here, a chronological approach is used to trace evolutionary and revolutionary developments in division design within their historical contexts. Created by the French early in the eighteenth century, the division achieved notoriety through Napoleon in the nineteenth century, when he employed it to wield the power of his mass citizen armies more efficiently. Since Napoleon's time, armies have steadily improved the division design to achieve greater combat power by taking advantage of information technologies, mobility, and firepower within flexible organizations that combine arms and support in optimal quantities, bringing these assets to bear at the right moments. For the twentieth century U.S. Army, change has most often come incrementally, in response to the introduction of new weaponry and equipment, resource limitations, or evolving battlefield conditions. More dramatic changes have resulted from new national strategic directions, inclinations of particular Army leaders, and revised doctrinal approaches that resulted from radically changed perceptions of expected battlefield conditions.

Four primary division designs and four modern variants are examined here. Four distinct design eras mark the development of the division in the twentieth century: the Square (World War I), the Triangular (World War II), the Pentomic, and the ROAD/modern heavy. Significant developments such as the light infantry, airmobile, TRICAP, and digital division concepts will also be explored.

Chapter Two

BIRTH OF THE MODERN DIVISION (1910–1911) AND THE U.S. ARMY EXPERIENCE IN WORLD WAR I (1917–1918)

The U.S. Army first used divisions during the Revolutionary War as administrative commands and only much later did they evolve into semipermanent tactical organizations. Divisions used during the War of 1812 tended to be ad hoc formations.[1] In the mid–nineteenth century the division began to mature as an organizational concept and significant operational and strategic instrument. Being greatly influenced by the Napoleonic hallmark of dividing armies into divisions—the first modern independent field maneuver units—General Winfield Scott first organized American troops into divisions for the purpose of flanking operations during the Mexican War in the 1840s.[2] Divisions were later used prominently in the American Civil War, but peacetime divisions would not come into existence until early in the next century. The U.S. Army then followed the examples of the large European armies, which had adopted permanent division designs by the 1890s.

The first U.S. Army division of the twentieth century was conceived not necessarily with combat power in mind, but primarily as an administrative formation used to aid mobilization. Its roots lie in an effort to improve training procedures and the speed of assembly. America's experience in its war with Spain in 1898 spurred a rethink-

[1]Wilson, *Maneuver and Firepower*, pp. 3–9.

[2]Russell F. Weigley, *The American Way of War: A History of United States Military Strategy and Policy* (New York: Macmillan, 1973), pp. 74–75.

ing among the Army's bolder leaders of its organization for fighting.[3] Secretary of War Henry Stimson and Army Chief of Staff General Leonard Wood also wished to eliminate the many small posts inherited from the constabulary and Indian fighting days and reorganize the Army into larger garrisons.[4] At the very least, Wood and Stimson believed that they should form temporary troop concentrations on paper that would aid mobilization purposes. The so-called "Maneuver Division" was formed at San Antonio, Texas, in March 1911. This grouping gave officers experience handling large bodies of men and permitted testing and experimentation with new Signal Corps equipment, such as telegraph and wireless telegraph sets (radios) and airplanes.[5] The shortcomings of the resulting undermanned and unprepared Maneuver Division later gave Army leaders the ammunition to call for an improved organization of the Army as a whole. Stimson subsequently called on the U.S. Army War College to plan for the tactical reorganization of the Army into a permanent, division-based organization.[6]

In early 1913, Stimson persuaded the Army's general officers of the merits of the divisional plan, and the reorganization of the Army into four divisions soon followed.[7] These divisions consisted of three infantry brigades, a cavalry regiment, an engineer battalion, a signal company, and four field hospitals. The wisdom of the new plan soon became evident as the Mexican Revolution threatened to spill over the Rio Grande. What once required scores of orders now required only one, and with that the 2nd Division commanded by Brigadier General Frederick Funston at Texas City and Galveston was mobilized.[8]

The Army's first permanent division was organized on June 8, 1917, as the 1st Expeditionary Division. During the mobilization for

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[3]Wilson, *Maneuver and Firepower*, p. 23.

[4]Russell F. Weigley, *History of the United States Army* (Bloomington: Indiana University Press, 1984), pp. 333–334.

[5]Wilson, *Maneuver and Firepower*, p. 30.

[6]Weigley, *History of the United States Army*, p. 334.

[7]Ibid.

[8]Ibid., p. 335.

American involvement in World War I, U.S. Army leaders noted the Allies' experiences and reorganized the division design with a new approach to two traditional Army hallmarks, mobility and firepower. The Americans did not want to get bogged down as the French and British had and designed and trained their forces to break the stalemates prevalent on the Western Front. Maintaining the momentum of attacks through sustained firepower was placed at a premium. While the Americans retained an open warfare style that had been abandoned by their allies, mobility was not a key consideration for organizing.[9] Meanwhile, infantry-artillery coordination was not yet smooth enough to engender effective maneuver: communications between infantry and artillery were still rudimentary, and artillery itself was not yet mobile enough to keep up with infantry advances.[10]

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[9]In *Maneuver and Firepower*, Wilson states that Chief of Staff Major General Hugh L. Scott originally leaned toward a smaller square division of about 13,000 men to facilitate mobility and the exchange of men on the line. Following British and French recommendations, a subsequent study conducted at the War College led to a division of nearly 19,000 men (including more than 10,000 infantrymen) that resembled the French square division, enlarging the regiments by reducing their number from nine to four, and slashing the amount of cavalry significantly. The Allies felt that cavalry had little utility in trench warfare, while horses and fodder would take up too much valuable shipping space. General John J. Pershing and Colonel Chauncey Baker later altered the underlying assumptions of division organization: instead of facilitating the movement in and out of the trenches, the division should be organized and sized to fight prolonged battles. They felt that the Allies would have increased the size of their divisions had they the luxury of abundant manpower. An infantry company was restored to each battalion, bringing the total to four in each, while augmentations to machine gun assets brought the U.S. Army square division to more than 27,000 men. Pershing was also an unabashed fan of the American soldier, believing that with innate American initiative and more divisional combat power, he could succeed where the Allies had failed. In his book *Fast Tanks and Heavy Bombers* (Ithaca, NY: Cornell University, 1998), David E. Johnson notes that Pershing felt American officers and infantrymen were superior to those of the tired Allies. Johnson adds that, unlike the Allies, the Americans still believed in the inherent power of the infantry charge with fixed bayonet, and they were successful with this "open warfare" doctrine—contrary to the British, French, and German experiences—only because of prevailing conditions on the Western Front that were conducive to such an approach.

[10]Traditional American tactical inclinations toward mobility and open warfare were made moot because of certain technological aspects of the battlefield in World War I, notably the machine gun and the limitations on effective artillery due to poor self-mobility and archaic methods of communication. The Army may have had a predilection for a more mobile style of warfare, but without effective artillery fire to support maneuver, the infantry was constrained to move slowly. For an account that illustrates this situation, see Allan R. Millett, "Cantigny, 28–31 May 1918," in *America's First Battles, 1776–1965*, Charles E. Heller and William A. Stofft, eds. (Lawrence, KS: University Press of Kansas, 1986).

The pre–World War I triangular design was deemed insufficient, lacking enough flexibility, control, and sustainable combat power. Deemphasizing mobility and maneuver, the division was to be bulked up and reorganized to fight prolonged battles in sustained frontal attacks.[11] While not totally abandoning mobility, this cornerstone of U.S. Army warfare was sacrificed somewhat in the interest of firepower needed to penetrate German defenses and exploit breakthroughs.[12] The commander of the American Expeditionary Force, General John J. Pershing, fixed the division at 979 officers, 27,082 men (about 40,000 all told, including support personnel). Pershing created this division—which was more than twice the size of its European counterpart—to "achieve a capacity for sustained battle which would ensure that American divisions would not falter short of their objectives as British and French divisions so often had done."[13] A division with fewer but larger regiments would facilitate a more reasonable span of control and battle momentum. Similar to—albeit larger than—early European "square" designs, the American square division consisted of two infantry brigades of two regiments each, one field artillery brigade (two 75-mm regiments, one 155-mm regiment), an engineer regiment, a machine-gun battalion, a signal battalion, and division supply, and sanitary trains (see Figure 2.1). Each infantry regiment had a strength of 112 officers and 3,720 men formed into three battalions and one machine-gun company. Each battalion consisted of four companies of six officers and 250 men each.[14]

Although it possessed tremendous firepower, this division could not fully capitalize on its assets and was also hindered by insufficient numbers of combat service support troops and equipment. Coordination between infantry and artillery was poor, hampered by unreli-

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[11]Wilson, *Maneuver and Firepower*, p. 53.

[12]John B. Wilson, "Mobility Versus Firepower: The Post–World War I Infantry Division," *Parameters*, Vol. XIII, No. 3, 1983, p. 47; Wilson here provides an excellent examination of the firepower/mobility tradeoff in World War I and postwar divisions.

[13]Weigley, *History of the United States Army*, p. 386.

[14]Ibid.

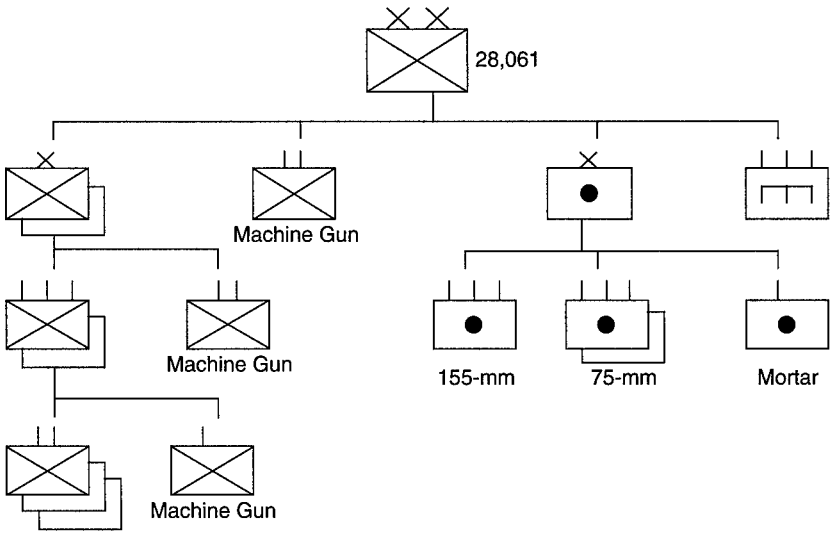

Figure 2.1—The Square Infantry Division, 1918

able communications equipment and the inability to keep track of the movement of infantry units in the offensive. Successful offensives were thereby slowed tremendously. A shortage of personnel and equipment specifically reserved for general logistical requirements, medical evacuation, and transporting rations and the dead further slowed the advance.[15] In short, the square division lacked coordination and was unwieldy and difficult to support logistically.

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[15]Wilson, *Maneuver and Firepower,* p. 73.

Chapter Three

THE INTERWAR PERIOD AND WORLD WAR II

The interwar period would prove to be important for incorporating lessons learned from World War I into the division design. Chief among them was the fact that greater coordination among the combat arms and support was required to enhance combat effectiveness. Advances in weapons, communications, and transportation technology were needed to improve the division's lethality, while properly integrating the advances into Army formations and operations was equally important.

Immediately after the war, many veteran officers recommended that the Army retain the square divisional structure. General Pershing objected, believing that these evaluations came too soon after the conflict and were heavily influenced by the special circumstances of the Western Front. He favored a division that was much more mobile and flexible and proposed a design possessing a single infantry brigade of three infantry regiments, an artillery regiment, a cavalry squadron, and combat support and combat service units.[1] Time and distance factors were paramount: "The division should be small enough to permit its being deployed from . . . a single road in a few hours and, when moving by rail, to permit all of its elements to be assembled on a single railroad line within twenty-four hours; this means that the division must not exceed 20,000 as a maximum."[2]

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[1]Wilson, *Maneuver and Firepower,* pp. 89–90.

[2]Wrapper Indorsement (Forwarding Report of AEF Superior Board), 16 June 1920, as reprinted in Wilson, *Maneuver and Firepower,* p. 90.

The debate over the divisional structure was framed by the assumption that North America would be the theater in which it would most likely be deployed. The static battlefield, characteristic of World War I in Western Europe, was viewed as a thing of the past as "technological advances in artillery, machine guns, and aviation made obsolete stabilized and highly organized defensive lines whose flanks rested on impassable obstacles, such as those encountered on the Western Front." [3] However, despite Pershing's preference for a much smaller and flexible division of three regiments, two prominent redesign efforts, the Superior Board (1919) and Lassiter Committee (1920), recommended square designs. In answering the call to increase mobility, the division was cut in size by reducing from four to three both the number of platoons in infantry companies and the number of companies in battalions; 155-mm howitzers and some support troops were also eliminated.[4] It is interesting to note that the Lassiter Committee wished to retain the brigade-based square division in part because a triangular design would have eliminated the brigade command billets filled by brigadier generals.[5] The reduced square division was tentatively approved by Army Chief of Staff General Peyton March in August 1920 at 19,385 men and grew to 19,997 men a year later.[6] Pershing, who was to become chief of staff soon after, may have ultimately acceded to a smaller square design because he wished to avoid embarrassment: many of his own officers had recommended the square design while serving on the Superior Board.[7] At the same time, following much criticism for the bloated and unwieldy 1917 design, the postwar cavalry division was radically reduced from approximately 18,000 men to 7,463.[8]

After the square infantry division was reduced, the infantry division was not to be significantly reorganized again until 1939, primarily because of struggles within the Army. Nevertheless, important studies conducted in this period eventually led to the modern, flexible

[3]Wilson, *Maneuver and Firepower*, p. 91.

[4]Wilson, "Mobility Versus Firepower," p. 50.

[5]Wilson, *Maneuver and Firepower*, p. 91.

[6]Ibid., pp. 92, 95.

[7]Ibid., p. 94.

[8]Ibid., pp. 38, 95.

combat division. Three needs and a belief greatly influenced change in the division in 1939: the need for increased mobility, greater flexibility, and improved integration of new equipment, weapons, and firepower in motorized and mechanized formations and the belief that North America was to be the battleground of the future (while another war in Europe was deemed unlikely). These factors led to the development of a division design that was flexible and mobile, able to take advantage of new equipment and weapons, while operating on a fast-moving, fluid battlefield that might not necessarily have a well-developed infrastructure.[9]

Two types of divisions would emerge just prior to the U.S. entry into World War II: the triangular infantry division and the combat command-based armored division. The designs of both underwent extensive modification throughout the war, adapting to battlefield conditions, resource limitations, and the shortcomings of assigned weapons. Historian John Wilson identified three principal factors driving initial design and change during the war: the availability of men, the availability of shipping space, and the availability and quality of equipment. On this last point, the Army continuously was forced to tinker with the division's design to compensate for inferior weapons, or to accommodate improved ones.[10]

The Triangular Infantry Division

In September 1939, with the onset of war in Europe, new Chief of Staff General George C. Marshall ordered a reorganization of the Army's infantry divisions into smaller three-regiment "triangular" divisions. Following years of extensive testing conducted under then Army Chief of Staff General Malin Craig, General Marshall approved the new triangular design to put greater maneuverability and flexibility into the divisions, with the additional advantage that the National Guard divisions could easily adopt it.[11] Craig initiated the

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[9]Major Glen R. Hawkins, *United States Army Force Structure and Force Design Initiatives, 1939–1989,* Advance Copy, United States Army Center of Military History, Washington, D.C., 1989, pp. 15–16.

[10]Wilson, *Maneuver and Firepower,* p. 201.

[11]Weigley, *History of the United States Army,* p. 424; Hawkins, p. 15; Wilson, *Maneuver and Firepower,* p. 133.

reorganization effort in 1936, and preliminary triangular designs had reduced division manpower by more than one-third to 13,512.[12] Testing was conducted via the Provisional Infantry Division (PID) from 1937 to 1939. The elimination of horses and the adoption of motor vehicles greatly increased the speed and range of these new formations. The brigade echelon was eliminated. As a result, the three regimental combat teams and a field artillery regiment (four battalions: 3 x 105-mm, one to each of the regiments; and 1 x 155-mm for general divisional support) could then operate directly under the division commander, providing enhanced responsiveness and flexibility. A cavalry reconnaissance troop equipped with lightly armored vehicles was also assigned to this division, in addition to engineer, signal, quartermaster, military police, medical, and maintenance units.

The triangular division enhanced mobility because its smaller size required much less road space than the square division, and it could deploy from the movement formation more quickly. Reporting on the results of the PID study, Brigadier General Lesley McNair proposed significant streamlining in the interest of economy, eliminating some engineers and signal assets, and shifting much of the reconnaissance and support to higher echelons, eventually yielding a division with a wartime authorized strength of 11,485 personnel.[13] After the 1940 Louisiana maneuvers, authorized division manpower was bulked up to 15,245 men (see Figure 3.1).

This new infantry division had a minimum of organic artillery and support units as a result of extensive pooling at higher echelons; tight shipping constraints also had an influence on limiting the division's size.[14] Planners believed that the division would always be part of a larger force in any engagement, thus permitting a more efficient dis-

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[12]Wilson, *Maneuver and Firepower*, pp. 127–128.

[13]Ibid., pp. 130–132.

[14]Kent Roberts Greenfield, Robert R. Palmer, and Bell I. Wiley, *The Army Ground Forces: The Organization of Ground Combat Troops* (Washington: Historical Division, Department of the Army, 1947) p. 300; Wilson, *Maneuver and Firepower*, p. 180. Both Chief of Staff General George Marshall and Lt. General McNair were strong proponents of pooling assets at higher echelons, as a reaction to personnel and equipment shortages and prevailing tight shipping conditions.

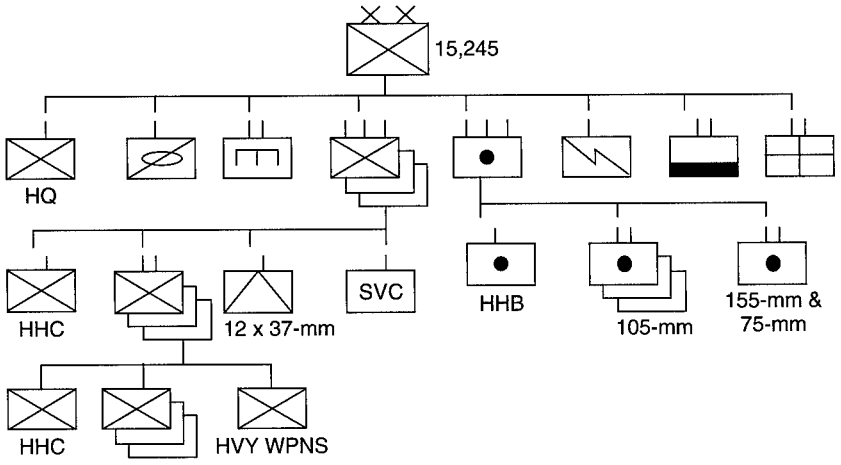


Figure 3.1—The Triangular Infantry Division, November 1940

tribution of resources across corps and armies and rationalizing limits on the division's organic support. Subsequent changes in this division during World War II were limited to decreasing its size without substantially affecting its structure. Consistent with considerations for economy of force, as well as manpower and shipping limitations, Lieutenant General McNair wanted the division to embody the following qualities:

> a compact offensive force with a minimum of specifically defensive weapons, streamlined for open warfare, and backed up by units of other types at corps and army level. The infantry division was the fundamental permanent combined arms team, intended to have the right amount of organic artillery and auxiliary elements to enable its infantry riflemen to move forward against average resistance. General McNair hoped to emphasize and clarify this conception by paring away the growth which tended to obscure it.[15]

With few exceptions, the triangular infantry division design remained essentially unchanged until 1956. After World War II, the infantry division merely grew in size—to nearly 19,000 men during the

[15]Ibid.

Korean War—augmenting existing engineer, military police, signal, reconnaissance, intelligence, and other support units.[16]

The Armored Division

First formed in 1940, the World War II–era armored division was a continuously evolving organization noted for its designed flexibility and was a principal forerunner of the modern heavy division. Technological advances in firepower and communications up to that point increased flexibility at lower echelons, particularly after 1942. It was then that the armored division would reap the benefits of an innovative organizational concept in the form of headquarters called Combat Commands, which would build task-organized combat groups for specific missions from the division's organic units and other nondivisional formations. Although the infantry divisions of World War II also took advantage of task organizing for their tactical employment, the armored combat commands formalized this concept, achieving vertical and horizontal flexibility through the attachment and detachment of combat and combat support units as needed.

Spurred by German successes in Poland and France, U.S. armored divisions were initially designed with a heavy emphasis on tanks and scant infantry support. The sheer shock power of German armor, which created dramatic breakthroughs, signaled a new, powerful dimension in warfare that U.S. planners hoped to exploit. Because they were expected to operate independently for extended periods, the new armored divisions were designed with substantial combat and support assets to permit greater flexibility than previous formations had. This original design had an armored brigade consisting of three tank regiments (two light, one medium), an artillery regiment of two battalions, and an armored infantry regiment in support. These nascent armored divisions were lavished with over 14,000 men and nearly 400 tanks.[17] Despite the views of some who believed the armored divisions to be elite formations that would be the spearhead of future battle, original armored division designers, such as Brig-

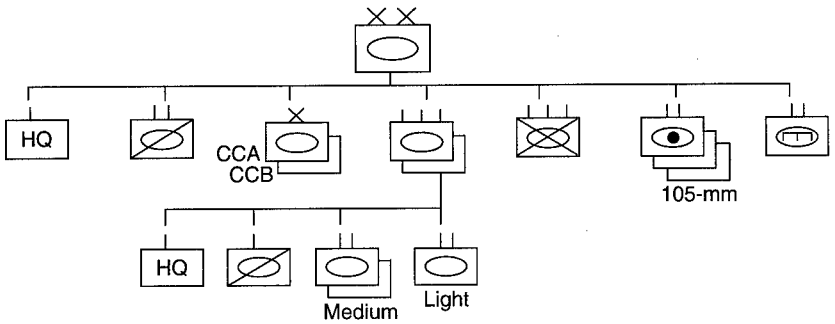
[16]Hawkins, p. 20.

[17]Greenfield et al., pp. 319–323.

adier General Adna Chaffee, intended these divisions to be employed for reconnaissance, screening, pursuit, and exploitation.[18]

By 1942, this initial design proved to be inadequate in the face of competent antitank defenses, as learned by the Germans in North Africa, as well as the Russians and British. As a result, the armored division's proportion of infantry to tanks was increased throughout the war. It should be noted that additional tank battalions were correspondingly augmented to infantry divisions at the same time. Most important, the armored division itself underwent a substantial and significant reorganization with the elimination of the brigade echelon and the addition of two "combat commands." Utilizing the concept of task organization, combat commands substantially increased mission flexibility. Tanks were organized in two regiments of three battalions each, armored infantry in a regiment of three battalions, and artillery in three battalions. Figure 3.2 shows this armored division design. The division commander would delegate command of each combat command to a brigadier general who would tailor his command according to mission requirements.[19]

In late 1943, the armored divisions—aside from the 2nd and 3rd divisions—were reorganized once again to conserve manpower and



NOTE: CCA and CCB denote combat commands A and B, respectively.

Figure 3.2—Armored Division, March 1942

[18]Ibid.; Wilson, *Maneuver and Firepower*, pp. 149–150.

[19]Greenfield et al., p. 323.

achieve maximum adaptability, flexibility, and an improved force mix. Figure 3.3 shows the results of this reorganization. Reflecting the need for more infantry to tackle enemy antitank assets, General McNair believed that a more-balanced formation would better help armor to advance. The regimental echelon was eliminated to increase command efficiency, making the battalion the basic unit, and a reserve combat command was added. Organically, the division would possess three each of tank, armored infantry, and armored field artillery battalions, effectively doubling the existing ratio of infantry to tank strength. All tank battalions became alike, and therefore interchangeable, and were made administratively self-contained. Meanwhile, nondivisional pools of identical but separate tank, infantry, and artillery battalions were made available for ready attachment to the armored divisions. These moves would reduce considerably the armored division's authorized personnel and tank levels to 10,937 and 263, respectively. The ratio of infantrymen to each tank subsequently rose from 6.1 to 11.4. Yet, although the number of organic tank battalions was reduced from six to three, the number of tanks in the division fell by only 30 percent, as the remaining battalions were enlarged. The net effect of this reorganization, aside from making the armored division a more effective combined arms team, was a transfer of much of the Army's tank strength to support of the infantry.[20]

The Combat Command represented a very important organizational change, designed to be a flexible headquarters around which the division commander could task organize maneuver battalions and artillery. In that sense, the Combat Command was the parent of the modern brigade.

The armored division originally had an organic supply battalion. The initial thinking was that these divisions would move very quickly, and would require 250 miles of "rolling supplies." After General George Patton indicated from North Africa that fighting really advanced only three miles per day maximum and that army supply

[20]Ibid., pp. 327–333. At one time, McNair envisioned the creation of separate armored groups formed from these battalions which "might perform the role of armored divisions."

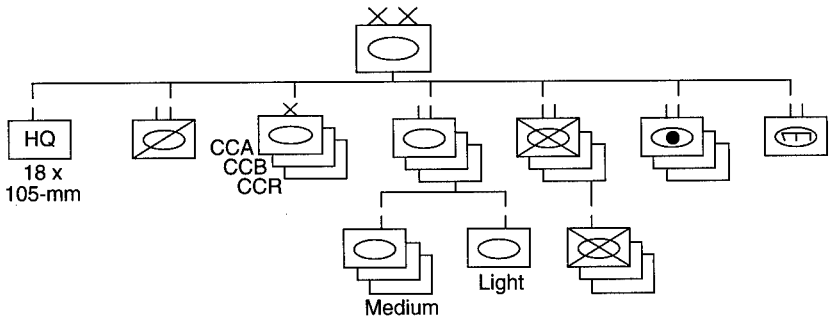


Figure 3.3—Armored Division, September 1943

points were sufficient, General McNair stripped the division of this supply battalion in the interest of economy.[21]

After World War II, armored divisions took on those units that had previously been assigned to higher echelons. Notable examples include an antiaircraft artillery battalion and a 155-mm self-propelled howitzer battalion; armored divisions also assumed the tank destroyer battalion then replaced it with a heavy tank battalion, and restored the supply battalion removed in 1943. The Army justified many of these changes by arguing that the depth and breadth of the modern battlefield required them.[22]

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[21]Ibid., p. 332.

[22]Hawkins, p. 20.

Chapter Four

THE PENTOMIC ERA (1956–1960)

Under the Eisenhower Presidency from 1953 to 1961, the United States made nuclear weapons the centerpiece of its military strategy, relying on the threat of massive nuclear retaliation to deter aggression. In so doing, the "New Look" policy caused the primary thrust of the nation's military forces to shift from costly manpower-intensive conventional ground forces to nuclear-capable forces, most notably in the form of the Air Force's Strategic Air Command. Eisenhower felt that nuclear weapons would permit the United States to effectively counterbalance the Warsaw Pact's manpower advantage and at the same time spare the American economy the strain of maintaining a large ground force.[1] Of the services, the Air Force was the primary beneficiary of nuclear strategy, while the Army was the odd man out: between 1953 and 1961, the Army's budget fell from $16 billion to $9.3 billion, while the number of divisions dropped from 20 to 14.[2]

In 1956, Army Chief of Staff General Maxwell Taylor stepped into this situation and attempted to make the Army relevant once again. Taylor appears to have championed the fielding of austere new divisions that would both capture increased budgets from the nation's

[1]Stephen E. Ambrose, *Eisenhower, Volume Two: The President* (New York: Simon and Schuster, 1984), pp. 171–172. Eisenhower felt that nuclear weapons had made large armies obsolete. Nevertheless, Army manpower stood at more than one million. Eisenhower regarded calls for anything beyond that as irresponsible and fueled by hysteria. To his credit, Army Chief of Staff General Matthew Ridgway charged that depending on nuclear weapons resulted in an unbalanced military, forcing the United States into an "all or nothing" posture.

[2]Wilson, *Maneuver and Firepower*, p. 286.

political leaders and permit the retention of a maximum number of divisions that could be bulked up during a mobilization.[3] After a series of studies and experimentation that would foreshadow future organizational and doctrinal inadequacies, the Pentomic division was designed and adopted under pressure from Taylor himself.[4]

Manpower limitations, tactical nuclear weapons, and the expectation that likely adversaries would themselves employ nuclear weapons were all prime design considerations. By the mid-1950s, in the midst of the predominance of nuclear weapons and the strategy of massive retaliation in the minds of U.S. security planners, the Army had lost much of its strategic direction and relevance, as well as much of its prestige and budget share, to the Air Force. Army leaders sought desperately to make the service relevant in the nuclear age by investing in air defense systems, long-range attack rocketry and missiles, and space exploration, in effect competing with the Air Force. Before long, they found their "silver bullet" in tactical nuclear weapons. Army leaders had come to believe that tactical nuclear weapons would decide the outcome of the next war: "small-yield, limited-range, highly accurate nuclear weapons would provide the crucial differential, allowing outnumbered American fighters to win."[5] Nuclear weapons were not thought of as small strategic bombs, but as artillery of unprecedented effectiveness. Thus, the Pentomic divi-

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[3]Ibid., pp. 271–286.

[4]For a critical account of Army policy during this period, see John J. Midgely, Jr., *Deadly Illusions: Army Policy for the Nuclear Battlefield* (Boulder, CO: Westview Press, 1986); for a different view on the prominent experiments of this period, see Hawkins and Carafano (1997). All three major studies commissioned by the Army to design a suitable atomic force—"Atomic Field Army" (ATFA), "Doctrinal and Organizational Concepts for Atomic-Nonatomic Army During the Period 1960–1970" (PENTANA), and "Reorganization of the Current Infantry Division, " (ROCID)—were characterized by incomplete wargaming and testing. Often when testing was conducted, it was done so with unrealistic constraints. For example, during testing of the ATFA division concept in exercises *Follow Me* and *Blue Bolt* in 1955, commanders were prevented from using nuclear strikes beyond those already scripted. Subsequently, the effects of nuclear strikes on maneuver operations had not been determined and evaluated. On a more positive note, the ATFA study indicated that Army aviation was coming into its own: the SKY CAV concept—grouping air transport, aerial reconnaissance, and air transportable reconnaissance under one headquarters—drew notable positive attention.

[5]A. J. Bacevich, *The Pentomic Era: The U.S. Army Between Korea and Vietnam* (Washington, D.C.: National Defense University Press, 1986), p. 65.

sion permitted the Army to claim some of the country's investments in nuclear weaponry.

The Pentomic division was intended to both survive a nuclear attack and successfully employ tactical nuclear weapons on the battlefield. This meant that the Army had to master these new weapons, and new doctrines and operational concepts for their employment, while attempting to minimize the effects of enemy nuclear weapons. U.S. Army formations, it was believed, would be required to mass quickly, strike, then disperse again to operate effectively and survive on the nuclear battlefield. New organizations and strategy emphasized three concepts: dispersion, flexibility, and mobility. American forces would disperse laterally and in depth, essentially scattered on the nonlinear battlefield. Units would avoid massing and thus refrain from presenting themselves as a strike-worthy target. Severe damage to one part of the division—even the command center—ostensibly would not prevent it from continuing the fight. Flexibility implied a more responsive command-and-control element, while mobility stressed the ability of forces to move rapidly and mass quickly from far-flung locations on the battlefield, thus requiring increased mechanization of the force.[6]

Five battle groups formed the fighting core of the Pentomic division, replacing regimental combat teams as the primary maneuver commands. The battle group was sized (at 1,427 total personnel, prior to 1959) to be large enough to fight independently, but small enough to be expendable. Subordinate units were similarly sized and organized to address the same dispersion and survival arguments. Each battle group was commanded by a colonel and had four (five after 1959) combat maneuver companies; each company in turn possessed five platoons. The battle group bolstered its firepower and sustainability through some organic support: it had a heavy mortar battery (4.2-inch), while its headquarters company had extensive reconnaissance, signal intelligence, maintenance, and medical assets.

The battle group's battlefield independence was, however, quite limited. It was clear that it still had to depend on the division for much of its combat and combat service support. Most indirect-fire

[6]Bacevich, pp. 66–68; and Hawkins, p. 23.

support—in the form of Honest John (nuclear) rockets, and 105-mm, 155-mm, and 8-inch howitzers—came from division artillery, while armor support came from the division's five tank companies. On the other hand, division artillery 105-mm howitzer batteries were so frequently attached to each battle group that they could be considered near-organic. Division engineer and tank companies were also similarly assigned. Division trains possessed all armored personnel carriers (tracked) and large wheeled vehicles, and the fact that there was only enough of them to move one battle group at a time severely hampered the division's mobility.

Figure 4.1 shows the Pentomic division's organization. Only the Army's infantry and airborne divisions were reorganized to the Pentomic design; troop strength in each fell to about 13,500 and 11,500, respectively. Armored divisions retained the World War II–type combat command structure, with the exception that an Honest John rocket battery was added to each for nuclear capability.[7]

The Pentomic era was a strategically muddled and dark period in Army history. The Pentomic division was conceived, developed, and presented as proof that the Army was adapting to the nuclear age

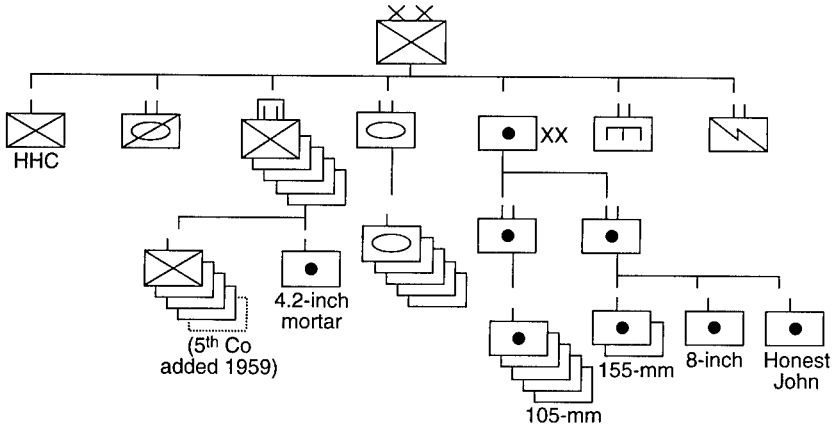

Figure 4.1—Pentomic Infantry Division, 1958

[7]Hawkins, pp. 26–32.

with dramatic, modern results. In its attempt to market itself to regain relevance in the nation's security planning, the Army dangerously lost its focus, leading to rushed force designs and incomplete testing and wargaming throughout the Pentomic division's development. Although it was admittedly planned and adopted to be merely a transitional design—filling the gap until technology or an improved design would arise—the Pentomic division encountered more problems than most decisionmakers expected.

From the start, Army leaders utterly failed to comprehend the damage that tactical nuclear weapons would do to the battlefield and battlefield operations, leaving the Pentomic organization unable to fulfill wishful predictions of Army performance on the nuclear battlefield. Severe equipment and technical shortcomings also ensured that the Pentomic division was simply not prepared to succeed in conventional warfare, either. The battalion-size battle groups did not possess sustainable combat power, while shortcomings in mobility and logistical assets also left the division ineffective. The division did not possess enough vehicles to fulfill the Pentomic doctrinal concepts of timely massing and dispersion of forces. In addition, the lack of intermediate command echelons and inadequate communications technology created significant command and control problems for commanders at all echelons. In the end, Pentomic division organization was unwieldy and unmanageable and proved to be less than robust vis-à-vis task organizing to suit specific missions.[8]

The dual atomic-conventional role imposed on the Pentomic division designers was impossible to fill. At the most fundamental level, there was an inherent contradiction in the objectives and doctrine of an "atomic battlefield" force and a conventional force. The preferred atomic force would consist of small, highly mobile reconnaissance elements designed to find suitable targets and force the enemy into kill zones, while conventional forces would be designed with elements capable of seizing and holding ground. The resultant Pen-

[8]*Staff Officers Field Manual: Organization, Technical, and Logistical Data,* U.S. Army Field Manual 101-10 (Washington, D.C.: Department of the Army, 1959), pp. 32–35; Bacevich, pp. 133–135.

tomic force—intended to satisfy the requirements of both missions—could not do either.[9]

[9]Midgely, pp. 72–79.

Chapter Five

THE ROAD DIVISION

The desire to regain a true conventional warfighting capability spurred the reorganization of Army divisions once again. In 1961, John F. Kennedy's presidency brought with it the strategy of "flexible response," a new policy crafted to reflect an evolved perception of the world's security environment and assert how the United States would respond to disruptions in international security. Policymakers felt that the chances of general nuclear war breaking out were slim, while smaller brushfire and regional wars were much more likely. In capitalizing on this opportunity to become relevant once again, the Army proceeded to make its divisions much more flexible to reflect the range of potential missions it might be called upon to undertake. The ROAD (Reorganization Objectives, Army Divisions) division resulted from a study that "proposed standardized organization to facilitate training, and tactical and strategic tailoring, yet [would] be flexible enough to integrate new weapons and equipment as they became available."[1]

Essentially, the ROAD division was a return to the triangular structure of World War II and the Korean War and was greatly influenced by the qualities of the armored division combat commands. The significant difference here was that the ROAD divisional structure emphasized the concept of interchanging battalion-size combat maneuver units within and between divisions in the interest of easy task organization. Combat maneuver battalions were nearly identical organizationally while also being tactically and administratively

[1]Hawkins, p. 42.

self-sufficient. This interchangeability also applied to personnel needs, as "similar assignments in all types of divisions needed to be standardized for efficient training and assignment of personnel." Finally, the ROAD division solved the problem of the professional development of majors and lieutenant colonels by returning the battalion to the command hierarchy.[2]

Each ROAD division consisted of three brigades and assigned support units. These brigades did not possess subordinate battalions as in the past but were really highly flexible headquarters that would coordinate the actions of maneuver battalions and other support units of the division that were attached in accordance with a particular mission. It was intended that the brigade act solely as a tactical headquarters, controlling two to five maneuver battalions. The battalions would seek administrative support directly from the division and became the lowest level of tactical and administrative self-sufficiency. Other changes included the creation of a division support command, which put all technical and supply elements under one commander, and a significant increase in aviation assets.[3]

The different types of ROAD division possessed various combat maneuver battalion mixes (see Figure 5.1), with each type having about 15,000 men. The infantry division had eight infantry and two tank battalions; the armored division had six tank and five mechanized infantry battalions; the mechanized division had seven mechanized and three tank battalions; and the airborne division had nine airborne infantry battalions and one airborne gun battalion. In addition to these units, each ROAD division had a base consisting of four artillery battalions (three with 105-mm howitzers and one composite battalion of 155-mm and 8-inch howitzers; early ROAD designs also had a missile battalion armed with Honest John and Little John rockets), an armored cavalry squadron, a signal battalion, an engineer battalion, an aviation battalion, an MP company, and a division support command (DISCOM).[4]

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[2]Ibid., pp. 42–45, 48.

[3]Ibid., pp. 46–47.

[4]Virgil Ney, *Evolution of the U.S. Army Division 1939–1968* (Fort Belvoir, VA: Technical Operations, Inc., January 1969), pp. 76–88.

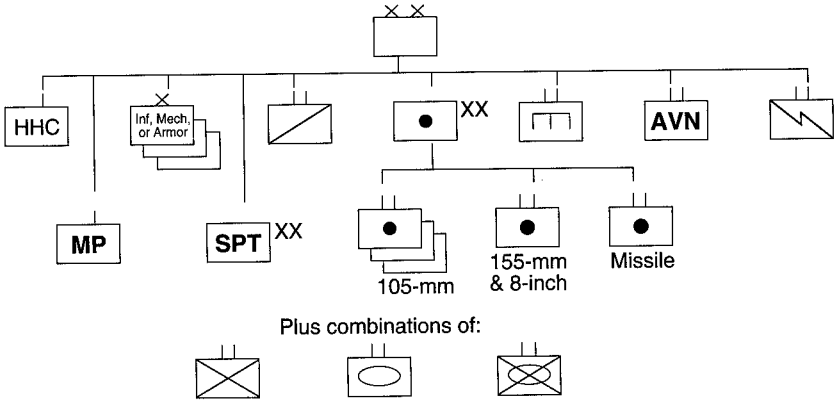

Figure 5.1—ROAD Division Base, 1961

The Airmobile Division (1965) and Vietnam

The ROAD division was to be the fighting organization that the Army employed in Vietnam, albeit in various forms, among which the airmobile variant would become the most notorious. After nearly two years of testing with the 11th Air Assault Division (Test), the airmobile concept was approved in late 1964 by Secretary of Defense Robert McNamara. McNamara had originally urged the study in 1962 intending to increase maneuverability by inserting more aircraft into Army formations. He instructed Army leaders to "examine their aviation requirements with a more audacious look at land warfare mobility."[5] McNamara was also aware of the pitfalls of the traditional service culture, so he wished to ensure that the Howze Board study from which the concept came was "divorced from traditional viewpoints and past policies, and free from veto or dilution by conservative staff review."[6] The airmobile division would give the Army the added dimension of vertical envelopment, intensifying the element of surprise and enabling much quicker reactions to enemy

[5]Hawkins, p. 49.

[6]Ibid.

movements. Organizationally, the airmobile division was essentially a ROAD division that differed in tactics and equipment: it had more than 450 aircraft and only 1,100 tracked and wheeled vehicles, while a typical ROAD division had about 100 aircraft and 3,400 vehicles.[7]

In 1965, the Army first adopted this modified ROAD organizational structure for the new 1st Cavalry Division (Airmobile), taking better advantage of transport and attack helicopters. It seemed to be better-suited to the lower-intensity warfare of the thickly forested, mountainous terrain of Vietnam, which lacked an extensive road system. The airmobile concept would eventually influence much of the rest of the Army throughout the war and into the present day in the form of the 101st Airborne Division (Air Assault) and every other division's aviation brigade. At the time, it was believed that fighting the Viet Cong and North Vietnamese Army required a quick, mobile, and powerful force that shocked the enemy with tremendous speed and firepower, from which they would not be able to recover. Putting troops and fire support in rapid, highly mobile vehicles—helicopters—helped the division to achieve heretofore unimaginable levels of maneuverability. The Army was able to kill large numbers of enemy soldiers, but ultimately this was not enough to attain victory and save the government of South Vietnam.

The Army's airmobile division was certainly a boon for mobility—surprising the enemy with tremendous and sudden force—but it was not without its shortcomings.[8] Depending on helicopters for most movement and transport, it was often either too heavy, loud, and cumbersome, or it lacked sufficient firepower and protection. Then as now, helicopters were noisy, vulnerable to small-arms fire, and required enormous logistical support. Additionally, the airmobile division of the time lacked organic armor and medium artillery and thus had to rely on corps artillery, the Air Force, or Navy for heavy fire support. Nevertheless, as mobile and destructive as the new airmobile force proved to be, it still was not flexible enough to defeat a foe that used a variety of warfare styles. The enemy would sometimes engage U.S. forces in conventional formations but would fre-

[7]Ibid., pp. 49–51.

[8]The Army's other nonairmobile ROAD-based divisions, a majority of those deployed in Vietnam, do not seem to have fared appreciably better or worse.

quently shift to smaller dispersed harassing groups that could escape destruction. U.S. units were then often sized to better hunt for the elusive enemy. Indeed, records indicate that U.S. units engaged the enemy in company-size elements or smaller a large majority of the time, leading one to speculate whether the division was an appropriate fundamental organizational design for combat in Vietnam.[9] Certainly, questions about Army strategy and doctrine and the larger national strategy, as well as the legitimacy of the South Vietnamese government, are at least as important as organizational design when evaluating Army performance in Vietnam.

Vietnam-era Army divisions were essentially a product of World War II combat requirements and experience, appropriate for the attrition of an obvious, heavily armed enemy in open slugfests. These large, heavy forces primarily designed for employment in the forests and farmlands of Europe proved to be ill-suited to the type of fighting found in Vietnam. Perhaps this should have had implications for force design. Although failure in Vietnam should not be blamed on division organization and design, a structure that could better support smaller group tactics—capable of defending the South Vietnamese population and territory—might have been more effective in the end. A division-based force designed for mid-intensity conflict against a conventional army might not have been appropriate for the often low-intensity, jungle-terrain insurgency warfare found in Vietnam.[10]

The Triple Capability Division: TRICAP

In the early 1970s, the 1st Cavalry Division was briefly reorganized into an experimental division that combined substantial armor, mechanized infantry, airmobile infantry, and air cavalry assets to evaluate their interaction while simultaneously filling the role of an armored division in the strategic reserve.[11] Possessing triple

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[9]Andrew F. Krepinevich, Jr., *The Army and Vietnam* (Baltimore: The Johns Hopkins University Press, 1986), p. 192.

[10]Weigley, *History of the United States Army*, pp. 545, 560–564. Also see Krepinevich, *The Army and Vietnam*; and Shelby L. Stanton, *Anatomy of a Division: 1st Cav in Vietnam* (Novato, CA: Presidio Press, 1987).

[11]Wilson, *Maneuver and Firepower*, p. 357.

capabilities, it was commonly called TRICAP. When originally stood up in 1971, the TRICAP division possessed a ROAD design variation notable for its armor, airmobile, and air cavalry combat brigade (ACCB) headquarters, which would command three tank, three infantry, one mechanized infantry, and one aviation battalions and an air cavalry squadron. By the end of 1972, an armor brigade headquarters, one tank battalion, and one mechanized infantry battalion were added, while airmobile assets were reduced and subsumed into the ACCB. The ACCB embodied many of the latest innovations that had been tested in Vietnam and Europe and was employed as a combined arms assault unit. Some saw the ACCB primarily as an integrated antiarmor brigade, while others envisioned it as a balanced, versatile organization that could undertake a variety of missions. Nevertheless, the presence of an overwhelming Soviet armored force in Europe pressed the case for a long-range antiarmor capability that could disrupt an enemy advance. Eventually, the ACCB's utility was proved but deemed appropriate at corps echelon. At the same time, with only six ground maneuver battalions, it was felt that TRICAP simply did not possess the ability to gain and hold ground on a European battlefield. Subsequently, in 1974, the 1st Cavalry Division was reorganized as an armored division, and in 1975, its ACCB stood up as a separate formation.[12]

[12]Ibid., pp. 357–359; Hawkins and Carafano, p. 19.

Chapter Six

THE MODERN HEAVY DIVISION

After the Army withdrew from Vietnam, it refocused on the European battlefield and the heavily armored forces of the Warsaw Pact countries. The 1973 War between Israel and its Arab neighbors was a watershed event, demonstrating a new level of battlefield lethality, prodding Army leaders to begin a new modernization effort and reorganize Army fighting units to get the most out of its new mobility and latest arms, particularly antitank and antiaircraft weaponry. At the same time, the ROAD design had been criticized for underutilizing modern weapons and tactics; subsequently, several studies indicated that units should be reorganized to reflect these advances.[1] Such would begin a seemingly perpetual process of studies, reorganizations, and modifications that has never really ended. As such, the era of the modern division is characterized not by revolutionary upheaval but by constant if minor evolutionary changes.

Conducted in the late 1970s, Division 86 proved to be the most extensive and thorough organizational redesign study the Army had ever conducted, resulting in a heavy division structure that took the probable future battlefield (Europe) and enemy into account, as well as the developing AirLand Battle doctrine. Meanwhile, the creation of the Army Training and Doctrine Command (TRADOC) in 1973 provided a new organization that would prove significant to the initiation and advocacy of new force design and experimentation, particularly to Division 86, henceforth giving solid institutional spon-

[1]Hawkins, pp. 52–63.

sorship to these once ad hoc activities. The processes and practices of Army force design have had TRADOC's weight and influence behind them ever since. Major aims of Division 86 were to enhance the Army's capacity for "prolonged heavy fighting despite disrupted or endangered lines of communication," while meeting the demands of increasingly faster-paced modern battlefield operations. These led to the need to fulfill two primary goals: reduce the division's dependence on armies and corps for support and increase the leader-to-led ratio and the number of units. Increasing the division's organic support and the ratio of lower echelon leaders would "increase the number of leaders trained to exercise flexible initiatives."[2]

Thus, the division would have an enhanced ability to fight when cut off from corps. Division 86 was also heavily influenced by the likelihood of fighting Warsaw Pact armies in central Europe; the defense of Europe so consumed the Army that it required all divisions to be structured with this task in mind. Also significant was the need to develop units that would take full advantage of the introduction of new equipment. Additionally, AirLand Battle doctrine was being developed concurrently with Division 86 and the two projects had a mutually influencing effect.[3]

Other concepts also helped shape the new organization. It was felt that putting a maximum amount of firepower forward, while arming, fueling, and maintaining this firepower from forward locations, would be necessary on a fast-paced battlefield. In addition, creating composite brigade support battalions streamlined support. Perhaps most important, Army leaders wished to improve combined arms integration on the battlefield, enhancing overall combat effectiveness.[4]

General Edward Meyer, Army Chief of Staff, approved implementation of this new division in August 1980. After minor modifications of Division 86 proposed under the Army of Excellence study, the Army's

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[2]Hawkins, p. 68.

[3]Ibid.; Weigley, *History of the United States Army*, p. 575.

[4]John L. Romjue, *A History of Army 86, Volume I, Division 86: The Development of the Heavy Division* (Fort Monroe, VA: U.S. Army Training and Doctrine Command, March 1977), p. 23.

active heavy divisions were reorganized to the new design during 1983 and 1984. Superficially, the new division was only slightly different from the ROAD design. The armored division version had six armor battalions and four mechanized battalions (20,250 personnel); the mechanized division had five armor and five mechanized battalions with (19,966 personnel). One battalion was later dropped from each division in the interest of reducing personnel end-strength. Aside from having various combat support and combat service support units, each division had a core of a division headquarters and headquarters company (HHC), three brigade headquarters, combat maneuver elements, a DISCOM, a reconnaissance squadron, and division artillery.

Although the new division organization did not vary greatly from its ROAD predecessor in fundamental terms, it differed in magnitude. For the first time, a fourth brigade-size maneuver headquarters united all division aviation. Firepower was greatly increased by adding a tank company to each tank battalion, for a total of four, while also adding one tank to each platoon. Additionally, greater counter-battery capability was achieved by bulking up division artillery to three 155-mm battalions, each having three batteries of eight guns each, and one battalion of 16 8-inch howitzers and nine Multiple-Launch Rocket Systems (MLRS). Command and control was also greatly improved, while critical battlefield support functions were placed into three direct support battalions.[5]

Despite the priority placed on increased independence, the division still relied on the corps for much of its support. Reinforcing field artillery remained at corps level; 8-inch howitzers were transferred from division to corps in 1986.[6] Engineers continued to provide direct combat support and bridging. Corps support to DISCOMs included evacuation of equipment and casualties, and direct support maintenance.[7]

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[5]Hawkins, pp. 65–66.

[6]Wilson, *Maneuver and Firepower*, p. 401.

[7]Hawkins, p. 67.

Chapter Seven

THE LIGHT INFANTRY DIVISION

Responding to the demand for powerful, highly mobile, and rapidly deployable units, the Army turned its attention to the light division concept. The Iranian hostage crisis and the Soviet invasion of Afghanistan reinforced the belief that the United States needed a quick-reaction force to counter mid-intensity threats. In the late 1970s and early 1980s, plans were made to create a suitable light force that could fight in austere low-intensity environments yet still be effective in more intensive operations in Europe. One project aimed to convert the 9th Infantry Division into a motorized, yet highly deployable force. This division, an experimental test-bed for new equipment, never became quite as readily mobilized as desired, and later budget constraints and a lack of focus forced its abandonment.[1]

Still, the Army felt that it had to broaden its mission capability and compete with the Marine Corps for contingency operations funding.[2] In 1983, it was argued that Army leaders "have a concept that will capture support and resources from OSD."[3] Under the leadership of Army Chief of Staff General John A. Wickham, Jr., the Army of Excellence study sought to rework the LID concept in a hasty design effort. The operational concept and need were developed concurrently with the force design. Principal design objectives focused on deployability and the ability to fight in low- to mid-intensity con-

[1]Ibid., pp. 71–81.

[2]Ibid., pp. 71–85.

[3]Ibid.

flicts, with the essential codicil that the LID have an antitank capability that would be useful in Europe. Wickham mandated that the LID design limit the division's total strength to about 10,000 soldiers—half of them dedicated infantrymen—in nine maneuver battalions, with the whole division deployable in 400–500 C-141 sorties.[4] As with past division reorganizations, manpower and other resource constraints were prime force design determinants.

In late 1983, the light division was approved at a strength of 10,220 men (which later grew to more than 11,000 men, requiring about 550 C-141 sorties). This division was explicitly designed for combat against light enemy forces with only enough support "to permit the division to operate in a low intensity setting for 48 hours without external support."[5] Warfare that was anything more than strictly light in intensity would require substantial corps support, as would be the case for deployment to Europe, a secondary but essential mission.

The force reflected this very limited role and the demands of deployability. It had three brigade headquarters, nine infantry battalions, division artillery with three 105-mm howitzer battalions, a combat aviation brigade with a reconnaissance squadron, attack helicopter and two combat aviation companies, a division support command, an MP company, an engineer battalion, an air defense battalion, and a signal battalion. Eliminated from the typical division structure were the adjutant general company, all organic vehicles and mortars in the line companies, general support artillery, and much organic capability in such areas as antiarmor, air defense, and nuclear, biological, and chemical (NBC) warfare. Mess and maintenance were consolidated at brigade level. MP and engineer missions were significantly reduced.[6]

To compensate for a lack of heavy firepower and substantial support, the LID would depend on increased "soldier power"; individual and team training would be intensified to create a light infantry fighter

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[4]Ibid., pp. 84, 85, and 89; Timothy B. Hassell, *Army of Excellence Final Report, Volume II: The Light Infantry Division* (Fort Leavenworth , KS: Design Directorate, Combined Arms Combat Development Activity, 1984), pp. 1-5, 1-6.

[5]Ibid., p. 86.

[6]Ibid., pp. 86, 87.

who used superior soldier skills, ingenuity, and toughness to overcome well-armed foes.[7] Thus, the LID would depend on the soldier for success, not the traditional U.S. Army hallmarks: mobility and firepower. Eventually, one reserve and four active Army divisions assumed the LID concept design in 1985 and 1986.

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[7]John A. Wickham, Jr., United States Army Chief of Staff, *White Paper, 1984: Light Infantry Divisions*, April 16, 1984.

Chapter Eight

DIVISION XXI

Division XXI, the design to which all heavy Army divisions are expected to convert, came out of an effort to capitalize on the potential of the information technology revolution to generate greater combat effectiveness. Improving the connectivity among maneuver, intelligence, command and control, and support units—digitizing the force—yields a great improvement in battlefield awareness, thus making all units in the division much more efficient and effective in their operations. All elements can see and therefore know and do much more. The Division XXI reorganization is structurally modest, with an overall reduction in personnel by about 10 percent, yet it still cuts the number of maneuver battalions by nearly 25 percent. At the same time, however, some of the firepower and support shed has simply been shifted to echelons above division (EAD), primarily the corps.

Division XXI reflects neither a fundamental change in organization nor an alteration in organizational relationships. Nevertheless, the inclusion of reserve component billets in the design of some units and a shift in logistics philosophy to a just-in-time system are important modifications. The application of advanced information technology has improved the inner workings of the existing structure, while the structure itself has remained essentially the same. Nevertheless, the benefits of information technology have permitted a reduction in the size of the division's fighting forces and logistical support elements while increasing the share or size of the battlefield that each division can cover effectively.

Among the design changes that were made, the sizing of maneuver companies is probably the most significant: tank and mechanized infantry battalions have been reduced from four maneuver companies and 58 combat platforms (Abrams tanks or Bradley Fighting Vehicles) each, to three and 45. Improvements in battlefield knowledge help make each company much more effective, permitting this reduction. Other changes include eliminating the division engineer brigade headquarters and placing the engineer battalions under each maneuver brigade headquarters, adding a brigade reconnaissance troop to each brigade headquarters, redesigning the MLRS battalion to have three companies of six launchers each, shifting most chemical assets to corps, and streamlining logistics assets and functions.

Chapter Nine

CONCLUSION

The division endured throughout the twentieth century as the Army's principal independent fighting organization because it was able to meet the nation's strategic requirements and address battlefield needs under the Army's resource constraints. The division's flexibility and adaptability have given it staying power throughout the twentieth century. The implications of national military strategy, national resources, and force structure have foremost determined the capabilities required of divisions and their end-strengths. Operational flexibility, firepower, agility (timeliness, mobility, and deployability), sustainability, and economy (manpower, money, and other resources) have been the primary objectives of division design, and balancing the needs of mobility, firepower, and survivability have determined the "shape" of divisions, be they square, triangular, or pentangular.

As technological advances in firepower, transportation, and communications have been introduced into Army divisions, the lethality, mobility, and responsiveness of divisions have increased tremendously, with the capability to occupy and cover increasingly expansive ground area. Furthermore, over time, combat power and operational responsibility have devolved to lower and lower echelons. While combined arms operations were generally available only at the division echelon during World War I, the proliferation of tanks, radios, motorization, and airpower brought combined operations to the brigade, regimental, and even battalion level by World War II. At the very least, this would mean that today's division is capable of a multitude of simultaneous, diverse missions compared to the simple, sustained mass infantry pushes of the World War I square division.

While the division of the twentieth century was first formed not necessarily to improve combat effectiveness but to enhance mobilization, its continued existence is explained by the fact that it is an extremely flexible and robust organizational concept that provides the Army with the basis for organizing and supporting combat forces capable of destroying powerful enemies on the contemporary battlefield. The division has endured because it has been able to adapt to overcome the spectra of likely enemies and battlefield conditions while successfully absorbing new equipment, weaponry, and evolving tactics and leadership dynamics.

Today, many criticize the division for being too large, heavy, and cumbersome to respond quickly to the nation's most pressing needs, particularly when the United States no longer faces a large, heavily armored enemy. Some experts have responded by arguing that the Army should possess smaller, more deployable forces that could carry out the entire range of likely missions. In questioning whether the division is a truly necessary organization or asserting that it is a hindrance to the achievement of greater combat effectiveness, they point to current information and transportation technologies that could help the Army assemble these smaller maneuver units. The division may be flexible and adaptable, they say, but it might no longer be an optimal organizational design. These arguments are strong and merit investigation. Of course, elimination of the division would have great implications for all Army activities. At the very least, the elimination of the division echelon from the Army combat hierarchy would necessitate the development of new organizations and training requirements, a reallocation of combat support responsibilities, and possibly a major restationing of units.

Elimination of the division may well be worth considering, but because of the division's profound institutional ramifications, it should be pursued only if careful study, experimentation, and debate indicate that such a decision is in the nation's best interests. The history of Army organizational design experimentation suggests that thorough study and testing should not only validate good organizational designs and doctrine but also yield beneficial knowledge from tests that are otherwise failures.

Determining the fate of the division and alternative force designs will be a difficult task, should it come to pass. Apart from the truly rele-

vant issues involved in force design, Army decisionmakers will have to face a barrage of biases, misinformation, political interests, and just plain uncertainty when deciding if, when, and how to go about selecting optimal combat formations. Rather than being strictly wedded to what is admittedly a very robust and effective organizational design, Army leaders should examine from the ground up what it is they need from their forces on the likely future battlefield. What will the nation expect of the Army and how can the Army best meet the nation's needs? Are smaller units indeed the right answer in all circumstances? Would a mixed force structure composed of divisions and brigade-size forces be appropriate? In the end, experimentation might or might not reveal that smaller, more deployable forces will be more appropriate to the missions for which the nation may call on the Army to undertake. Regardless, any exploration of optimal force designs must consider the most relevant factors in creating effective modern combat power in the context of the nation's interests and the global security environment.

In addition to exploring whether the division should now be abolished, it is instructive to ask why it has not been before now. From the standpoint of combat effectiveness, the combat commands of World War II certainly seemed to provide an opportunity to eliminate divisions, considering their flexibility and power. Independent brigades and regiments and the subcommands of the ROAD and more modern divisions have been quite powerful, too, and capable of independent, albeit limited, action. When facing large and powerful enemies, the division has provided invaluable and irreplaceable mechanisms for observing and evaluating the battlefield that corps cannot provide to smaller units, while also allocating the proper forces and assets and commanding them to defeat the enemy and negotiate obstacles. Certainly the corps' span of control is a problem that the division solves. Indeed, there may be other "irreplaceable" mechanisms that the division provides. Ultimately, divisions and other fighting organizations must be evaluated considering their effectiveness under expected battlefield conditions; those that make best use of national resources can then be identified.

Appendix A

PERSONNEL STRENGTHS OF SELECTED U.S. ARMY DIVISIONS

Date	Type	Personnel	Comments
1918	Infantry	28,334	Square; nearly 40,000 with all support
June 1941	Infantry	15,245	Triangular
March 1942	Armor	14,620	390 tanks, 54 howitzers
September 1943	Armor	10,937	263 tanks, 54 howitzers
December 1945	Infantry	19,425	Occupation
1947	Armor	14,975	361 tanks, 72 howitzers
1950	Infantry	17,752	Korean War
1958	Infantry	13,748	Pentomic; 125 tanks, 66 howitzers
1961	Mech Inf	15,976	ROAD; 7 mech inf, 3 tank battalions
1961	Armor	15,966	ROAD; 6 tank, 5 mech inf battalions
1961	Airborne	12,972	ROAD; 9 inf battalions, 3 brigade headquarters
1965	Airmobile	15,787	ROAD; 434 aircraft, 54 howitzers
1984	Light Inf	10,740	Army of Excellence (AOE) LID
1984	Armor	16,295	AOE; 6 tank, 4 mech inf battalions
1984	Mech Inf	16,597	AOE; 5 tank, 5 mech inf battalions
1987	Armor	20,459	AOE; 6 tank, 4 mech inf battalions
1999	Mech Inf	17,425	AOE; 5 mech inf, 4 tank battalions
2000	Force XXI	15,719	Includes 417 Guard and Reserve troops

SOURCES: U.S. Army Public Affairs Office; Major Glen R. Hawkins, *United States Army Force Structure and Force Design Initiatives, 1939–1989*, Advance Copy, U.S. Army Center of Military History, Washington, D.C., 1989; Virgil Ney, *Evolution of the U.S. Army Division* (Fort Belvoir, VA: U.S. Army Combat Developments Command, January 1969); and U.S. Army Field Manual 101-10, *Staff Officers' Field Manual: Organization, Technical, and Logistical Data* (Washington, D.C.: Department of the Army, 12 February 1959).

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