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SHAPING THE AMERICAN ARMY OF WORLD WAR II: MOBILITY VERSUS POWER

by

RUSSELL F. WEIGLEY

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Their kettle-shaped helmets lent a medieval aspect to the horse soldiers clattering out of the twilight. The year was 1940, the occasion a preparedness parade, the helmets actually those of the 1917-18 style. Yet to a small boy catching his first glimpse of America's Army as it readied itself for the new war, the pennant-like guidons drooping in the chill, damp evening as well as the metallic headgear seemed to represent old wars rather than new, a military past yet more remote than the Mexican border skirmishes for which the troopers in fact were outfitted.

Early in the year of the German Blitzkrieg, the American Army was antique enough. There were only two Regular divisions in the continental United States amounting to more than the barest of skeletons, and one of these was traditional cavalry, the 1st Cavalry Division. Both this division and the other that was reasonably ready for combat, the 2d Infantry, were under VIII Corps headquarters at Fort Sam Houston, Texas to guard against trouble spilling across the Rio Grande from restless post-revolutionary Mexico. The 2d Infantry was mostly in garrison at the corps headquarters, while the 1st Cavalry was stretched out along the frontier.

There was a mystique of the horse in the American Army in those days. An artil-

leryman who distinguished himself later while commanding armor units remembered fondly: "There was nothing more delightful than to move out at the head of my battalion of 75s in the cool of a frosty morning, guns and caissons rolling, horses snorting, and trace-chains rattling as we trotted along the sandy roads."¹

In August 1940, two months after the completion of the German Army's mechanized conquest of France, the final phase of the American Army's large-scale maneuvers in Louisiana between the IV and VIII Corps opened by pitting horse cavalry against horse cavalry—the latter's 1st Cavalry Division opposed to the 23d Cavalry Division. The 23d's National Guardsmen—from Wisconsin, Illinois, Michigan, Louisiana, Georgia, and Tennessee—unfortunately had to rent horses for the occasion. The animals they could find turned out to be unsuited for military rigors and had to be removed by truck to rest areas at the end of the second day. But American war was still a war of cavalry horses, artillery horses, and infantry pack mules.

The horses were no mere embodiment of a conservatism suspicious of new military technology. Nor was the American Army's fondness for the horse at all as resonant with a social significance involving the class status of the officer corps as were equine passions in

the British Army. Rather, in the American Army the importance of the cavalry was yet more fundamental, the quintessence of all that the Army was or ever had been. Historically, the American Army was not an army in the European fashion. It was a border constabulary for policing unruly Indians and Mexicans. The US Army of 1940 had not yet completed the transition that would have made it an appropriate instrument of its country's claims to world power.

MOBILITY AND POWER

The American Army's capacity to transform itself during the next few years was as impressive an achievement as any in military history. The achievement was possible in large part because the immense material resources of the United States were available to support it. It was possible also because the 12,000 to 13,000 officers of the old Army had succeeded in preparing themselves mentally for the transition more than the observer of mounted parades and maneuvers—and polo matches—might have suspected. The officers did so thanks largely to an excellent military school system modeled on European examples and long embedded somewhat incongruously within the frontier constabulary. But the limitations of the Indian-fighting past could not be entirely transcended so soon.

The American officer corps had been able to prepare itself mentally for the transition also because, along with the legacies of the Western frontier, the Army had inherited the traditions and institutional memory of one great European-style war of its own: the American Civil War. The Civil War had molded the American Army's conceptions of the nature of full-scale war in ways that would profoundly affect its conduct of World War II.

Yet the American Army's two principal inheritances from its past were mutually conflicting legacies, which would put the Army at cross-purposes with itself as it began in 1940 to prepare for European war. The memory of the Western border wars sug-

gested that the primary military virtue is mobility: the history of the frontier was that of the horse soldier in blue or khaki forever challenged by the quicksilver elusiveness of Mexican irregulars or the Indian light cavalry of the Plains. At odds with this vestige from the past, the memory of the Civil War suggested that the primary military value is sheer power: General U. S. Grant's great blue army corps smothering the gray legions of Robert E. Lee under the weight of their weapons and numbers. To reconcile mobility and power, to arrive at the appropriate military compound of the two, proved the central problem of the transformation of the old American Army of the frontier to the new Army of European war.

THE PROBLEM OF WEAPONS

In 1917-18, during the American Army's single brief adventure in European war before World War II, American officers had betrayed hypersensitive awareness that they were embarked on their first contest in the military major leagues. Not the least of their sources of embarrassment was American dependence on foreign weapons for everything beyond shoulder arms and machine guns.

This awkward dependence provoked a postwar shakeup in the Ordnance Department, the Army's designer and in peacetime

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principal manufacturer of weapons; henceforth, the Department would attempt to ensure that American weapons would adequately serve the combat arms' requirements. One of the changes was a determination that the users of weapons must be able to decide what sorts of weapons Ordnance should provide; previously, the Ordnance Department blandly imposed its own decisions upon the users. This change proved less helpful, however, than might be assumed from the apparent common sense of letting the soldiers who had to face enemy fire decide what they needed to survive and overcome the fire. The Ordnance Department was more closely in touch than the combat arms with European weapon developments. It was consequently aware of and receptive to European tendencies in the late 1930s toward rapid enhancement of firepower through bringing increasingly heavier weapons closer and closer to the front. These European tendencies might have accorded with American strategic predilections about applying overwhelming power, but they conflicted with the attitudes and practices grown habitual in a frontier constabulary charged with patrolling vast distances and needing above all to be mobile.

THE TANKS

In the post-World War I US Army, the tank was an infantry weapon. It was officially proclaimed an infantry weapon, and its use was restricted to the infantry by the basic organizational statute governing the Army—the National Defense Act of 1920. This law had terminated the wartime Tank Corps, which had begun to cultivate the notion that tanks were not mere appendages to the traditional combat arms but rather the foundation of a new mode of war. Rejecting such a heretical view, both the legislation and postwar Army doctrine (which each of the traditional combat arms—infantry, cavalry, coast artillery, and field artillery—prepared for itself) regarded tanks as mere aids to the foot soldier in his efforts to break enemy defenses and occupy ground.

Attaching tanks to the infantry might conceivably have encouraged the development of powerful, heavily armed tanks to increase the firepower of the infantry assault as much as possible. The actual effect ran in the opposite direction. If tanks were to assist the infantry, they must be able to move wherever a rifleman might go. Therefore, they must be light and agile. Establishing the principles to guide tank development in 1922, the Adjutant General's Office declared: "The primary mission of the tank is to facilitate the uninterrupted advance of the riflemen in the attack. Its size, armament, speed, and all the accessories for making it an independent force must be approached with the above mission as the final objective to be obtained in development." Specifically, the Adjutant General translated this dictum into a requirement for two basic tank types, both of them small and of necessity lightly armed: a five-ton tank that could be transported from rear areas to the front in trucks along with the infantry, and a "medium" tank that would not exceed the 15-ton weight limit of average highway bridges or of the Army's medium pontoon bridge. An outside limit of 25 tons was superimposed because any vehicle in excess of that weight would be too heavy for the emergency bridges of the Corps of Engineers.²

American tanks thus became machine-gun carriers designed to move with the infantry, and armored only against enemy machine guns. As late as 1935, this conception of the tank led to calls upon the Ordnance Department to develop a tank limited to three tons. The arbitrary weight limits of 25 tons at most, and preferably 15, governed the design of medium tanks until 1940 and influenced it thereafter. The Ordnance Department warned repeatedly in the late Thirties that American tanks were falling behind their European counterparts in both guns and armor, but the users persisted in demanding lightness and maneuverability.

In 1935, some ordnance officers urged the mounting of a 75mm pack howitzer in a tank turret, but not until 1938 were they permitted to do so in one experimental tank.

By that time, the Germans were experimenting with an 88mm gun in a tank turret; however, the American Chief of Infantry still pronounced the 75mm a useless weapon for a tank. When the rival European armies fought the Battle of France in the spring of 1940 with 75mm guns in the main battle tanks of both sides—the German *Panzerkampfwagen IV* and the French *Char B*—the heaviest gun in an American tank was a 37mm. The War Department's approval to design a tank mounting a 75mm howitzer came not until July 1940. In the spring of 1944, when Anglo-American armies prepared for the invasion of northwest Europe in accordance with the American strategy of direct application of power, Germany's Panther tanks carried long-barrelled, high-muzzle-velocity 75s and her Tigers fired 88s. But the largest gun on an operational American tank was still a short-barrelled, low-muzzle-velocity 75, the standard armament of the then-standard M4 Sherman tank.

TANK KILLERS

Mobility rather than power similarly shaped the search for weapons with which the traditional American combat arms might protect themselves against enemy tanks. Just after the Armistice of 1918, as a result of concern about the deficiencies of American ordnance in the war, the Army Chief of Staff, General Peyton C. March, appointed a board of ordnance and artillery officers to convene in France, study existing American and foreign weapons, and draw up recommendations for the American artillery of the future. Headed by Brigadier General William I. Westervelt of the Ordnance Department, the Westervelt Board (or "Caliber Board") included among its recommendations development of an antitank gun of about 75mm, based on the board's projections of the strengthening of tank armor. If this recommendation had been heeded, it would have been just about right for World War II. But the War Department actually chose a 37mm antitank gun that served the infantry into the 1930s. When reports of thickening tank armor and new antitank guns in Europe

led in 1936 to an effort to modernize the American weapon, the result was merely the adoption during the next year of a new model 37mm gun. By this time the Russians had achieved good results in the battle-testing of a 45mm antitank gun in Spain, and the Germans were adopting antitank guns of from 50mm to 80mm. Nevertheless, in response to questions about the small American gun raised by officers in touch with European progress, the infantry insisted on mobility and lightness and thus on retaining the 37mm gun. In 1938 the War Department explicitly instructed the Ordnance Department to expend no funds in fiscal 1939 or 1940 on antitank guns larger than 37mm.

The European war that began in 1939 swiftly demonstrated the shortsightedness of this decision and the emphasis on mobility alone that underlay it. The 37mm gun could not kill modern tanks, and mobility and lightness were irrelevant if the gun could not do the job it was intended to do. By 1939 and 1940, however, it was late for American gun designers to start catching up. In the spring of 1944, on the eve of the invasion of northwest Europe, the standard American antitank gun had grown to only 57mm, and it remained a weapon that could kill tanks only at short ranges and only by finding their lightly armored flanks, undersides, and treads. By that time, the standard German antitank gun was a mobile 75mm piece, to say nothing of the Germans' famous dual-purpose 88mm antiaircraft gun that had become the terror of British (and American-made) tanks in the Western Desert.

With American tanks undergunned against enemy tanks, and the American Army lacking suitably powerful weapons with which the ground forces in general might take on enemy armor, an attempted solution consistent with the Army's habitual attitudes and practice developed in the form of the so-called tank destroyer. The tank destroyer was a special pet of the most influential single architect of the American ground forces in preparation for the European war, Major General (from June 1941 Lieutenant General) Lesley J. McNair. Chief of Staff of General Headquarters from its activation in 1940, and

then Commander of the Army Ground Forces from March 1942, McNair was a bantam, efficient, decisive—some would say opinionated—artilleryman whose career as a staff officer and instructor and lack of field and combat experience did not temper his assurance that he knew what was good for the troops in combat. McNair's passion was to keep the American Army lean and mobile. Believing that existing tank design was satisfactory because tanks should not fight tanks anyway, he characteristically preferred in a tank killer a bigger gun mounted on a tank chassis, but with the vehicle stripped of heavy armor protection and its turret open to save weight and afford rapid mobility. By 1942, the M10 tank destroyer had become standard—a 3-inch, high-muzzle-velocity, flat-trajectory gun mounted on a Sherman chassis. By 1944, the need for still more gunpower to cope with German tanks brought into service the M18, with a 75mm gun in a shallow open turret on the new M24 light tank chassis, and the M36, an M10 redesigned to accommodate a 90mm gun. The troubles implicit in this effort to unite mobility and gunpower at the expense of a thick skin might have been apparent long before the final report of the First United States Army assessed them in retrospect:

The tank destroyer was created for the primary mission of destroying the hostile armor. Its initial superiority for this mission lay in its superior gun power. With the development of more adequate tank cannon and due to the offensive nature of operations the need for this special-mission type of unit has ceased. During operations tank destroyers were required to assume tank missions for which they were not equipped or trained adequately and to perform secondary missions as roving batteries, direct fire assault gun action, and augmentation of the fire of armored units. The tank destroyer mission as originally conceived has been superseded by the requirements for a killer tank. Tank destroyers should be replaced by a tank which can equal or outgun enemy tanks and which has sufficient armor to protect itself and its crew from normal anti-tank and tank weapons.³

In any event, the tank destroyer was no more able than the newer, more heavily armored tanks to go everywhere the infantry went, and so there remained the need for tank protection that the soldier on the ground could take with him—preferably an antitank weapon the infantryman could carry and fire from his shoulder. By the late 1930s, the Ordnance Department had developed an interest in an antitank grenade designed by a Swiss inventor, Henri Mohaupt. The Mohaupt grenade drew its special effectiveness from the shaped- or hollow-charge principle discovered by American physicist Charles E. Munroe as early as 1880: shaping a high explosive with a hollow cone at the forward end focuses the explosive to yield greater penetration per unit weight. Initially the Mohaupt grenade was fired from a spigot launcher resembling a mortar, which did not permit accurate aiming. Years before (in 1918, in fact), Robert H. Goddard of Clark University, the father of modern rocketry, had offered the Ordnance Department his “recoilless gun” or “rocket gun,” a portable tube rocket launcher. After the Armistice the Army's interest in Goddard's work languished, but it never altogether died, and in 1941 the Ordnance Department returned to the recoilless gun as an instrument for launching the Mohaupt grenade. At the first test firing of the rocket grenade at Aberdeen Proving Ground in May 1942, the firing tube was dubbed the bazooka because it resembled a curious gas-pipe musical instrument of that name favored by a comedian named Bob Burns.

Unfortunately, the next month the Ordnance Department standardized a 2.36-inch model of the rocket and launcher. Introduced into battle in Tunisia, the bazooka was sufficiently troublesome to German tanks that the enemy soon began fitting *Pzkw IVs* with wire-mesh antirocket screens and eventually put solid metal covering skirts over the vulnerable bogey wheels. But the bazooka, like American antitank guns, was too small. It could not penetrate the heavy front armor of the German tanks. It demanded careful aim against soft spots, which was no easy chore for an exposed, nervous infantryman when a

massive German tank came looming up so close upon him that he could hear the pulsating squeak of the bogies. The Germans promptly adopted the bazooka principles, and the resulting 88mm *Panzerfaust* was about twice as powerful. James M. Gavin was a colonel in the 505th Parachute Infantry of the 82d Airborne Division when his troops first used bazookas in Sicily in 1943. Expressing the men's disappointment, he wrote:

As for the 82d Airborne Division, it did not get adequate antitank weapons until it began to capture the first German *Panzerfausts*. By the fall of 1944 we had truckloads of them. We also captured German instructions for their use, made translations, and conducted our own training with them. They were the best hand-carried antitank weapon of the war.⁴

The United States did not initiate a project for a more powerful, 3.5-inch rocket until August 1944.

Some of the weapons with which the American Army entered World War II were excellent. The Western border constabulary had always cultivated expert marksmanship, using superb rifles from the time when rifles first entered general military service. The US Army's Garand .30-caliber M1 semi-automatic rifle was the best standard infantry shoulder arm of World War II. No other rifle of the war matched its combination of accuracy, high rate of fire, and reliability. The standard American medium artillery weapon, the 105mm howitzer, was at least the equal of its German counterpart of the same caliber. The effectiveness of this weapon and every other type of American artillery was multiplied by the best equipment and techniques of any army for fire direction, observation, and coordination. By 1944, the US Army Air Corps had more than caught up with the early lead of the German *Luftwaffe* in quality of airplanes and tactics for direct support of the ground battle, though air-ground teamwork still left something to be desired.

Nevertheless, while American strategy relied not on maneuver or even on concentration, but on overwhelming the enemy with the exertion of superior power, American weapons had been designed first for mobility, and the weapons could not be counted on for power appropriate to the strategy.

THE INFANTRY

When the Civil War and World War I had demanded that the mobile, frontier-constabulary American Army convert itself into a force of overwhelming power, the power came to reside primarily in Grant's and Pershing's infantry divisions. In the years following World War I, American soldiers mainly believed that if the call came to apply a strategy of overwhelming power again, once more they would muster big, strong, resilient infantry divisions. In October 1938 the War Department General Staff restated that "the infantry division continues to be the basic combat element by which battles are won, the necessary enemy field forces destroyed, and captured territory held."⁵

The American infantry division of 1917-18 was big, strong, and resilient to the extent of employing about twice the manpower of other nations' divisions. This was the "square" division of four regiments organized into two brigades, the whole some 22,000 strong. From 1935 to 1941, the threat of a new war led the US Army to conduct the largest sequence of maneuvers in its history. Consistently, the American senior officer who boasted the most extensive command experience in World War I, Major General (from August 1939 Lieutenant General) Hugh A. Drum, commander of the First Army, affirmed that the maneuvers proved the necessity to retain the combat endurance and sustained power of the square division of 1917-18.⁶

Increasingly, Drum's colleagues thought otherwise. From the square division's origins in 1917, many officers had objected that it was too hard to maneuver and supply to be fit for anything except static trench warfare.

General McNair faulted the square division because it obstructed his passion for mobility. In the late 1930s, McNair was commanding general of a division testing a "triangular," three-regiment structure that dispensed with brigade headquarters and was altogether tailored for lightness and mobility. General Pershing had recommended such a triangular division as early as 1920 as more suitable than the square division for the open, mobile warfare likely to return in the future, and the War Department had tentatively endorsed the design in 1935. As chief of staff of General Headquarters from 1940 to 1942 and later as commanding general of Army Ground Forces, McNair would be the main architect translating the concept of the triangular division into reality.

Under tables of organization drawn up in 1940, the Regular Army divisions shifted from square to triangular form by the time of Pearl Harbor. National Guard divisions were converted only after the United States went to war. In contrast to the square division, the triangular division had 15,514 officers and men under tables of organization of 1 June 1941. By 15 July 1943, General McNair had taken the lead in further paring the American infantry division to 14,253.

McNair's special contribution was to improve the mobility and flexibility of the new division through consistent application of "the sound fundamental," as he put it, "that the division or other unit should be provided organically with only those means which it needs practically always. Peak loads, and unusual and infrequent demands obviously should be met from a pool—ordinarily in the army or separate corps."⁷ A combat infantry division should consist solely of combat infantry and the essential supporting arms and the barest necessities of supporting services. There should be no frills; anything beyond basic combat forces that might be required occasionally should be attached only for the occasion, coming when needed from an army or corps pool and then returning to the pool. Nothing unessential should hinder the division's movement. McNair liked his fighting units lean and tough.

The more fully the infantry division adhered to McNair's "sound fundamental" and carried as part of its table-of-organization strength only the men and equipment it would need under practically all conditions, the lighter and more mobile the division became. The more faithfully the whole Army observed the fundamental, putting nothing into a division unless the division "practically always" required it in combat, the more effectively the Army could use its limited manpower and resources. Men and equipment would be wasted if they were placed where they were not constantly used. The military principle of economy of force did not mean getting along with little, it was argued, but making maximum use of available resources, without waste.

Total principal armament of the infantry division designed by McNair was 6518 rifles, 243 automatic rifles, 157 .30-caliber machine guns, 236 .50-caliber machine guns, 90 60mm mortars, 54 81mm mortars, 557 bazookas, 57 57mm antitank guns, 54 105mm howitzers, and 12 155mm howitzers. This was an apparently formidable armament; yet, throughout, mobility rather than power had become the outstanding characteristic of the American infantry division. All elements of the division except the infantry were motorized. With the attachment of only six quartermaster truck companies, the infantry could be motorized as well. Or, as the infantrymen promptly demonstrated in combat, the appropriation of enemy transport and the mounting of infantry on the division's trucks, artillery vehicles, and attached tanks motorized the division still more easily. In pursuit, an American infantry division readily moved on wheels and tracked vehicles. No other army in the world was so mobile.

Whether the 1943 infantry division would prove to be a satisfactory reservoir of power was another matter. In combat power, the triangular division no longer heavily outweighed a German infantry division as the old square division had done, but instead mustered merely comparable strength. When the German Army was on the offensive in 1939-42, however, its infantry divisions

played second fiddle to the *Panzer* divisions in exerting the power to achieve breakthroughs. But American armored divisions were not designed with the power to do what *Panzer* divisions had done. Whether the American infantry divisions, deprived of the decisive instruments of power, could suitably carry the burden of a strategy of head-on assault across the English Channel against German strength was the question raised by their remaining the principal locus of the American Army's power.

In 1943, the Americans had scarcely begun to reenact those painful lessons of World War I in the limitations of infantry's offensive power. These of course were the lessons that had driven the Europeans to search for substitutes, culminating in the *Panzer* division. As far back as 1921, Major George C. Marshall Jr., writing in the *Infantry Journal*, had warned American officers against generalizing about modern warfare from their 1918 experiences against a German Army already stumbling into exhaustion. American infantry had scored offensive accomplishments against a crippled and weary enemy that it could not expect to repeat against a fresh and first-rate foe.⁸ The generalizing proceeded nevertheless, not least in unflinching reliance on the infantry division as "the basic combat element by which battles are won."

The limitations of the battlefield power generated by the standard infantry division accounted for the custom of attaching a tank battalion to almost every infantry division. The attached tank battalions were to prove themselves essential to the forward advance of the infantry against recalcitrant opposition, and often on defense against enemy armor as well. Yet the attachment of a tank battalion to a division also underlined the defects of the design of the Army. If an attached tank battalion was essential to the effectiveness of the infantry division under most combat circumstances, as it proved to be, then by the logic of McNair's system the battalion should have been organic to the division. The number of separate battalions and the number of divisions did not quite match up. Occasionally in the campaign of

France and Germany, an infantry division was to find itself without an available tank battalion, sometimes necessitating the detachment of substitute armor from an armored division, to the detriment of that force, to remedy the deficiency. More important, if the infantry division needed tanks consistently, infantry and tanks should have been able to train together and work together routinely to learn each other's ways. Deficiencies in infantry-tank teamwork were to prove a severe problem in Europe at the outset and a persisting problem even as the campaign wore on. Moreover, because the infantry division required consistent tank support, one tank battalion was scarcely enough. The infantry regiments might rotate and rest their battalions, but the infantry division's single attached tank battalion had to fight on, wearing out men and equipment, as long as the division was in action. Finally, the infantry-tank team especially suffered from the deficiencies of the Sherman tank. Heavy firepower and armored protection comparable to the *Panzers'* were more valuable than mobility in a tank working with infantry.

Furthermore, mobile as the American infantry division was, its designers omitted an artillery weapon both mobile and powerful enough to work up close with the riflemen. The towed 105mm gun-howitzer was too cumbersome for this role, as any towed gun would have been. With this weapon, divisional artillery too often had to remain well behind the infantry, working with corps and army artillery rather than contributing uniquely and more directly to the division. The need was for a self-propelled gun able to keep pace with infantry movement, at least comparable to the 75mm self-propelled gun that the Germans used both to support the infantry platoon close at hand in the attack and to assist in repelling enemy tanks. By 1944, the German Army no longer had enough of these guns, to the great good fortune of the Allies; but losses of the guns had been high partly because they served so well and were therefore so much in demand on the Eastern Front. In general, relying principally on towed, roadbound guns meant

that the artillery detracted from the mobility that was the primary characteristic of the American Army. This limitation of the artillery, its difficulties in displacing rapidly either forward or toward the rear, would become conspicuous, especially when the American Army had to go into retreat.

Nevertheless, an American officer observed that "We let the arty fight the war as much as possible." For the sustained power that its other components lacked, the American Army had to look to its artillery. From the time American divisions first entered World War II against Germany in 1942, the same Germans who disparaged American infantry consistently praised American artillery. The artillery was the American Army's special strong suit.

For all the deadliness of American guns, there remained enough inconsistencies between the American strategy of overwhelming power, on one hand, and the American Army's actual design emphasizing mobility over power, on the other, that the strategy could have struck deep trouble against an alert, well-disciplined, well-equipped, and battlewise foe. Fortunately for the Americans, the German Army in 1944 as in 1918 would not be the German Army at the peak of its own power. Yet, this foe still had to be respected and feared, and the unresolved conflict within the American Army between the military values of mobility and power was to make his defeat a more difficult task than it need have been. In Normandy in the summer of 1944, and again along the West Wall all through the autumn and well into the winter of 1944-45, the

Germans were able to grasp the allies in costly deadlocks, largely because the American Army lacked in force structure the combat power demanded by the Army's own power-drive strategy. After 25 July 1944, artillery, air power, and above all the German enemy's exhaustion were to rescue the American Army from its internal contradictions—but only after excessively high casualty tolls.

Whether the American Army's historic difficulties in balancing power and mobility have been resolved today is an issue that experience in World War II may well make worth pondering.

NOTES

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2. Constance McLaughlin Green, Harry C. Thomson, and Peter C. Roots, *The Ordnance Department: Planning Munitions for War*, part of the official history series *US Army in World War II*, Vol. 6: *The Technical Services* (Washington: Office of the Chief of Military History, 1955), p. 190.
3. *First United States Army, Report of Operations, 23 February-8 May 1945*, 1 (Washington: GPO, 1946), 93.
4. James M. Gavin, *On to Berlin: Battles of an Airborne Commander, 1943-1946* (New York: Viking, 1978), p. 52.
5. Wesley Frank Craven and James Lea Cate, eds., *The Army Air Forces in World War II*, Vol. 6: *Men and Planes* (Chicago: Univ. of Chicago Press, 1948-58), p. 197.
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8. George C. Marshall, "Profiting by War Experiences," *Infantry Journal*, 18 (January 1921), 34-37.
9. Chester B. Hansen Diaries, US Army Military History Institute, Carlisle Barracks, Pa., 25 June 1944, quoting an unnamed captain of the 12th Infantry Regiment.

