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# Field Artillery in Military Operations Other Than War:

An Overview of the US Experience

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## Foreword

The initial conflicts in the Global War on Terrorism, Afghanistan and Iraq, pose significant challenges for the armed forces of the United States and its coalition allies. Among the challenges is the use of field artillery in those campaigns that fall short of conventional warfare. Engaged in a spectrum from full-scale combat to stability and support operations, the military is faced with an ever-changing environment in which to use its combat power. For instance, it is axiomatic that the massive application of firepower necessary to destroy targets in decisive phase III combat operations is not necessary in phase IV stability operations.

However, the phasing of campaigns has become increasingly fluid as operations shift from phase III to IV and back to phase III, or activities in one portion of a country are in phase IV while in another portion phase III operations rage. The challenges of this environment are significant but not new. The US military has faced them before, in places like the American West, the Philippines, Latin America, Vietnam, and others. Dr. Larry Yates' study, *Field Artillery in Military Operations Other Than War: An Overview of the US Experience*, captures the unique contributions of that branch in a variety of operational experiences. In doing so, this work provides the modern officer with a reference to the continuing utility of field artillery in any future conflict.

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# **Field Artillery in Military Operations Other Than War: An Overview of the US Experience**

## **Introduction**

One of the principal developments in European military technology during the 13th and 14th centuries was the advent of artillery tubes that used gunpowder to launch their projectiles at enemy targets. Initially, these artillery pieces were extremely large, heavy, cumbersome, inaccurate, and unreliable. Over the ensuing centuries, however, continuous technological breakthroughs resulted in smaller, lighter, more accurate field guns that could, using many refined techniques, fire a variety of munitions over longer ranges. As the guns became more versatile and mobile, their utility expanded: besides their initial use as siege and garrison weapons, they quickly became fixtures on the conventional battlefield as well. Over the course of several centuries, commanders and other military specialists made adjustments in artillery techniques and placement that, given improvements in accuracy, weight, mobility, range, vulnerability, and target acquisition, employed the pieces in ways that would wreak as much havoc while enjoying as much protection as possible. In the process, the use of artillery on the battlefield and in siegecraft became—and remains—a matter of specialized study within the military profession. To the present day, that study has largely dealt with the employment and utility of field artillery in conventional warfare, characterized by force-on-force engagements across clear-cut siege lines or on a linear battlefield, in which artillery functions as one of the combined arms alongside infantry and cavalry/armor, not to mention naval and air power.

Historically speaking, the professional study of the employment of field artillery has devoted little attention to the role artillery weapon systems play in what the US military refers to as Military Operations Other Than War, or MOOTW (pronounced “moo’-twa”). This umbrella term is used within the joint community to cover a variety of activities that fall short of total or limited conventional warfare (or, as these two phenomena were categorized throughout much of the 1980s, high-intensity conflict and mid-intensity conflict, respectively). The paucity of MOOTW artillery studies is easy enough to understand. Artillery was invented as a weapon of war, and the massive destructive power of artillery pieces over the ages has made them most effective when employed against enemy

fortifications and weapons or against massed numbers of enemy troops (and, in too many instances, civilians).

Because of its tremendous firepower, artillery has been called “the most important branch of a field army,” even the “King of Battle.”<sup>1</sup> For the same reason, it is generally assumed to have a limited role within MOOTW, where most activities do not require delivery of such destructive power, either because the situation constrains or does not demand the use of overwhelming force (or, perhaps, any force at all), or because an enemy does not present himself as a target vulnerable to artillery fire. This is not to say, however, that field artillery is irrelevant to MOOTW or, if it is relevant, that it is always relegated to a peripheral role. But it is often the case that when employed in MOOTW, those artillery tactics, techniques, procedures, and doctrine suitable for conventional warfare require modification and adjustment. It is the purpose of this short study to provide a concise overview of those circumstances and adjustments as they have been manifested by US field artillery during its use in MOOTW over the past two centuries.

Before presenting such an overview, it is necessary to offer a brief word about what this study does *not* attempt to accomplish. First of all, it is not a study of *fire support*, but of *artillery* only. Further, within the acceptable range of weapons incorporated under the latter term, the study focuses on field artillery, principally howitzers, but direct-firing guns as well; it is not a study of coastal or air defense weapons, rockets, or mortars, although there may be a passing reference relating the interaction of these weapons with the aforementioned artillery pieces.

There is also a need to say a preliminary word about MOOTW, laying out, to the extent possible, what it is, what it is not. To begin with, MOOTW is a relatively recent term, coined sometime in the 1990s. Among its historical antecedents is the term “small wars,” popular in the early 20th century. Despite the appearance of the word “war” in the term, small wars covered many military activities that would be considered MOOTW today. In the 1960s, the term “stability operations” was in vogue, but by the mid-1970s, it had fallen into disuse, a casualty of the Vietnam War. By the 1980s, the numerous military operations that did not fit the definitions of total or limited conventional warfare had been subsumed under the rubric of low-intensity Conflict (LIC), but that term fell into disfavor within a decade, in part because the word “conflict” was inappropriate to many activities crowded under the LIC umbrella and, in part, because the doctrine overemphasized counterinsurgency at the expense of the other activities. As the LIC label dropped from sight, operations short of war enjoyed a brief endorsement, only to be replaced by MOOTW.

As of this writing, MOOTW and war constitute what the US Army calls “full spectrum operations.” In war, offensive and defensive operations “normally dominate,” occasionally with some “smaller-scale contingencies.” In MOOTW, on the other hand, stability operations and support operations (SASO) “predominate,” perhaps with the inclusion of “certain smaller scale contingencies and peacetime military engagements” as well.<sup>2</sup> Support operations, in general, cover two principal categories: domestic support operations and foreign humanitarian assistance. The range and scope of stability operations are much broader, to encompass:<sup>3</sup>

- Peace Operations
- Foreign Internal Defense (including Counterinsurgency [COIN])
- Security Assistance
- Humanitarian and Civic Assistance
- Support to Insurgencies
- Support to Counterdrug Operations
- Combatting Terrorism
- Noncombatant Evacuation Operations
- Arms Control
- Show of Force

Of the two principal categories of MOOTW, the presence or threat of violence is probably least pronounced in support operations. In domestic support operations, for example, the case for calling in US military forces may be argued more in terms of organizational readiness and manpower availability than in terms of their ability to threaten or dispense violence (although military personnel participating in riot control or even disaster relief may find themselves facing groups intending them deliberate physical harm). Participation in foreign humanitarian assistance operations may run the risk of deadly firefights, as during the US involvement in Somalia in the mid-1990s, but may often entail no violence whatsoever. Stability operations, on the other hand, almost invariably contain the risk of some degree of violence, and it is to the employment of field artillery in this category of MOOTW that this study will devote the bulk of its attention.

Having made this modest generalization about the categories of MOOTW, it is important to note the doctrinal admonition, “It is difficult to generalize about stability operations and support operations. They can be long or short, unilateral or multinational, domestic or foreign, developmental or coercive.” It is also difficult to generalize about the ways in which SASO differs from conventional warfare, although some suggestions as to the differences might be instructive before launching



on the study of artillery in MOOTW. To begin with, in SASO political considerations generally override military concerns—even what is regarded as military necessity—and do so at the strategic, operational, and tactical levels. Because of this, the forces employed may operate under greater restrictions and constraints than in conventional warfare, as witnessed by some of the more restrictive rules of engagement (ROE) applied in certain US stability operations during the Cold War and post-Cold War periods. The “battlefield” in SASO may often lack the linearity of its conventional counterpart and, with a frequency much greater than that found in war, may contain a variety of noncombatants, to include the civilian population, private and governmental organizations, media personnel, and foreign diplomats and workers. The “enemy” on that battlefield might be an armed opponent, or an unarmed individual—say, a town mayor or a local cleric—who simply is interfering with the accomplishment of the mission. As on any battlefield, conditions may change rapidly and dramatically, but in SASO, those changes are likely to alter the mission itself, or at least the nature of the tasks required to accomplish it, thus making some degree of “mission creep” likely, if not inevitable. Finally, but not inclusively, SASO often involves some degree of cross-cultural interaction.

In an effort to make an overview of the employment of US artillery in MOOTW more manageable, this study will not attempt a comprehensive assessment of the American military experience but will look very selectively at events within two chronological periods. The first, while covering the long stretch of time from the American Revolution to the beginning of World War II, will concentrate on the use of artillery primarily in the Indian wars of the mid- to late 19th century, and the expeditionary activities, or “small wars,” of US forces overseas from 1898 to 1934. The second, shorter period will focus on the role of artillery in MOOTW in several cases from 1945 to the end of the 20th century. A brief discussion of artillery’s role in the Global War on Terror will then be followed by a summary of the conclusions drawn from the chronological overviews.

### **US Field Artillery and MOOTW, 1789-1941**

An examination of the history of the United States during the country’s first century and a half as a sovereign nation reveals many examples of what today would be labeled MOOTW. In the category of domestic support operations alone, there are numerous cases in which the Army (to include regulars, militia, National Guard, and volunteers), and occasionally the Marine Corps and Navy, were called out to maintain or restore law and order at home. Two excellent volumes from the US Army

Center of Military History assess these operations in detail, from the measures to suppress the Whiskey Rebellion and other armed uprisings in the early Republic; to dealing with pre-Civil War violence on the frontier; to putting down draft riots during the war itself; and dealing with range wars, labor strikes, race riots, and other forms of unrest between the Civil War and World War II.<sup>4</sup> This is not the place to offer details of each episode. Rather, the point to be made is that federal military forces involved in these operations often included artillerymen. In some cases, artillery units were deployed to serve as infantry; in other cases, artillery pieces were employed as well, generally for psychological effect. Prominently displayed field pieces loaded with canister provided an effective deterrence against mob action. In the New York City draft riots of 1863, for example, one group of police and soldiers with a field piece in tow encountered little difficulty clearing the streets they were assigned to patrol. In this and most domestic support operations, the employment of artillery was limited to its psychological impact. The specter of US forces firing cannons at groups of angry American citizens for the sake of restoring order was not a prospect that any political or military figure of prominence relished.

There were many more stability operations than domestic support operations from 1789 to 1945, and many of the kinds of activities listed today under the former category took place during the first century and a half of this country's existence. To the extent that MOOTW represents nontraditional, unorthodox, and unconventional roles for the military, one could argue that America's major wars during that period, beginning with the War for Independence and moving through the War of 1812, the Mexican War, the Civil War, the Spanish-American War, World War I, and World War II, all contained some aspect of MOOTW, such as guerrilla warfare. But easily the best example of the phenomenon of stability operations during the late 18th and the 19th centuries is the experience of the US military with native Americans.

The doctrinal admonition against generalizing about MOOTW/SASO is readily evidenced in the history of the Indian campaigns of the United States military.<sup>5</sup> Conducted intermittently over the course of a century, these efforts to control Indian tribes, first east of the Mississippi, then west of it, involved activities ranging from police-type actions to combat. The terrain varied according to time and place, to include deserts, swamps, mountains, plains, and timberland; the climate varied as well according to location and season. And so, too, did the adversary. Each native group embraced its own way of life—from hunting and gathering to sedentary

agriculture—and in some way, great or small, stood apart culturally from other native groups. This diversity lent itself to frontier warfare as well, requiring the US military to learn and adjust to the variety of tactics it would confront in fighting different tribal groups.

Regarding Indian warfare, at least one generalization can be made. It did not resemble the European model of conventional, set-piece battles employing massed, organized, and well-trained and disciplined armies armed with weapons reflecting the best industrial technology of the day and maneuvering on large, open battlefields.

The problem on the American frontier was that US officers had been trained and educated in this European-style warfare, and there had been enough such wars involving the United States between 1789 and 1898 to make this paradigm seem valid. In the 19th century, the War of 1812, the Mexican War, and, above all, the Civil War influenced the training, education, and thinking of the American officer corps. After the War of 1812 and until the Civil War, for example, cadets at West Point studied conventional operations of American soldiers at Chippewa and Lundy's Lane (both occurred in 1814), not the more numerous campaigns their countrymen waged against the Indians.<sup>6</sup>

The Civil War, of course, provided a plethora of conventional battles for examination, battles in which artillery, either in the offense or defense, had been used by armies massing their troops shoulder to shoulder to fight each other upon a linear battlefield. Given this mind-set, 19th-century thinking on artillery “emphasized the use of massive firepower to destroy or severely weaken enemy infantry or cavalry formations in preparation for an attack or to attrit the enemy when in the defense.”<sup>7</sup> If, to most US officers, this represented the proper role of artillery on the battlefield, it is not surprising that few saw the utility of the weapon in operations against “primitive” Indian tribes. Compounding this view was the absence of a body of doctrine on how artillery could be employed in unconventional warfare.

In light of this traditional mind-set and the void in doctrine for unconventional warfare, the decision concerning whether to use artillery in Indian campaigns and, when it was used, the strategy and tactics adopted, generally reflected the preferences and prejudices of individual commanders. Some, such as George Armstrong Custer, saw little utility for the weapon when he took the offensive; others, such as Nelson A. Miles, employed it regularly in their operations. Often determining one's choice in the matter were physical factors, particularly the size and weight of artillery tubes, and convenience, especially with respect

to the transportability of the cannon. Could the artillery pieces available keep up with the cavalry columns that often led wartime expeditions? Could the available pieces negotiate the various terrain obstacles they would encounter along the march route? Did the firepower advantage offered by the artillery compensate for the cost in mobility exacted by their inclusion in a column on the move? Under what conditions did that firepower advantage actually make itself felt? In that artillery pieces on the frontier varied in their capabilities, and in that the terrain, as noted, varied tremendously from one part of the country to another, the answers to these questions were often problematic for a commander planning a campaign or operation.

Generally speaking, from the mid- to late 19th century, the standard pieces on the frontier were the 12-pounder smoothbore Napoleon (named not after the great European commander, himself an artilleryman, but after his nephew, Napoleon III), the 3-inch Ordnance rifle, and the 12-pounder Mountain Howitzer. The Napoleon tube weighed 1,230 pounds and fired both canister and spherical case-shot, the latter being the most effective against the Indians. The mass-produced, cast-iron 3-inch Ordnance rifle, while considered a light piece, weighed 830 pounds, which made it, like the Napoleon, cumbersome and difficult to maneuver over rugged terrain and in pursuit of Indian bands. The mountain howitzer, weighing in at 220 pounds, was much lighter than its companion pieces, but despite this advantage, it still presented problems of mobility and was considered by many officers to be unsuitable for their needs on the frontier.

Surplus Civil War artillery and postwar budget trimming militated against the development of new, more technologically advanced field pieces until the 1870s. By that time, the War Department found itself under mounting pressure from officers such as Colonel Miles, a veteran of the Indian campaigns, to develop a lighter, more accurate, and more mobile artillery piece suited to the Indian frontier. After much discussion, the department ordered the Hotchkiss 1.65-inch breech-loading rifled gun that weighed a scant 117 pounds and employed metallic fixed ammunition. Given the gun's range of 4,000 yards, its accuracy, and the mobility accorded it by being able to break down its carriage for horse transport, "it soon became the dominant field piece on the frontier."<sup>8</sup>

During the Indian campaigns, the US Army generally operated out of forts positioned throughout the frontier areas. In the second half of the 19th century, a consensus existed that each fort should have enough troops to conduct field operations and to protect the facility itself. In the best cases, a fort would have four Army units posted to it, consisting of cavalry

for reconnaissance, and infantry and artillery for security.<sup>9</sup> While this standard was never uniformly met, it indicated that there was indeed a role for field artillery on the frontier, at least in a static defense mode. In the course of over a century of Indian warfare, there were numerous occasions on which artillery fire repelled or dispersed an organized attack by hostile bands against an Army fort. Often, the firing of an artillery round or two, or even the mere presence of the guns, had enough of a psychological impact on natives unfamiliar with weaponry beyond small arms to deter an attack or to frighten off the attackers with few or no casualties on either side.

Artillery pieces also served defensive purposes in field operations. Small detachments armed with a field gun could often repel an Indian ambush, as in 1862 at Apache Wells in eastern Arizona, where 700 Apaches surprised 126 California militiamen, who scattered the Indians by opening fire with two mountain howitzers. (Decades earlier, in the Second Seminole War, US forces ambushed in a Florida swamp used a single 6-pounder cannon to hold off the attacking Seminoles; ammunition for the gun ran out, however, and the unit was overrun in the infamous Dade Massacre that started the war.) Artillery could be used to protect smaller woodcutting and foraging parties from ambush as well. In a similar but distinct vein, artillery in the field could protect a defensive position, as in 1862 when Kit Carson's New Mexico volunteers took refuge from pursuing Comanche in an abandoned trading post at Adobe Walls. When the Indians charged the position, artillery fire broke their attack.<sup>10</sup>

When terrain, enemy dispositions, and other considerations allowed, artillery in the course of field operations could perform a number of offensive roles. There was always the possibility, of course, that it would be used for one of its intended purposes: open battle. Such battles rarely occurred against Indian bands whose operations stressed ambushes, raids, and dispersal. Still, on those occasions when Indian warriors did gather in mass—not shoulder to shoulder, to be sure, but in sufficient bulk to offer a lucrative target—artillery fire could be devastating. It could also be effective when used in attacks against Indian encampments or prepared fortifications. An example of the former occurred in 1868 during a winter campaign in the Indian Territory against the Cheyenne. After elements of a column led by Major Andrew Evans beat back a Cheyenne ambush, the troopers followed the Indians to their camp. Rather than charge the encampment immediately, one of Evans' subordinates brought forward two of the unit's four mountain howitzers and opened fire from a distance. When the cavalry moved in, the howitzers continued to fire in support,

detering any Indian counterattack and ultimately compelling the warriors to abandon their lodgings and possessions. The soldiers moved into the vacated area and, protected by the artillery loaded with canister, spent the night destroying the contents of the village “at their leisure.” Thanks in part to the patient use of artillery to prepare and support the move against the encampment, Evans’ column suffered only one casualty during the entire engagement.<sup>11</sup>

On at least one occasion, an artillery piece employed against an encampment by an officer not familiar with the weapon’s capabilities produced results not nearly so desirable as those experienced by Evans. In July 1877, a command of 350 troops under Brigadier General Oliver O. Howard, an infantryman (and former ordnance officer), was pursuing Nez Perce Indians when scouts observed a hostile village along the Clearwater River in Idaho. When this news reached the general, he ordered one of his two howitzers brought forward and placed on a bluff high above the encampment. The gun opened fire, but it did not have the range to reach its target. Thus, the shells “burst high in the air and did no damage beyond frightening the fleeing people.” The explosions also alerted warriors not in the village to the presence of the US force. The result was a two-day battle in which artillery played a significant part, at one point almost being overrun by the Nez Perce. In the end, however, the Indians withdrew, leaving many on both sides to wonder what the outcome might have been had Howard not lost the element of surprise through the inappropriate use of the howitzer.<sup>12</sup>

One of the best recorded examples of the effective use of artillery against a fortified Indian position (not just an unfortified encampment) occurred during the Modoc War of 1872-1873. During the first phase of the conflict, the Modocs established themselves in the rugged lava beds of northwestern California. The terrain, according to one account, was “criss-crossed with lava ridges, pockmarked with sinkholes, and studded with volcanic rock,” offering defenders “concealment and protection from enemy fire.”<sup>13</sup> US troops, including veterans of the Apache wars who tended to dismiss the value of artillery support, made their initial assault on the stronghold on foot, with several artillery units serving as infantry. The cannon scheduled to mount direct fires in support of the attack fell victim to a dense fog that covered the battleground and obstructed the crews’ view. Not surprisingly, the assault was repelled. After a buildup of the force—a buildup that included artillery pieces brought with great difficulty through snow, mud, and other difficult terrain—a renewed effort to reduce the stronghold incorporated artillery fires, both from mountain

howitzers and Coehorn 160-pound mortars (the latter artillery weapon having a higher trajectory than the howitzers). The howitzers employed shells (as opposed to shot or canister) timed to explode in an airburst over the target, while the mortar rounds exploded on impact. Together, the field guns and mortars, by supporting a series of daylight attacks and mounting nighttime bombardments as well, inflicted enough casualties to cause the Modocs to abandon their position. Worth noting is that one soldier participating in the Modoc War observed that, in 23 years of frontier campaigning, it was the first time that he had seen artillery employed.<sup>14</sup>

The use of artillery against the Modoc stronghold produced casualties not just among the warriors but among the women, children, and elders accompanying them. While official Army policy was to spare noncombatants, this was not always the case. Exceptions to policy could be the result of women and children having the misfortune of being mixed in with the warriors during a battle, or it could be the result of US troops deliberately failing to discriminate between combatant and noncombatant. Given the power of artillery, the field guns were especially prone to inflicting what the military today refers to euphemistically as “collateral damage.” The Modoc War provides one example. Just four years later, there was another. In the campaign to round up the Nez Perce, Colonel Miles used a Napoleon gun against the Indian camp in the Bear Paw mountains. To make the flat trajectory gun effective against a well-trenched enemy, the crew dug a hole and placed the carriage’s trail into it, thus elevating the gun’s barrel and using it as a makeshift mortar that could lob shells on top of ravines and rifle pits protecting the Indians. In the process several warriors were killed, but so were an undetermined number of women and children.<sup>15</sup> Over a decade later, in 1890, perhaps the best known case of noncombatants being killed during a fight occurred at Wounded Knee, South Dakota, where an ill-advised attempt to disarm Sioux warriors resulted in hand-to-hand fighting between US troops and the recalcitrant Indians. An artillery bombardment of the camp by four Hotchkiss cannon followed. Two hundred Sioux were killed, including 62 women and children, despite compelling evidence that the Army tried to spare the noncombatants.<sup>16</sup> Historically, the action that day represented the last major battle of the country’s Indian wars.

To recapitulate, the use of artillery on the Indian frontier varied from place to place and commander to commander. While the role of cannon as weapons of static defense was generally taken for granted, their use in field operations depended on terrain, mobility, logistics, weather, the enemy, and the personality of the US commander. Those officers who did

take it into the field on a regular or habitual basis often did so as a matter of prudence, increasing their sense of security through the “firepower insurance” the guns provided. (The matter of “firepower insurance” has led several historians to speculate on what would have happened had Custer exercised similar prudence.) When artillery was employed in the field, as noted, it was often in a way that could be described as “conventional” on a small scale, as when used to good effect against massed Indians or against their fortified positions. Still, despite the frequent (but not continuous) effectiveness of artillery in the Indian campaigns, the conventional wisdom expressed by many military and political leaders continued to hold that the guns were largely irrelevant to frontier warfare. Consequently, no body of “doctrine” evolved for the employment of artillery in something less than all-out conventional warfare on the European model against another country. Similarly, because the United States seemed to be insulated from such warfare, the development of artillery, both technologically and organizationally, received a low priority in US military affairs until the very late 19th century.

There was another argument many officers made against using artillery on the American frontier, one that is often heard with respect to MOOTW in general. Engaging in the Indian campaigns, it was alleged, caused a degradation in the skills of artillerymen. There were only small numbers of cannon in the West at a given time, and these were dispersed throughout an extremely large area. Often, only one to four guns saw use in any single operation, and often they were manned by barely trained infantrymen and cavalymen; conversely, artillerymen too often served as infantry and cavalry, roles that did not enable them to maintain their gunnery skills. The War Department’s attempt after the Civil War to set up a field artillery school at Fort Riley was short-lived and ineffectual, further aggravating fears that artillerymen on the frontier would not be able to perform well if called upon to ply their craft in formal warfare.<sup>17</sup>

Summarizing the role of artillery in the Indian wars of the post-Civil War period, historian Boyd Dastrup stated:

As the Indian campaigns of the 1870s and 1880s indicated, the challenge of moving cumbersome field artillery over rugged country restricted its use. When the Indians were running, field artillery was generally worthless because it could not stay up with fast-moving cavalry or infantry columns. However, when the Indians fought on the Army’s terms or when the Army defended against Indian charges, field artillery demonstrated its value.



Although commanders employed field guns whenever the opportunity presented itself, the difficulties of pulling cannons along when chasing the Indians reinforced the popularly held opinion that only cavalry or infantry could be effectively utilized in Indian warfare. . . . As far as [General William T.] Sherman was concerned, field artillery's only real value was engaging massed troop formations on the conventional battlefield.<sup>18</sup>

Less than a decade after Wounded Knee, the United States found itself at war with Spain in a conflict that reflected the fact of America's rise as an industrial and military power and its willingness in the name of security to assert that power beyond the country's continental borders. Between 1898 and the American entry into World War II in 1941, US military forces deployed overseas in one major conflict, World War I; a limited conventional conflict, the Spanish-American War; and several expeditionary operations to include the pacification of Cuba, 1898-1901 and again in 1906-1909; the Philippine War, 1899-1902; the occupation of Puerto Rico and the Canal Zone in Panama; the Boxer rebellion in China; the pacification of the Moros in the Philippines, 1903-1913; intervention at Vera Cruz, Mexico, in 1914; the Punitive Expedition into Mexico, 1916-1917; the occupation of Haiti, 1915-1934, and the Dominican Republic, 1916-1924; and intervention in Nicaragua, 1927-1933. Each of these expeditionary operations, taken in its entirety, could be categorized today as MOOTW. Furthermore, each was a joint operation—more than one service—with the Army taking the lead in the first decade and a half, roughly 1898 to 1916, and the Marine Corps assuming the primary role thereafter.

When American troops, whether soldiers or marines, deployed for most of these operations, they took their artillery with them. Over the course of four decades, the pieces would change, as breech-loading, long-range guns with recoil mechanisms and, after 1918, motorized transport, replaced what had been the state-of-the-art weapons of the 19th century. Also, as early as the 1890s, the Army looked into the concept of indirect fire, adopted the practice as did many European powers after the Russo-Japanese War of 1905-6, and saw this decision validated in the world war. Doctrine in the form of updated field drill regulations, force structure, command and control, and tactics more or less kept pace with technological breakthroughs, although limited funding and, World War I excepted, the absence of an imminent threat from another world power constrained military spending.<sup>19</sup> Yet, remarkable as these changes were, they were

geared as before to fighting a world-class enemy, armed similarly to the United States, on a linear, conventional battlefield. This was not, however, the enemy that soldiers and marines confronted in Cuba, the Philippines, China, Mexico, or the Caribbean basin.

Indeed, in many respects, the use of artillery in the expeditionary operations between 1898 and 1941 bore little resemblance to how American artillerymen employed it in Europe in 1917-1918 and more to the way it was used in the country's Indian campaigns. As in the American West, there were times when operations took on the form of conventional battles against an organized and massed, but not equally armed foe. Given the US advantage in firepower, artillery in these cases could be used in a direct-fire mode to good effect. In the Philippines, for example, what became a four-year guerrilla war pitting American troops against Filipino resistance in the northern islands began as a conventional battle in which US soldiers with light artillery support—the Army never shipped heavy pieces to the Philippines—charged Filipino trench lines around Manila, dislodged the defenders, and began a year-long pursuit up the island of Luzon in which the Filipinos mounted many rear-guard skirmishes. During this opening conventional phase, US artillery played an essential part in the American victories.<sup>20</sup> Even after the Filipino resistance began relying on guerrilla tactics, the occasional conventional battle unfolded. Such was the case in Batangas province in January 1900, for example, when the guerrilla leader Malvar erected elaborate defenses, including antiquated field guns, around the town of Santo Tomás, only to have the position demolished by US artillery fire and infantry columns, with heavy losses for the defenders.<sup>21</sup>

Nearly two decades later, in the Dominican Republic, US marines were sent ashore to put down an uprising against the national government. At one port city where they disembarked, they encountered heavy but inaccurate fire from rebel forces. The marines sustained several casualties as they overcame the resistance, but they deliberately did not call upon their artillery or the naval guns offshore for fear of inflicting civilian casualties. Once the marines received the mission of occupying the country, they went after the rebel forces, which led to several engagements along conventional lines. The first came at a place called Las Trencheras, where the rebels had entrenched themselves in strong defensive positions. With no fear of receiving counterbattery fire from a force outfitted mainly with small arms, the marine commander brought his own 3-inch guns onto a hill overlooking the trench lines. The ensuing volleys, followed by a marine bayonet charge that was covered by continuing artillery fire,

sent the rebels fleeing to a backup position. There, the sequence of the first attack was repeated, with artillery again playing a key role in the rebel setback. A few days later, the rebels tried to make another stand, this time entrenching themselves in locations marine gunners could not observe for the purpose of direct firing. Thus neutralized, the artillery sat out the subsequent battle, as marines equipped with small arms, including machine guns, managed to disperse the rebels but with considerably more difficulty than when the leathernecks had enjoyed artillery support.<sup>22</sup>

Once the rebel force in the Dominican Republic disbanded and began a guerrilla campaign of harassment, the Marine artillery lost much of its battlefield effectiveness. This was also the case a decade later in Nicaragua, when as part of their mission to stabilize the country, marines had to defeat the recalcitrant forces of Augusto Sandino. The initial battles with the *sandinistas* were conventional affairs, with the marines using aircraft bombardments for fire support. Once Sandino adopted guerrilla tactics, though, the Marines switched their emphasis from heavy firepower to mobility, the best example of which was M Company, a 32-man unit (2 marines; 30 Nicaraguans) armed with six automatic weapons (Thompson submachine guns and Browning Automatic Rifles) and rifles, four of which had grenade launchers.<sup>23</sup> Marine artillery did not appear among the unit's weaponry and did not figure in its tactical and operational successes.

That is not to say, however, that artillery had become irrelevant to the unconventional side of these expeditionary operations. It could still serve as a defensive weapon, and as in the Indian wars, it could be used as protection against ambushes. In one instance in the Dominican Republic, shells from a 3-inch gun mounted on a flatcar in front of a locomotive scattered rebels attempting to waylay the small troop-carrying train.<sup>24</sup> Also, as in the Indian wars, field pieces could be used, when weather permitted and other impediments to direct observation were lacking, to dislodge enemy forces from fortified positions. Thus, US artillery in the Boxer Rebellion effectively blew away the gates to Peking's inner city, opening the way for a successful assault. Similarly, artillery was used to good effect against fortified positions occupied by the Moros during pacification campaigns directed at these people of the southern Philippines.<sup>25</sup>

Again, in another parallel with the frontier experience, some US expeditionary forces incorporated artillery into their operational plans for the purpose of "firepower insurance." When Brigadier General John J. Pershing entered Mexico in March 1916 in pursuit of the Mexican revolutionary and bandit, Francisco "Pancho" Villa, two field artillery batteries consisting of eight 2.95-inch howitzers were among his forces,

just in case Villa had field pieces or the expedition became embroiled with Mexican government troops. As it turned out, Pershing's men fought three major engagements—one against the *villistas*, two against government forces—but artillery did not figure in any of the battles. It did, however, provide base security for Pershing, especially at the main camp of Dublán. The cost of this security was not cheap in terms of mobility and logistics. The artillery pieces did not travel well over the northern Mexican terrain, and the wagons, horses, fodder, and men it took to transport them were not insignificant. According to one account, “it required four mules to carry one gun, disassembled, plus another six mules to carry the ammunition; thus to transport one gun required ten animals, which needed shoeing and forage, plus a dozen men to look after the mules as well as assemble and fire the gun.”<sup>26</sup> Besides the logistics issues, the presence of the artillery created political problems for Washington. Given the history of American-Mexican relations, officials in Mexico City were suspicious of the motives behind another US incursion into their country. The presence of artillery only fueled these concerns: Why, the Mexican government asked, would the American force employ artillery if it only intended to chase after guerrillas?<sup>27</sup>

In the 1920s and 1930s, both the Army and the Marine Corps took a serious look at their “small war” experience. Except for occupation duty in some countries, the Army by that time was pretty much out of the “small wars” business and focused almost entirely on planning for large-scale, conventional conflicts, thus its contribution to the subject was limited. The Marine Corps, in contrast, undertook a more thorough, systematic examination of their expeditionary ventures and, in 1940, published their final version of the *Small Wars Manual*, the closest thing to a comprehensive doctrinal approach to the subject then in existence. On the subject of artillery, the manual suggested that the “role of artillery in small wars is fundamentally the same as in regular warfare. Its primary mission is to support the infantry.” Light artillery, the text went on to say, was best employed “against personnel, accompanying weapons, tanks, and those material targets which its fire is able to destroy.”

On the other hand, medium artillery reinforced “the fire of light artillery, assists in counterbattery, and undertakes missions beyond the range of light artillery,” although except in specific situations, “the necessity for medium artillery will seldom be apparent.” How much artillery to include with a deployed force depended upon the mission, the terrain, the capability and intent of any opponent. “As a general rule,” the manual asserted, “some artillery should accompany every expedition

for possible use against towns and fortified positions, and for defense of towns, bases, and other permanent establishments.” The guidelines also recognized that artillery was best employed against an opponent whose forces were intact, as they often were at the outset of an expedition. “When the opponent’s organization is broken and his forces widely dispersed,” however, “the role of artillery as a supporting arm for the infantry will normally pass to the 81-mm. mortar platoons.”<sup>28</sup>

The *Small Wars Manual* also addressed the place of artillery in the march column, the need for artillerymen to be prepared to serve as guards and infantry, and procedures for parceling out artillery batteries within a battalion to small units. Further, the manual raised the all-important issue of mobility, stating that “artillery must be able to go where the infantry can go.” To this end, the 75-mm gun and the 75-mm pack howitzer were seen as the pieces best suited to this requirement. Of the two, the howitzer was preferred “in small wars situations,” since it could be “employed as pack artillery where a satisfactory road net is lacking in the theater of operations . . .” To carry the pack artillery, mules were needed, generally to be “secured locally.” The mobility afforded by the animal was deemed “rapid, quiet, and dependable,” and “especially suitable for operations in mountains and jungles.”<sup>29</sup>

The *Small Wars Manual* still stands as a comprehensive and insightful discussion of various aspects of what today is termed MOOTW. At the time its final version came off the presses, however, there was a war raging in Europe and the Pacific, and the United States was just one year away from entering the fray. Consequently, the manual went on the shelf, a compendium of wisdom about the kind of military operations neither the Army nor the Marine Corps had undertaken willingly and to which neither really wanted to return. Fortunately, in the view of most career officers, the chances that such operations would be in vogue again in the near future seemed remote. Even after Germany and Japan were defeated in a war fought the way most officers believed wars should be fought—that is, conventionally and without significant constraints on the use of one’s military power—the emerging Cold War focused the US military on the prospect of conventional warfare against the Soviet Union and, after 1949, Communist China in what planners predicted would be a near repeat of World War II in Europe and Asia, albeit with one significant modification, nuclear weapons. Given this mind-set, the *Small Wars Manual* gathered dust. But for those who had put it on the shelf in hopes it would remain there, history would prove most unaccommodating.

## **US Field Artillery and MOOTW: 1945-2000**

The traditional military mind-set reinforced by the conventional nature of most combat in World War II carried easily into the postwar period. Although US servicemen occupying Germany and Japan performed what today would be labeled stability operations and nation-building, military planners looking to the future assumed that the next world war would involve a combination of conventional and atomic combat, perhaps with some special-type unconventional operations taking place behind enemy lines. Artillerymen did not dissent from this view as they undertook a thorough reevaluation of the role field artillery would play in a new global conflict. Beginning in 1945, various conferences, committees, and boards analyzed the weaponry, mobility, fire direction, organization, procedures, and command and control arrangements for artillery.<sup>30</sup> The recommendations that surfaced were far-reaching and, as would be expected, geared to high-intensity conventional warfare similar to what had unfolded in the European Theater of Operations in 1944-1945. Many of the proposals, however, fell victim to postwar budget constraints and higher priorities; others could not be implemented without extensive research and development or other time-consuming processes. This meant, among other things, that at the outset of the Korean War in June 1950, the artillery tubes in the US inventory were what they had been at the end of the world war despite the recognized need for more technologically advanced weaponry.

With the emergence of the Cold War, US policy makers and military strategists came to perceive Soviet and, after 1949, Chinese communist expansion as the principal threat to American security, to which the response of President Harry Truman's administration was a policy of containment. While, theoretically, the communist threat was deemed universal, the first major act associated with containment was not a global initiative but, disallowing the rhetoric employed,<sup>31</sup> a geographically limited program calling for military and economic assistance to Greece and Turkey, each of which was the object of some form of Soviet pressure. The approach taken in what became popularly known as the Truman Doctrine reflected the nature of almost all of what followed militarily in the Cold War: not global conventional hostilities but a series of local and regional crises and conflicts, most often conducted by proxy but sometimes involving one or the other of the superpowers directly. On two occasions, Korea and Vietnam, local/regional struggles pulled the United States into conventional but limited warfare. But those two wars aside, most US military activity between passage of the Truman Doctrine in

1947 and the end of the Cold War by 1990 involved several hundred cases of what would today be classified as MOOTW. What follows is a selective overview of some of the more prominent of those cases.

### ***Greece***

Truman Doctrine aid to Greece opened the door to a type of US military involvement that today would be categorized as foreign internal defense. To assist a right-wing Greek government battle communist guerrillas in the country's northern mountains, the United States provided an impressive program of military assistance, including military advisers to help the Greek military plan and coordinate operations, training, and logistics. In December 1947, these advisers were organized into the Joint U.S. Military Advisory and Planning Group (JUSMAPG). In an attempt to create a Greek fighting force based on US doctrine, equipment, and organization, JUSMAPG enjoyed some quick but ephemeral successes. In early 1948, the Greek National Army, equipped with US weapons and employing US tactics including tactical air bombardment and artillery fires from 105-mm howitzers, cleared communist forces from one critical mountainous area. Subsequent sweeps, however, were less productive. Not until the guerrillas began to form into units geared to conventional combat did the civil war turn in the government's favor. Even though many US military observers realized that the communists' reversals were to some degree self-inflicted, JUSMAPG nevertheless drew a dubious "lesson" from the experience: "The combination of *heavy firepower*, close air support and good mobility, which had been the American way of war in World War II, was seen to be appropriate for fighting new forms of war."<sup>32</sup>

### ***The Philippines***

This perception that a conventional approach to guerrilla warfare could overcome unconventional forces was not immediately applied beyond Greece, as evidenced by the case of the Philippines. In 1950, just after the insurgency in Greece had been defeated, the United States was stepping up military assistance to the government in Manila for its ongoing struggle with the communist-led Huk insurgents. Thanks in no small part to Ramón Magsaysay, the Filipino defense minister and later the country's president, the approach to fighting guerrillas in the archipelago did not mirror Greece, but employed more of what would be regarded as classic counterinsurgency techniques: a combination of political and economic reform, psychological warfare and civic action, all supported by military pressure applied by lightly armed and highly mobile conventional units

and by small “hunter-killer” groups. The basic antiguerrilla conventional unit was the battalion combat team, or BCT, consisting of three infantry companies; a heavy weapons company with mortars, machine guns, and recoilless rifles; a reconnaissance platoon; and various support elements. “Normally artillery was not organic,” one source has noted, “but a battery of towed 105-mm howitzers was attached, if required by the mission.”<sup>33</sup> The United States supplied the artillery as part of its military assistance program, but the weapon did not play a decisive role in the successful suppression of the insurgency.

### ***Korean War***

In June 1950, war broke out on the Korean peninsula, as the Soviet-supported communist regime in the north attacked the US-backed republic in the south. During the first week of the conflict, President Truman committed American ground troops to what was primarily a conventional war but one that was restricted geographically to the Korean peninsula, denied the use of certain weapons (no atomic bombs were used), and, following the entry of Communist China into the war later in the year, redefined America’s war aims. By early 1951, the military operations of the anticommunist coalition in this “limited war” were designed not to win a decisive victory but to prevent the other side from doing so, thus compelling it to seek a political settlement to end hostilities.

During the first year of the Korean War, the battlefield shifted up and down the peninsula. On a map, a continuous line separating the two sides represented these shifts; in reality, the battlefield did not become linear until mid-1951. The relevance of this for US artillerymen entering Korea in 1950 was enormous. Many had fought in Europe against the Germans; others had at least been trained in the tactics of the European theater. They were comfortable with a linear battlefield. Discarded as an “aberration” was the Pacific experience of World War II, in which artillery crews operating in hilly, mountainous country had to learn to protect and defend their flanks and rear. Although, once in Korea, artillerymen “quickly understood the need for units to protect themselves through all-around defense and coordinate their activities with nearby infantry and armor units, putting this into practice after years of training for linear warfare was another matter entirely.” To complicate the situation, just as artillerymen were learning to adjust to a nonlinear war, the battlefield, in fact, became linear. Consequently, the practical techniques for the perimeter defense of artillery units “were never fully tested against either sustained assault or large-scale attrition.”<sup>34</sup> This was perhaps the most relevant point to come out of the Korean War, a mid-intensity conflict, for artillerymen who would



later engage in low-intensity conflicts, or MOOTW. It is also a point that would have to be relearned a decade later. For the remainder of the 1950s, however, in an effort to avoid another prolonged and limited war such as the one that chewed up American manpower and resources in Korea, US military strategy would focus again on fighting a conventional, atomic war in Europe. If, at the lower end of the operational scale, insurgencies or regional conflicts threatened to escalate into another Korea, the United States stood ready—or so it said—to employ massive retaliation, meaning tactical or strategic nuclear weapons, to defend its interests.

### ***Lebanon***

In practice, the strategy of massive retaliation (more formally known as the New Look) enunciated by President Dwight D. Eisenhower rarely relied on nuclear brinkmanship, especially after the Soviet Union acquired effective means to deliver its nuclear weapons on the United States in the late 1950s. Military and civilian critics of the New Look spoke of a “Balance of Terror” in which any American threat to use nuclear weapons to settle some “brush-fire” conflict simply lacked credibility. Like it or not, the United States needed to be ready to intervene with conventional forces and weapons in such cases where its interests warranted military action. The deployment of American troops to Lebanon in 1958 seemed to prove the point. It was the first of what would be several contingency operations that involved the intervention of US conventional forces in local and regional crises at the lower end of the conflict spectrum.

In mid-July 1958, a military coup against the pro-Western monarchy in Iraq, during which the royal family was murdered, led President Eisenhower to order US Marine Corps and Army forces into Lebanon, where another friendly government seemed on the verge of falling to radical elements from inside and outside the country. Within 24 hours of the presidential decision, the first of three Marine Battalion Landing Teams had come ashore just south of Beirut. A few days later, a US Army battle group out of Germany began to arrive. (Artillerymen in Germany, it should be noted, had been assigned control group duties during the assembly and embarkation process.) The combat elements from both services brought artillery with them: the marines had six 8-inch howitzers, eight 4.2-inch mortars, and three 105-mm howitzer batteries, each with six pieces. By the end of July, all of these had been placed under the centralized command of a Force Artillery Group. The Army, for its part, inserted one artillery battery of howitzers and another of antiaircraft artillery. In perhaps the strangest development of the intervention, an artillery battery with two launchers for the nuclear-capable Honest John

tactical rocket also appeared. The launchers were redeployed immediately but questions would follow as to why a nuclear-capable weapon had been introduced into a highly charged but clearly conventional operation.<sup>35</sup>

US troops entering Lebanon had expected combat—against whom they were not quite sure—but their mission quickly became one of helping the Lebanese army establish stability around Beirut until diplomats could negotiate a political settlement to the internal crisis. Under these circumstances, the threat faced by American forces ringing the capital city came not from any conventional army but from the small-arms fire of rebel groups in the vicinity of US positions. The Americans were well protected from this kind of dangerous harassment—the Americans suffered only one fatality to rebel sniping—and as a result, the artillery pieces located in the beachhead area never fired in anger. They did furnish potential support for the troops (a forward artillery observer generally accompanied units on patrol), with the guns being ready to respond if serious combat did occur. But, on the whole, the role of the artillery was a familiar one of “firepower insurance.” In the past, the mere presence of artillery pieces capable of direct fire would have also served as a psychological deterrent to hostile groups, but in Lebanon that role was usurped by the tanks the marines and soldiers brought with them. Thus, while Marine, Army, and Lebanese artillerymen conducted liaison visits and established the means to coordinate fire support should the situation deteriorate, the plans and procedures they developed were never put to the test. By the end of October 1958, diplomacy backed by the US military presence had produced a political settlement, and all American troops were withdrawn.

### ***Dominican Republic***

Seven years later, US forces intervened in the Dominican Republic in an operation that bore many similarities to the one in Lebanon. In April 1965, the pro-US Dominican government fell to armed rebels in a coup d'état that Washington perceived to be communist led. Several days of bloodshed followed as the rebels and their opponents engaged in civil war, largely confined to the capital city of Santo Domingo. When the rebels appeared on the verge of complete victory, President Lyndon B. Johnson ordered US forces into the country to prevent a communist takeover and to stabilize the situation. Leading the way were elements of a Marine Expeditionary Unit and all three combat brigades of the Army's 82d Airborne Division. The 82d brought its field artillery with it, but inasmuch as the fighting was in a highly populated urban area, a desire to avoid casualties among innocent civilians and major damage to the city itself led to a ban on fires from mortars, naval guns, and artillery.<sup>36</sup> For a brief

period, illumination rounds were allowed, then discontinued for fear that one might start a fire that, given the densely packed, combustible buildings in the city, could destroy a substantial portion of the capital.

Within a few days of arriving, US forces bottled up the bulk of the rebels in the southeastern portion of Santo Domingo, and Washington decided to pursue a political settlement instead of a military victory. In the ensuing year and a half that American troops remained in the country, the main threat they faced was from rebel small-arms fire, snipers, and occasional mortar rounds. Under ROE that changed frequently, the troops responded with minimum force. Generally, the 106-mm recoilless rifle and the M-72 Light Antitank Weapon, “workhorses against hard targets and weapon positions,” represented the heaviest firepower employed.<sup>37</sup> Soldiers in the division’s field artillery battalions were attached to the combat brigades to perform a variety of “secondary missions,” to include search and clear, security, food distribution, and traffic control. The tubes themselves were removed from the city to a division artillery training camp well to the northeast. There, they stood ready if needed—“firepower insurance” once again—while engaging in a number of training events, including live-fire exercises. By the end of May, less than a month after they had arrived, all the artillery units except one battery began redeploying to Fort Bragg, North Carolina. In July, two months after an inter-American peace force began operating in the capital with US participation, the Brazilian commander requested that one of the 82d’s artillery battalions be brought back to enhance the multinational force’s capabilities. Political considerations delayed a decision on the request until October, and the battalion did not arrive in the Dominican Republic until December. In the meantime, two of the division’s artillery units deployed their countermortar radar, which, when it worked, proved invaluable in determining the parties responsible for launching periodic mortar attacks in violation of a series of cease-fire agreements.

One lesson drawn by the 82d in the Dominican Republic was that, in an intervention where overwhelming force made quick work of a grossly inferior military threat, the immediate need was for noncombat assets, such as engineers, military police (MPs), and signal equipment. As one report stated:

To make the critical airframes available to move this added signal equipment and the additional Infantry and MP units, a reduction in artillery is acceptable. The requirement for artillery, as well as for close air support and naval gun fire, will not be as great as in conventional

operations. A small amount of armour [sic] is particularly useful: tanks have great psychological value even if conditions preclude the firing of their main armament.<sup>38</sup>

## *Vietnam*

The US intervention in the Dominican Republic in 1965 coincided with the escalation of America's military involvement in Vietnam. In some ways, what followed in the Southeast Asian conflict resembled the Korean War: Vietnam was a limited war in terms of objectives, geography, and the weapons employed. Furthermore, as in Korea, political considerations would often override military needs at the operational and tactical levels. But there were also tremendous differences between the two conflicts, among them the fact that Vietnam, while in many respects a war pitting conventional US forces against conventional North Vietnamese and Viet Cong (VC) regular units, involved, to a much greater extent than in Korea, unconventional counterinsurgency against Viet Cong guerrillas on the nonlinear, civilian-populated battlefield of South Vietnam. At the peak of America's longest war, over 500,000 US service personnel would be in Vietnam. Artillery was prominently represented among this force, although many of the artillerymen who served in Vietnam learned that their conventional training and tactics were not always adequate in confronting the enemy threat.

The conventional mind-set US artillerymen carried into Vietnam reflected military developments between the Korean War and the early 1960s, when the Army had spent most of the decade trying to modernize its force and make it relevant to the atomic age, all on a shoestring defense budget that favored the Air Force and Navy over ground forces. In the late 1950s, the Army introduced the Pentomic Division, a unit of five battle groups that could be dispersed on an atomic battlefield, meaning Europe. Critics were quick to point out the shortcomings of the new force structure, and by the mid-1960s, a new divisional structure—the Reorganization Objective Army Divisions (ROAD)—designed to fight on a conventional or nuclear battlefield replaced the Pentomic configuration. By the early 1960s, the Army had also introduced new field pieces to its inventory: the M108 105-mm howitzer, M109 155-mm howitzer, M110 8-inch howitzer, and the M107 175-mm gun were self-propelled pieces; the M102 105-mm howitzer, M114 155-mm howitzer, and M115 8-inch howitzer were towed. Despite the availability of these weapons at the time President Johnson committed US combat forces to Vietnam, many older and nearly obsolete pieces remained in unit inventories. Still, in the summary of one historian, Army field artillery had gone through “a period of rapid transformation”:

Pressed by massive retaliation, the Army seized the opportunity to join the nuclear age. It introduced more lethal and mobile conventional field artillery, standardized more and better nuclear artillery, started adopting computerized gunnery, formed aerial artillery, and revised tactics, doctrine and organization to permit fighting a conventional or nuclear battle. As many field artillery officers correctly proclaimed, these developments revolutionized the field artillery.<sup>39</sup>

While the Army touted the advantages of ROAD in both conventional and nuclear warfare, little or nothing was said about its role on an unconventional battlefield. Likewise, training was geared to fighting the Soviets in Europe. President John F. Kennedy, to be sure, was preoccupied with Soviet promises to support local and regional “wars of national liberation,” including the conflict in Vietnam, but despite his administration’s attempt to refocus the military on counterinsurgency, most officers viewed guerrilla warfare as falling within the province of Special Forces. Thus, artillerymen entering Vietnam were not prepared for the unconventional aspects of the Second Indochina War, 1965-1973, and the first major battle of that war did little to elicit a reorientation in their thinking. The engagement occurred in South Vietnam’s Ia Drang valley in early November 1965, when elements of the US 1st Cavalry Division ran into North Vietnamese regulars. As the fierce fight began, towed US field artillery provided little support—the battle was being waged beyond the range of its guns. To remedy this, four artillery batteries were lifted by helicopter in mid-November to within firing distance of the combatants. The fires they subsequently delivered helped repel the threat to US forces. At least one general officer credited the tube artillery with giving the infantry “a vital measure of superiority.”<sup>40</sup>

In this respect, the battle of the Ia Drang validated conventional wisdom concerning the concentration of field artillery fires during force-on-force engagements in which the enemy massed for a stand-up fight. The problem was that, after Ia Drang, the North Vietnamese and Viet Cong generally tried not to accommodate US firepower by forming in mass for major offensives.<sup>41</sup> The Americans, in response, developed tactics designed to force the enemy to fight. One such approach was *search and destroy*, a tactic in which small US units (generally platoons) would patrol the countryside, find the enemy (ranging anywhere between a two-man patrol to a VC regiment), disengage, and call in air, naval, and artillery fire

to deal with the hostile force. Maneuver, in other words, was undertaken in support of firepower, rather than firepower being used to facilitate maneuver. This controversial approach presumably saved American lives but generated debate about its deleterious effect on the initiative of infantry units. The approach also raised questions about whether fire support could play a decisive role on the battlefield.

Although the enemy often deployed regular forces and US troops were generally trained in conventional warfare, the United States, as one author has noted, “remained in the uncomfortable position of fighting a war that was generally COIN in nature.”<sup>42</sup> The Viet Cong continued to operate both as guerrillas as well as main force units, and both Viet Cong and North Vietnamese regulars employed guerrilla tactics when the situation warranted. Further, they did so on a nonlinear battlefield that encompassed the whole of South Vietnam. Search and destroy tactics thus required US forces to disperse, with battalions acquiring responsibility for covering relatively large sections of the country. Field artillery batteries accompanied the battalions, with many functions doctrinally reserved for the artillery battalion being performed at the battery level by junior officers whose scope of responsibilities in decentralized operations quickly expanded well beyond the training they had received. Dispersal also required mobility, and in a country lacking a sophisticated road network through difficult terrain, the helicopter became a principal method of displacing artillery pieces (the lighter 105s were better suited than 155s for this kind of transport) and ammunition and of putting them in positions from which they could achieve maximum effect. Also, as in the Korean War, a nonlinear battlefield allowed the enemy to attack from any direction, meaning that, once set up, the artillery required perimeter—“6,400 mils”—protection. This need, together with mobility requirements, led to the creation of a network of fire support bases (FSBs), at which artillery pieces were generally located with a maneuver battalion command post. The tactics generated to defend the FSB included the use of the artillery’s counterbattery radar, indirect fire from nearby FSBs, and artillery in a direct-fire mode using canister.<sup>43</sup>

From these dispersed and fixed positions, “located so that any point in the area of operations could be reached by at least one battery and usually two or more, the maneuver commander conducted offensive operations, while field artillery, ranging from 105-mm. howitzers to 175-mm. guns, furnished fire support and helped defend other fire bases as required. This arrangement guaranteed a rapid response by the artillery when called upon, simplified furnishing fire support in guerrilla warfare, and saved

lives.” In what proved to involve very complex procedures, field artillery also coordinated with air and sea power to maximize fire support within a given area.<sup>44</sup>

These arrangements, many US officers believed, would help compensate for friendly ground forces falling far short of the 10:1 ratio (10 counterinsurgents to 1 insurgent) theoretically needed to prevail in COIN. And, in fact, there was much the artillery could accomplish to make up the difference. As noted, the enemy could mass for a major conventional attack only at its peril, as witnessed by the casualties the North Vietnamese and VC suffered in the Tet Offensive and at Khe Sanh in 1968. In the latter battle, close air support and tube artillery cut apart waves of attacking North Vietnamese in a manner that bore some resemblance to the carnage of the Western Front during World War I. (Perhaps it turned out to be irrelevant, but US forces are said never to have lost a major conventional engagement in South Vietnam.) American artillery could also protect friendly patrols by destroying obstacles blocking their paths or by answering the call for fire support once the enemy was encountered. If, in the course of an engagement, the infantry could isolate the enemy, artillery could help close down avenues of retreat or reinforcement. As in past conflicts, artillery also proved effective—although there is a debate over just how effective—against the enemy’s fortified positions. For the Viet Cong, these positions tended to be the underground tunnels and bunkers from which the guerrillas could emerge to wreak havoc on an exposed and surprised US or South Vietnamese unit. Once discovered, however, these underground complexes could be “busted” by the combined use of air power, armor, and artillery, in which the latter used airburst shells from 105s to keep the enemy under cover, and delayed-fuse rounds from 155s and 8-inch howitzers to destroy the bunkers.<sup>45</sup>

Other uses of artillery included “preparing” landing zones for the arrival of troop-carrying US helicopters. There was also the “artillery raid,” in which pieces were taken out of the FSB and placed where they could reach targets beyond the range of the guns at the base. Usually a battery of 105-mm guns and three 155-mm pieces, with an infantry company providing security, deployed via helicopters, fired several hundred rounds at the designated target, and then returned to the FSB.<sup>46</sup> In addition to the raid, artillery served up fires on concealed areas, forcing enemy troops into the open, where US helicopters and fighter planes waited to unleash their own firepower. There were also the frequent, highly important, and highly controversial “harassment and interdiction” fires, “the primary U.S. tactic for preempting attacks on bases by Communist indirect fire.”<sup>47</sup> The tactic

was effective when the response to an incoming enemy round was rapid. The controversy arose (1) from the excessive amount of ammunition that was too often expended, (2) from the belief of numerous observers that too many rounds “were wasted on empty ground” and did only marginal damage to the enemy, (3) from the observation that harassment and interdiction fires contributed significantly to civilian casualties, and (4) from the realization that rounds which failed to explode provided VC guerrillas with ordnance for making booby traps and mines that could be used effectively against US troops in the jungle.<sup>48</sup>

Finally, in those cases where artillery was present but could not be employed, artillerymen often served, as had their predecessors, as light infantry or in other capacities that had nothing to do with firing the weapons on which they had trained and honed their skills.

As the war continued, the Viet Cong and North Vietnamese modified their tactics in an effort to neutralize the effectiveness of American artillery. One response was to dig in deeper and to fortify their bunkers even more. Another was to lure US troops into terrain in which artillery could not be employed. Enemy elements also tried to “hug” the Americans, getting so close to them in combat that artillery and close air support could not be called in for fear of friendly fire. Operating in small bands, the Viet Cong could also wait until the last minute before launching an attack on a US position or on a village or hamlet, hoping to inflict the desired damage before artillery and other fire support weapons could be brought into action. In many cases, the VC actually lived in the villages and hamlets, mingling among the population as part of the guerrilla infrastructure. This presence often provoked violent American responses, including the use of fire support weapons, that would kill civilians, destroy civilian homes and belongings, and alienate the survivors.<sup>49</sup>

In fact, US firepower exacted horrendous casualties among Vietnamese civilians and created thousands upon thousands of refugees. This degree of “collateral damage” seemed to contradict American proclamations that the war was being waged to allow the people of South Vietnam a better, freer life than they could hope to have under communist domination. Killing friendly or indifferent civilians to save them was regarded as counterproductive by both supporters and opponents of the war, helped fuel antiwar sentiments within the United States and around the world, and complicated efforts by American troops in South Vietnam to win the “hearts and minds” of the indigenous population. But civilians were an inescapable part of the battlefield in Vietnam, and their proximity to enemy forces meant that they would suffer from the actions of both sides.



The American practice of calling in overwhelming firepower contributed to this problem. A burst of AK-47 fire aimed at US troops, for example, was often enough to bring in a massive air and artillery response in retaliation.<sup>50</sup>

Finding ways to avoid or at least minimize civilian casualties thus became a political and military imperative, and efforts undertaken to this end had a profound impact on the way field artillery would come to operate in the latter years of the Second Indochina War. According to one author,

U.S. forces were aware of the problem [of civilian casualties] and tried to strike a balance between immediate military requirements and longer-term interests by imposing controls on fire-planning. In some areas “no-fire zones” were established to curtail the massive weight of fire that was often the automatic prescription for even minor targets. Elaborate clearance procedures were imposed, recognizing that while a short round may be a disaster in conventional war, a long round may be equally unfortunate when fighting guerrillas, not least for friendly troops. . . .

Calls for fire were carefully monitored and a slower response time accepted in exchange for greater accuracy. This was particularly important in heavily populated areas where the target lay between friendly troops and civilians and it was not possible to adjust fire. The need to hit only confirmed targets, and with greater accuracy, resulted in the proliferation of forward observers and in turn the expansion of low-level communications, which needed greater control.<sup>51</sup>

Under a variety of complicated controls and procedures and restrictive ROE, field artillery, another author observed, “was often accused of being too slow and unresponsive in Vietnam because to achieve the accuracy demanded in many cases, double and triple checks were cranked into the fire support process.”<sup>52</sup>

In the end, the adjustments made by the US military on Vietnam’s conventional/unconventional battlefield enabled firepower at times to inflict crippling casualties on the enemy, but they could not bring victory in what was at heart a political-military struggle that placed restrictions on where the war could be fought and on the weapons that could be used in fighting it. In 1973, the last conventional American combat units left

South Vietnam, and its government fell two years later to the communists. The war had been a traumatizing experience for all involved and had left US ground forces, especially the Army, a shell of the professional, well-trained entity that had entered the conflict in 1965. Reacting to the experience, the Army eschewed unconventional warfare and promulgated the position that it should never again be committed piecemeal to an open-ended conflict in which political constraints would prevent the achievement of victory in a traditional sense.

Battered by the Vietnam experience, the Army began the task of rebuilding itself and, in the process, turned its focus once again to high-intensity, conventional warfare, namely fighting Warsaw Pact forces in Europe. Developments in field artillery during the remainder of the 1970s and into the 1980s took place within this framework, to include advances in computerized/automated data processing systems for fire control and targeting, the adoption of new counterbattery and target acquisition systems, new precision-guided munitions (the Copperhead, for example), more accurate countermortar and counterbattery radars, the testing of remotely piloted vehicles (RPVs) for target acquisition, the creation of the Fire Support Team (FIST) to consolidate forward observation and direct fire support planning at the company level, and at higher levels the consolidation of all fire support planning under the Fire Support Officer/Fire Support Element (FSO/FSE). Also with an eye on the Soviet threat in Europe, the Army reorganized its heavy division and revised the allocation of division artillery.<sup>53</sup>

Even while these innovations were taking place, the US military conceded that a war in Europe was not likely. Indeed, for the remainder of the Cold War, the United States continued to be involved militarily in local and regional crises, as it had been all along. In the late 1970s and throughout the 1980s, Washington was deeply engaged against a communist-led insurgency in El Salvador. In deference to the Vietnam experience, no conventional US combat units deployed to that country and the American military advisory group was limited to 55 personnel. Meanwhile, the administration of President Ronald Reagan turned to the CIA and US Special Forces to support an insurgency movement against the communist *sandinista* government in El Salvador's neighbor, Nicaragua. By the end of the decade, both situations had been resolved on terms acceptable to the United States. So, too, had the outcome of US support to Afghanistan "insurgents" fighting Soviet troops in the Central Asian country. US field artillery units played no part, or at least no significant part, in any of these ventures.

## *Grenada*

Besides having to deal with insurgency and counterinsurgency in the post-Vietnam years, the US military also found itself involved in interventions that bore more resemblance to stability operations in Lebanon and the Dominican Republic than to Korea or Vietnam or to what was being planned for the Fulda Gap in Europe. In October 1983, President Reagan ordered US forces into the Caribbean island of Grenada to evacuate American medical students, neutralize hostile forces, topple the island's unstable Marxist regime, and set the stage for democratic government. Field artillery accompanied the deploying marines and the paratroopers from the 82d Airborne Division's 2d and 3d Brigades but played only a small part in the inevitable American victory. In the three major instances in which Army artillery did fire, the results were mixed. The first case concerned a paratrooper attack on a hostile target; the second was the rescue of medical students at one of three student enclaves on the island. In both cases, field artillery successfully joined with aviation assets or mortars to provide an effective preparatory bombardment.<sup>54</sup>

In the third case, the target was the Grenadian military camp at Calivigny, not far from the Salines airstrip on the southern tip of the island, where US Rangers and paratroopers had begun their assault two days before. The Rangers planned to assault the camp but not before it had received 30 minutes of bombardment from field artillery, naval guns, and Air Force fighters and an AC-130 gunship. Three batteries of Army 105s opened the barrage. Of the 500 shells fired, one hit the camp, while the rest fell into the sea. Later it was discovered that "the artillery had misplotted their own positions by 700 meters, had inaccurate coordinates for Calivigny, and had left their artillery aiming circles (compasses on tripods) behind at Fort Bragg."<sup>55</sup> Since no fire support officer was in the helicopter flying near the target, no one could correct the fires. For a variety of reasons, naval gunfire fared little better. Only when the fighters and AC-130 launched their ordnance was the camp demolished. The Rangers then assaulted the fortifications, which turned out to be deserted. A helicopter accident at the site, however, left three Rangers dead and four injured.

In assessing the effectiveness of field artillery in Operation URGENT FURY, one Army artilleryman concluded that the 82d had "employed sound fire support techniques at the *unit* level during the pre-deployment phase." There were, however, "significant breakdowns" at the joint level, in his opinion, because of "inadequate planning" at the US Atlantic Command (in whose area of responsibility Grenada fell), "insufficient

staffing” of the operational joint task force (JTF) with Army personnel versed in “Army procedures and requirements for the employment of indirect fires,” the late deployment of Navy air and naval gunfire liaison company (ANGLICO) teams and Air Force tactical air control parties, and an overemphasis on operational security that “restricted key fire support personnel from participating in the planning.” Once the operation was under way, communications and procedural problems complicated joint interaction with respect to fire support.<sup>56</sup> The breakdown of jointness in several areas, including those affecting firepower, provided much of the justification for passing the Goldwater-Nichols Act in 1986, with its emphasis on improving interservice cooperation.

### ***Panama***

Six years after Grenada, in December 1989, President George H.W. Bush ordered the US invasion of Panama to displace the dictatorial regime of General Manuel Antonio Noriega, the commander of the Panamanian Defense Forces (PDF). The main elements of the ground assault force were a variety of special operations elements; Marine Corps and Army units already in Panama; the 82d Airborne Division; and the 7th Infantry Division (Light). The latter was one of the light divisions that the Army, in grudging recognition of the “full spectrum” of military threats it faced, had created in the 1980s to fight on a low-intensity battlefield. Among the light division’s artillery pieces was the newly fielded M198 towed 155-mm howitzer designed for firepower and mobility.<sup>57</sup> Field artillery deployed with the conventional units, but given that much of the fighting took place in densely populated cities and that the PDF was considered an inferior opponent, field artillery could only be used for indirect fire if approved by a battalion commander or higher ranking officer.<sup>58</sup> If any such request was actually made, it was not granted. AC-130s and attack helicopters—direct-fire weapons—pounded PDF targets with enough firepower and, more important, *precision* to produce the desired effects. In one case, however, a 105-mm howitzer was used successfully in a direct-fire mode against a PDF infantry company barracks at Fort Amador. Once the fighting in Panama subsided, so did any further need for the artillery. As was the case in Grenada, US field artillery played no role in the stability operations that accompanied and followed the combat.

With the Cold War drawing to a close, Operation JUST CAUSE in Panama refocused the Army on force projection and was regarded as a model for future operations in what was seen by some as a new world order, by others as the “coming anarchy” in world affairs. JUST CAUSE as a “paradigm shift” was still in the conceptualization stage when it was

abruptly swept aside by the invasion of Kuwait in 1990 by Iraq's dictator, Saddam Hussein, setting the stage for the first Gulf War. Some observers argued that, after 40 years, the US military finally had the chance to fight the kind of war for which it had allocated so many of its resources in preparation: force-on-force in which US armor, state-of-the-art technology, and overwhelming firepower could be used to maul a credible opponent (as the Iraqi army was regarded, at least before the war began) in a stand-up fight. Field artillery played a significant role in the war, especially in destroying the Iraqi artillery, but because sensitive political considerations compelled the US-led coalition to halt its advance far short of Baghdad, thus leaving Saddam in power, there was no follow-on occupation of Iraq that would necessitate occupation and nation building. What postcombat operations took place, such as PROVIDE COMFORT, were humanitarian efforts to feed and assist groups within Iraq who, having unsuccessfully risen up against the regime, had been decimated by what was left of Saddam's elite forces. These forces did not interfere with the US-led humanitarian effort, so field artillery once again was not called into play.

### *Somalia*

During the remainder of the 1990s, the United States military intervened in a number of post-Cold War local and regional crises, including Somalia, Haiti, and the Balkans. All of these could be categorized as MOOTW, and all saw the deployment of field artillery, although not always for the same purposes. When a US-led coalition, ultimately called the United Task Force (UNITAF), deployed to Somalia in December 1992, its mission was to secure the southern third of the country so that humanitarian relief agencies could get food to Somalis starving as a result of drought and civil war.<sup>59</sup> Within the coalition, the principal US combat elements came from the 1st Marine Division and the Army's 10th Mountain Division (Light). The marines brought with them one artillery battalion of 155-mm howitzers, while the 10th Mountain sealifted a 105-mm battalion and a 155-mm battery.

Once it became apparent that the two most powerful warlords in southern Somalia would not oppose coalition operations, the UNITAF commander, a Marine Corps lieutenant general, listed field artillery among the assets he considered as "low-priority." But even if fighting had broken out, especially in the heavily populated capital city of Mogadishu, UNITAF would not have been able to employ its artillery without inflicting heavy casualties among innocent civilians. For these reasons, one Marine battery commander brought only two M101A 105-mm howitzers ashore to provide illumination if needed. The battery's remaining artillerymen,

serving as riflemen, performed security duties in Mogadishu. Marines from another battery came ashore soon thereafter, leaving their gun tubes on ship and assuming duties as members of a provisional infantry battalion. The UNITAF commander canceled the deployment of other Marine artillery while the pieces were still in the United States.

Elements of the 10th Mountain Division followed the marines into the country, but the field artillery being shipped with them was returned to the United States. The unit's fire support requirements, it was believed, could be fulfilled with attack helicopters and mortars. As with the marines, artillerymen found other duties. When elements from the division moved south of Mogadishu into the Kismayo area, 10th Mountain's artillery staff, bolstered by other division assets, formed the headquarters of Task Force *Kismayo*. When UNITAF completed its mission on 4 May 1993, US field artillery pieces in Somalia had fired a total of one illumination round.

The United Nations took over operations in Somalia upon UNITAF's departure. With a countrywide mission that amounted to nation building, and with much less military force than UNITAF to accomplish the mission—a force that included an American quick reaction force (QRF) and US logistic support—the endeavor quickly ran into trouble, mainly in the form of opposition from the Somali faction leader Mohammed Farah Aideded. After Aideded's people killed 24 Pakistani troops serving under the UN on 5 June, a hunt for the warlord began. Over the ensuing weeks and months, several major firefights took place in Mogadishu, culminating in what is popularly referred to as Black Hawk Down, the 3-4 October battle between Aideded's militia and supporters, on the one hand, and US special operations forces (SOF) and the QRF, on the other. Because of the US casualties suffered in the fight, the United States decided to withdraw its forces from Somalia within six months. To provide protection for those troops in the meantime, President Bill Clinton decided to reinforce US combat capabilities in the country, doubling the size of the American force on the ground and adding tremendously to its firepower. These assets came under Joint Task Force *Somalia*, which deployed in October 1993, and field artillery was an integral part of that force.

Major General Carl Ernst served as the JTF commander, and upon his arrival in Mogadishu, he began putting the firepower at his disposal to use. Through a variety of exercises and operations, he conveyed to Aideded and other possible troublemakers what they would be up against should they take military action against US forces. Ernst's biggest show of force was a joint amphibious operation that employed "every piece of the Joint Task Force," including an Army mechanized/tank company team,

a Marine battalion landing team, two mechanized company teams, carrier and other aircraft, and AC-130 gunships. Furthermore, “We positioned artillery throughout the area to provide fire support if needed,” Ernst related later. “That gave us the Copperhead capture angles we needed to shoot into Mogadishu if it became necessary. The artillery fired out to sea for precise registration that night . . . . [The operation] was just a big firepower demonstration.”<sup>60</sup>

In the event of combat operations against friendly forces, JTF *Somalia* had to be ready to launch retaliatory actions that would overwhelm the offending forces. Ernst drew up contingency plans for such an eventuality, the first phase of which called for defeating factional militia in Mogadishu while avoiding street-to-street fighting and the killing of innocent civilians. The key to success, should the plan need to be executed, was precision-guided weapons, beginning with trained snipers and escalating to AC-130s, wire-guided TOW missiles, Marine laser-guided Hellfires, and laser-guided bombs from Marine and Navy aircraft. The inventory also included Army laser-guided Copperhead artillery rounds. Most of these weapons were highly complex, making it essential that the units involved train and rehearse daily to synchronize the operating systems.<sup>61</sup> As it turned out, the warlords, well aware that all US forces would withdraw by the end of March 1994, took no action that would risk the devastating and presumably precise retaliation that JTF *Somalia* stood ready to inflict.

## ***Haiti***

Later that year, in September 1994, elements of the 10th Mountain Division (Light) found themselves en route to Haiti. Three years before, the elected president of that country had been ousted in a military coup. As fallout from that event, hundreds of Haitian refugees had begun cramming into boats and sailing toward the United States to seek asylum. Some drowned en route; other were turned away. As the tide of “boat people” continued, their plight became a political embarrassment for the Clinton administration, compelling the president and his advisers to consider military intervention in Haiti to end the humanitarian debacle at sea and to reinstate the controversial but democratically elected Haitian president.

Assuming that US intervention would meet with resistance, the XVIII Airborne Corps planned a forced entry option that featured the 82d Airborne Division, together with its division artillery. The lead elements of that force were in fact in the air and minutes away from a combat drop into Haiti when, in a last-minute agreement with American representatives, the Haitian military junta that ruled the country agreed to step down peacefully.

The inbound US assault force was recalled, and a second force in which the 10th Mountain Division was the principal element took its place for what amounted to a permissive entry. The US “intervasion” in Haiti was now essentially a stability operation with strict ROE. US commanders perceived no critical need for the division’s artillery, so the pieces were left behind and the artillery staff became the core of one of three maneuver element headquarters, Task Force Mountain. This was similar to the organizational arrangement the division had applied with much success in Somalia, and it proved effective in Haiti as well. In addition to this headquarters function, artillerymen and other fire support personnel “had to adapt warfighting skills to unique conditions.” Members of the brigade fire support element, for example, helped plan and conduct civil-military operations (CMO) and established and ran a CMO Center, or CMOC, which was daily involved in such matters as local government, public administration, public works, infrastructure repair, and the organization of law enforcement agencies. In addition to carrying out these missions, artillerymen also constructed a multipurpose range complex at which they could conduct training, including live-fire exercises, using whatever artillery assets they were allowed to bring into the country.<sup>62</sup>

### ***Bosnia***

Soon after Haiti appeared to be stabilized, US forces in December 1995 began deploying to Bosnia, where they represented one of several nations taking part in Operation JOINT ENDEAVOR, a stability/peace operation following a peace agreement among the warring parties in that part of the Balkans.<sup>63</sup> The centerpiece of the US deployment was a heavy division, the 1st Armored, which served as the nucleus for Task Force *Eagle*, one of three multinational divisions that made up the Implementation Force (IFOR) under the command and control of the NATO Allied Ready Reaction Corps, headquartered in Sarajevo. The Bosnian situation was extremely complex and the peace agreement tenuous. While IFOR activities would feature information operations, civil affairs, and psychological operations (PSYOP), each task force had to be prepared to engage in conventional combat should the situation warrant. It was hoped, however, that the combat power of a heavy division, including its self-propelled 155-mm howitzers, would deter the various armed groups in Bosnia from provoking such a step. To this end, several artillery assets served to demonstrate a task force’s firepower and resolve. A platoon of self-propelled howitzers—“mobile pillboxes”—on patrol or serving as escorts for IFOR troops on a mission had an intimidating effect, as did illumination rounds fired above potentially hostile mortar positions or



personnel. The timely arrival of these weapons at a “hot spot” generally had a similar calming effect. If deterrence failed, however, artillery units had preplanned targets and procedures that would facilitate the transition to combat.

In some parallels to Vietnam, IFOR troops operated out of fixed firebases, for which the self-propelled howitzers provided much of the base protection. If a base should come under ground attack, the circled howitzers and their accompanying armed vehicles could fire directly into the enemy. Artillerymen also plotted likely counterfire targets and practiced reaction times in case a base should come under indirect mortar or artillery fire. Counterfire radar, while not in enough supply to distribute throughout the IFOR, was also available for this purpose (and was actually used at times to locate snipers, a function for which it was not originally designed). Furthermore, artillery staff officers worked to provide close protection to friendly troops who had left the base without armor, air, or artillery escort to perform their various duties. As a result, infantry troops on patrol knew that friendly artillery had targeted potential ambush sites along their route and that, in contrast to close air support, those fires could be called in within minutes of encountering armed resistance.

Finally, as in countless past operations, artillery units provided personnel for tasks and duties that had nothing to do with artillery. In Bosnia, artillerymen conducted mine strike investigations, inspected weapon storage sites, mounted patrols, stood guard, helped beef up convoys, and pulled KP. In one particularly unusual case, two artillery officers received a directive to meet with friendly troops and civilians performing nonlethal missions—for example, police work, civil affairs, humanitarian assistance, psychological and information operations—and help them apply the artillerymen’s fire planning methodology and matrices to the work they were doing to stabilize the situation in Bosnia.<sup>64</sup> As of this writing, that mission is still ongoing.

## **The War on Terror and the Role of Field Artillery**

After the terrorist strikes on the World Trade Center buildings and the Pentagon on 11 September 2001, the United States took the leading role in what the administration of President George W. Bush called the Global War on Terrorism. One of the first prominent military targets in that war was the Taliban regime in Afghanistan, which had supported and provided training bases and sanctuary for the al Qaeda network that had engineered and executed the 9/11 attacks. Initially, in what was called Operation ENDURING FREEDOM, the US military deployed SOF to Afghanistan to assist the Northern Alliance, a loose coalition of forces that had been

fighting the Taliban for some time. American air power and the Alliance's own firepower forced the Taliban out of key cities and other defensive positions, bringing down the hostile government in the process. In early 2002, conventional US ground forces, mainly from the 10th Mountain Division and the 101st Airborne Division, arrived in the country and, with SOF and Afghan fighters, launched Operation ANACONDA to round up groups of recalcitrant Taliban and al Qaeda fighters in the Shah-e-Kot mountains. At this point, the war in Afghanistan was still in a conventional phase, but the tactics and "unstructured" organization of enemy forces, combined with the country's mountainous terrain, gave operations a definite nonconventional feel. While outnumbered and outgunned, the enemy fighters put up a fierce and effective resistance, which included the use of D-30 cannon and mortars. The antiterrorist coalition responded by raining enormous amounts of firepower down upon the well-entrenched defenders. Of the numerous and diverse weapon systems employed, one was conspicuously missing: field artillery pieces.

The omission was deliberate, a decision made by General Tommy Franks, commander of the US Central Command.<sup>65</sup> Taking issue with Chief of Staff of the Army Eric Shinseki, who wanted the Army's Crusader howitzer deployed, Franks argued that the airlift was not available to move artillery pieces into position and that artillery pieces would be affected adversely by the altitudes involved. As a result, howitzer crews who did deploy with the 10th Mountain and 101st Airborne were trained to fire 120-mm mortars, a more mobile weapon than the 4,400-pound M119 105-mm howitzer but one that trailed the M119 in range and accuracy. As the battle in the Shah-e-Kot mountains unfolded, therefore, mortars and air power provided close support for the infantry units committed. The results only fueled the debate that started with the decision to keep the field artillery pieces at home.

In at least one interview after Operation ANACONDA, which ended with many enemy fighters killed and with what the coalition regarded as too many others able to escape, Major General Franklin Hagenbeck, the 10th Mountain Division commander, supported the decision not to deploy 105s, asserting that he "knew we could accomplish the mission without them." Reviewing his own reasons for preferring the mortars over the howitzers, he said that the airlift available to him was better used for taking soldiers and their mortars into the battle area. In addition, he listed the "constraints" on helicopter lift capabilities at the high altitudes at which the howitzers would have had to have been positioned, the danger involved in setting field pieces and their ammunition down on rugged terrain, the weather conditions that prevailed, and the drain on air power

and ground combat units that protection of the howitzers would have demanded. Thus, even if the howitzers had been in theater, he asserted, he would not have brought them in on the first day. "So there were trade-offs which, again, I didn't face because we didn't have 105s in country." Hagenbeck went on to praise the fire support provided by Apache AH-64 attack helicopters, A-10 attack aircraft, and AC-130 gunships. But he was critical of the tasking procedures that sometimes resulted in hours passing before a request for close air support was executed. He also noted that the noise of the arriving aircraft often allowed the enemy to get into their caves, which were virtually immune from anything but a direct hit by a 2,000-pound explosive.<sup>66</sup>

While many officers in the field artillery community were also critical of close air support in ANACONDA and believed that howitzers, under certain conditions, could have provided effective and, equally important, more timely fires than friendly aircraft, they took issue with the arguments posed by Franks and Hagenbeck for not employing the artillery. The counterarguments began at the beginning, with deployment, by claiming that field artillery batteries, perhaps somewhat reduced, would not have required that much more airlift to deploy into the theater than did the mortar units sent in. Proponents of this view conceded the mortar's lightness and greater maneuverability compared with the howitzer but maintained that the howitzer's greater range, firepower, and accuracy compensated for its comparative disadvantage in mobility. Mortars, for example, had to move much closer to a target to be in range, and this took time and support assets. More time was required to seat the mortar's baseplate firmly into the ground, a step necessary for allowing the weapon to cover certain ranges. Furthermore, because of the mortars' proximity to the target, they proved vulnerable in ANACONDA to enemy mortar fire that would not have been able to reach the howitzers. Another point in the howitzer's favor brought forth analogies to Vietnam. The mortars could not clear a "hot" landing zone as howitzers could, a shortcoming that the howitzer's advocates argued had cost lives when friendly forces, receiving heavy fire upon arriving at their landing zone (LZ), did not receive timely fire support. To those making these arguments, then, the howitzer was clearly a better weapon than the mortar for close supporting fires and for destroying enemy artillery. It should have been deployed to Afghanistan, they maintained, and employed in ANACONDA. To have howitzer crews in Afghanistan manning 120-mm mortars was regarded as "a step in the wrong direction for the artillery."<sup>67</sup>

To many, the big battles early in the Afghanistan campaign raised questions about the relevance of field artillery for low-intensity hostilities.

The issue continued to fester when, following Operation ANACONDA, the conflict in Afghanistan shifted to unconventional, guerrilla-like warfare. When a brigade of the 82d Airborne Division entered the country in July 2002, it brought with it a battery of M119 105-mm howitzers and, in doing so, set a precedent that successive conventional brigades rotating in and out would follow. In the new phase of the conflict, the artillery took part in three kinds of undertakings: major combat operations, firebase and forward operating base support, and logistics operations.<sup>68</sup> Some of the artillery units were undermanned and underequipped; they also often found themselves in operations that were decentralized, once again summoning up for some an analogy with Vietnam. In such an environment, battery officers and fire supporters were often compelled to operate in “a nontraditional and equally nondoctrinal manner for many missions.”

The combat operations lasted anywhere from several hours to several weeks, with mortars and artillery pieces being inserted either by ground convoy or airlift. Whatever the method, problems of mobility often arose, as the following case describes.

Due to constant moves along these tough valleys . . . C Battery (105-mm) had trouble maintaining the pace of the anti-tank company ground movement and other air assault assets; the large amount of howitzer ammunition had overloaded the trucks (we only brought two). The B Battery platoon of mortars also experienced difficulty in repositioning with just gators for transport and had to rely on help from the maneuver battalion’s supply and transport (S&T) platoon.<sup>69</sup>

Despite these problems and the large number of combat operations in which the unit in question was involved, “firing was limited.” Most of the time the howitzers fired illumination or high explosives to establish a “presence” or as a show of force to “demonstrate resolve to a sometimes recalcitrant local population.”

Most of the artillery pieces in Afghanistan were located at firebases from which they fired in support of maneuver units, SOF, and other friendly forces. When enemy groups began ambushing patrols, a “combined arms approach” employing well-armed infantry and high explosive rounds from supporting artillery proved an effective response. The main threat posed by the enemy came from 107-mm rockets fired at the firebases. US artillery units used their Q-36 Firefinder radars to determine the location from which the rockets had been launched, but a counterfire response was

problematic. The radars could not tell US gunners whether the incoming ordnance had been launched from a deserted or highly populated area, and strict ROE prohibited a lethal response that risked killing innocent civilians. The artillery could fire illumination rounds to let enemy mortar and rocket teams know their location had been discovered, but such rounds also gave the enemy a chance to escape. The usual response to hostile fire, therefore, was to launch a patrol or attack helicopter into the area pinpointed by the radars and hope to catch the enemy still in place. The ability of artillery to locate but not dispatch the enemy again raised the issue of artillery's relevance on a low-intensity battlefield.

Artillery units in Afghanistan also conducted logistics operations and, as in the past, performed a host of other duties as well, to include base security (which often required taking artillerymen off gun crews), information operations (IO), CMO, and airfield support, all of which competed with traditional artillery duties. Still, despite the multitude of problems understrength artillery units faced in Afghanistan, the officers who served there believed they had made a significant contribution to unseating the Taliban and in keeping the remnants of Taliban and al Qaeda fighters at bay. But, as skeptics continued to argue, until the Army developed a lighter, more mobile field piece, doubts would still surround "the practical uses of artillery in non-conventional settings."<sup>70</sup>

In 2003, the Second Gulf War, Operation IRAQI FREEDOM, pushed the controversy to the background briefly, as field artillery played a prominent part in the mid-intensity operation that "seemed in many ways unexpectedly old-fashioned, although the term *enduring* might better describe many of its essential characteristics."<sup>71</sup> Yet, as the transition took place from war to a stability operation, artillerymen serving in Iraq were once again performing tasks for which few had trained. A recent issue of *Field Artillery* contains several articles about the postwar activities of artillery units; the list includes force protection, IO, CMO, PSYOP, dismounted patrols, securing oil facilities, guarding a bank, overseeing a detention facility, helping set up elections and establishing provincial governments, clearing buildings and weapons caches, setting up a nongovernment organization (NGO) reception center, and training.<sup>72</sup>

As for the insurgencies that erupted in the wake of Saddam Hussein's defeat, to the extent that they were urban based, field artillery was constrained in what combat actions it could perform. The Q-36 would often pick up a target, but battalion and brigade headquarters would have to study the data to determine if friendly units or civilians were in the

target area. Several minutes would often pass before the gunners received instructions to shoot or to hold their fire. When they did shoot, they often received no feedback on how effective their fires had been.<sup>73</sup> Frequently, the resulting mood was one of disappointment and frustration, triggered in part by doubts as to whether the artillery was accomplishing any good against the hit-and-run tactics of the insurgents. Somewhat more satisfying was the role played by artillery in the counterinsurgency operations in Fallujah in late 2004. Before US and Iraqi ground troops entered the city, American aircraft, artillery pieces, and mortars pounded insurgent targets. Once the ground attack started, Army M109A6 Paladin self-propelled 155mm howitzers, Marine artillery pieces, and US mortars fired at strongpoints and other insurgent areas identified by field observers and air surveillance. In most cases, the rounds landed within 5 yards of their target. When the artillery did not attain that degree of accuracy, aircraft or other weapon systems were often called in. Generally speaking, though, field artillery helped accelerate the pace of the successful operation.

## **Conclusions**

From its rudimentary beginnings in the late Middle Ages down to the present day, field artillery has evolved technologically in ways that are quite impressive. The cumbersome, highly inaccurate, virtually immobile, direct-fire siege weapons of the 13th and 14th centuries stand as curious relics when compared with today's much lighter, rapid-firing, mobile, indirect-fire towed and self-propelled howitzers and guns. In the process, the stone and solid shot fired by the antiquated pieces over past centuries have gone by the wayside, quaint artifacts in a world of precision-guided ordnance. But as the artillery has developed, so have all aspects of the battlefield on which it is employed. Today, an increasing number of weapon systems can deliver powerful and accurate ordnance on enemy forces. Coordinating the fire support necessary to accomplish a mission has become a complex process requiring advanced, computerized technology together with officers capable of making the process and equipment work efficiently and effectively. And while the varieties of military operations have not changed in their typologies, artillery is no longer confined, as it was in its infancy, to high-intensity warfare between conventional forces. In the US experience alone, field pieces have been employed throughout the history of the republic in high-, mid-, and low-intensity conflicts. It is the role of field artillery in the latter category of operations—currently identified as MOOTW—and how that role coincides with, or differs from, what is required at the other two levels of conflict, that has been the focus of this extended essay.

In summarizing the experience of US field artillery in MOOTW over the course of more than two centuries, one should begin by remembering that in many of the categories that constitute stability operations, the possibility for combat exists, and that under certain circumstances, field artillery might be able to function as though it were in a high-intensity, unlimited, conventional war. More often than not, however, stability operations are guided by political considerations that impose constraints—among them restrictive ROE—on the friendly forces involved. US Army Field Manual 3-07, *Stability Operations and Support Operations*, emphasizes both of these situations with respect to fire support in general and field artillery in particular, referring to the destructive combat power the artillery provides a commander but also stressing the deterrent value of field pieces, the usual requirement to use “minimum essential force,” and the need in many situations to avoid collateral damage.<sup>74</sup>

The historical experience of the US field artillery supports these doctrinal observations. From the Indian wars through the current deployment of artillery units in the Balkans, Afghanistan, and Iraq, the role of artillery on the nonconventional battlefield has revealed patterns and repeated themes.

- In combat, the field pieces proved effective, both in the offense and defense, when hostile, unconventional forces have come together in mass to fight or to seek the protection of a fortified position.
- Even when these conditions did not prevail, and were not likely to, some commanders deployed artillery pieces just to be ready for any eventuality, the “firepower insurance” cited so often in this essay.
- In situations short of combat, the artillery often served as a deterrent, a “presence,” or a show of force.
- Finally, US artillerymen for over 200 years have learned to perform a vast variety of other duties—usually by way of “on-the-job training”—most having nothing to do with firing their weapons but which were deemed essential to the accomplishment of the stated mission.

During the Indian wars, there were those US officers who, like Custer, believed field artillery had no role to play in unconventional warfare, much less in an environment that did not involve hostilities at all. That point of view has resurfaced more recently in the debate over military transformation. As US armed forces reorganize to adapt to the post-Cold War world and GWOT, the Army Campaign Plan calls for fewer field artillery, armor, air defense, engineer, and logistics units and an increase in MP, transportation, civil affairs, military intelligence, and special operations units. The arguments for cutting back on field artillery center

on the mobility, accuracy, and redundancy of the weapon system. In other words, can other weapons be deployed more easily and provide similar or better results than field artillery? In addressing these issues, the discussion tends to focus on the role of artillery in conventional warfare. It is hoped that this essay has made a case for extending the discussion to MOOTW as well.

If field artillery is on the defensive in some quarters, it is probably too early to write it off as a contributor to US stability operations.<sup>75</sup> It is still faster than most aircraft in responding to calls for close support fires by units receiving hostile fire, even from unconventional forces. Also, the number of highly sophisticated, precision-guided munitions available to other weapon systems may be limited in number because of their expense. At the same time, more precise munitions are being developed for artillery pieces that should allow them to increase their accuracy against fortified targets or targets located within civilian areas. And if artillery no longer enjoys its preeminence as a ground-based show of force weapon, its illumination and high explosive rounds can still have a deterrent effect on hostile forces or restless populations.

In short, field artillery was constructed primarily to operate on a conventional, high-intensity battlefield, but over the centuries, and certainly in the history of American military operations, it has adapted to unconventional warfare and various kinds of stability operations in which a threat of violence is inherent. To this point, it has generally adjusted well to MOOTW, as this essay has demonstrated, and despite problems of battlefield mobility and the requirement for restraint in most stability operations, there is every reason to believe that field artillery will continue to have many roles to play in MOOTW for the foreseeable future.

### Notes

1. J.B.A. Bailey, *Field Artillery and Firepower* (Annapolis, MD: Naval Institute Press, 2004); Boyd L. Dastrup, *King of Battle: A Branch History of the U.S. Army's Field Artillery* (Fort Monroe, VA, and Washington, DC: U.S. Army Training and Doctrine Command, and Center of Military History, 1993).
2. FM 3-07: *Stability Operations and Support Operations* (Washington, DC: Headquarters, Department of the Army, February 2003), 1-1.
3. *Ibid.*, 1-2.
4. Robert W. Coakley, *The Role of Federal Military Forces in Domestic Disorders, 1789-1878* (Washington, DC: United States Army Center of Military History, 1988); Clayton D. Laurie and Ronald H. Cole, *The Role of Federal Military Forces in Domestic Disorders, 1877-1945* (Washington, DC: United States Army Center of Military History, 1997).



5. Unless otherwise noted, the following section on the Indian campaigns is taken from Larry Don Roberts, "The Artillery with the Regular Army in the West from 1866 to 1890," Ph.D. dissertation (Stillwater, OK: Oklahoma State University, May 1981); Fairfax Downey, *Indian Wars of the U.S. Army, 1776-1865* (Garden City, NY: Doubleday & Co., 1963); Major Prisco R. Hernandez, ARNG, "No Master Plan: The Employment of Artillery in the Indian Wars, 1860-1890," *Field Artillery* (July-August 2000), 12-17.
6. Sam C. Sarkesian, *America's Forgotten Wars: The Counterrevolutionary Past and Lessons for the Future* (Westport, CT: Greenwood Press, 1984), 108-10.
7. Hernandez, "No Master Plan," 12.
8. On the field pieces used on the Indian frontier, see Dastrup, *King of Battle*, 132-33; Robert M. Utley, *Frontier Regulars: The United States Army and the Indian, 1866-1890* (Bloomington, IN: University of Indiana Press, 1976), 72; Roberts, "Artillery," 20, 32-35. The weight cited for each of the field pieces refers to the tubes only, not to the combination of tube and carriage.
9. Robert Wooster, *The Military & United States Indian Policy, 1865-1903* (Lincoln, NE: University of Nebraska Press, 1988), 29-30.
10. Hernandez, "No Master Plan," 13-14; John K. Mahon, *History of the Second Seminole War, 1835-1842* (Revised, paperback ed., Gainesville, FL: University of Florida Press, 1991), 104-6.
11. Roberts, "Artillery," 53-61.
12. Jerome Greene, *Nez Perce Summer, 1877: The U.S. Army and the Nee-Me-Poo Crisis* (Helena, MT: Montana Historical Society Press, 2000), 77-83 (with the quoted material appearing on 78); Utley, *Frontier Regulars*, 305.
13. Roberts, "Artillery," 85. This brief description of the use of artillery to assault the Modoc stronghold is based on Roberts' longer account, 82-108.
14. This observation is cited in Wooster, *Indian Policy*, 149.
15. Roberts, "Artillery," 195.
16. A brief account of the action at Wounded Knee can be found in Utley, *Frontier Regulars*, 406-8.
17. Dastrup, *King of Battle*, 133.
18. *Ibid.*
19. *Ibid.*, Chapters V-VII. Dastrup's study concerns the US Army. For a brief overview of the artillery pieces employed by the Marine Corps during this period, see Major A.D. Natri, USMC, "USMC Artillery, 1900-1941," *Field Artillery Journal* (July-August 1977), 32-36.
20. Conversation between Professor Brian M. Linn and Dr. Lawrence A. Yates, 22 May 2004.
21. Glenn Anthony May, *Battle for Batangas: A Philippine Province at War* (New Haven, CT: Yale University Press, 1991), 96, 108, 110-11.
22. Captain Stephen M. Fuller, USMCR, and Graham A. Cosmas, *Marines in the Dominican Republic, 1916-1924* (Washington, DC: Headquarters, U.S. Marine Corps, History and Museum Division, 1974), 16, 18.
23. Neill Macaulay, *The Sandino Affair* (Paperback ed., Durham, NC: Duke University Press, 1985), 173.

24. Fuller and Cosmas, *Dominican Republic*, 20.
25. Michael Davis, "Boxer Rebellion," in Jerold E. Brown, ed., *Historical Dictionary of the U.S. Army* (Westport, CT: Greenwood Press, 2001), 65; Remarks by Charles Byler at the Society for Military History 2004 Annual Meeting, 21 May 2004.
26. Herbert Molloy Mason, Jr., *The Great Pursuit* (New York: Konecky & Konecky, 1970), 84.
27. Donald Smythe, *Guerrilla Warrior: The Early Life of John J. Pershing* (New York: Charles Scribner's Sons, 1973), 224-25.
28. U.S. Marine Corps, *Small Wars Manual (Reprint of the 1940 Edition)* (Washington, DC: Headquarters, United States Marine Corps, 1987), Chapter II, 60, 62.
29. *Ibid.*, 61-64.
30. For the post-World War II discussion of artillery issues, see Dastrup, *King of Battle*, 241-52.
31. In asking Congress to authorize US economic and military assistance to Greece and Turkey, President Harry Truman sought to shock his audience by employing universal rhetoric in support of the regional initiative. "I believe," Truman proclaimed, "that it must be the policy of the United States to support free peoples who are resisting attempted subjugation by armed minorities or by outside pressures."
32. Larry E. Cable, *Conflict of Myths: The Development of American Counterinsurgency Doctrine and the Vietnam War* (New York: New York University Press, 1986), 9-29 (the quotation used above is located on page 29; italics added).
33. *Ibid.*, 57.
34. This paragraph on Korea, including the quotations, is based on D.M. Giangreco, *Artillery in Korea: Massing Fires and Reinventing the Wheel*, Korean War Anthology (Fort Leavenworth, KS: Combat Studies Institute, 2003).
35. This brief look at US artillery in Lebanon is based on Jack Shulimson, *Marines in Lebanon, 1958* (Washington, DC: Headquarters, U.S. Marine Corps, Historical Branch, 1966); Major General David W. Gray, USA (Ret.), *The U.S. Intervention in Lebanon, 1958: A Commander's Reminiscence* (Fort Leavenworth, KS: Combat Studies Institute, 1984); 24th Infantry Division, *After Action Report, Lebanon, 5 November 1958*; Headquarters, American Land Forces, Beirut, Lebanon, *After Action Report, 15 July – 25 October 1958*, 25 October 1958; Headquarters, 24th Airborne Brigade, *Command Reports, 1-31 August 1958*, no date.
36. This brief look at US artillery in the Dominican intervention is based on U.S. Forces Dominican Republic, *Stability Operations*, Part 1, Vol. II; Part 1, Vol. IV; Part II; Part III.
37. *Ibid.*, Part 1, Vol. II.
38. *Ibid.*, Part 1, Vol. IV.
39. Dastrup, *King of Battle*, 278. This quote comes at the end of a section (265-78) in which the author provides a succinct overview of developments in field artillery between 1954 and the early 1960s.

40. The general officer was Major General W. O. Kinnard. His quotation is from *ibid.*, 281.
41. Robert H. Scales, Jr., "Firepower and Maneuver in the Second Indochina War," *Field Artillery Journal* (September-October 1986), 51.  
On the rare occasions when North Vietnamese and VC troops did mass and mount a major offensive, they tended to suffer enormous casualties. The Tet Offensive in 1968 is perhaps the best example of this. Once the United States had withdrawn most of its forces, however, such conventional offensives proved quite effective and ultimately brought the defeat of the South Vietnamese military and government.
42. Bailey, *Field Artillery*, 370-71.
43. On the purpose of the FSB, as well as its layout and the tactics employed for defending it, see James J. Carafano, "Fortresses and Firepower in Vietnam," *Field Artillery* (August 1988), 39-40. See also Carafano, "Letters from Vietnam," *Field Artillery* (October 1987), 26. On the dispersion of US combat forces, including field artillery, see Bailey, *Field Artillery*, 370. Bailey writes, "The priority was not so much the concentration of fire as the dispersal or mobility of assets in order to provide coverage over a large area. For this reason fire control, which in Europe was increasingly focused at battalion level, was reinforced in Vietnam at battery level."
44. Dastrup, *King of Battle*, 284; Bailey, *Field Artillery*, 370.
45. Bailey, *Field Artillery*, 371, 378; Carafano, "Fortresses," 37-39; Carafano, "Letters," 28.
46. Bailey, *Field Artillery*, 372.
47. *Ibid.*, 379.
48. *Ibid.*, 379-80; Andrew F. Krepinevich, Jr., *The Army and Vietnam* (Baltimore: The Johns Hopkins University Press, 1986), 201. In this same citation, Krepinevich argues that "Artillery was employed not so much out of necessity as out of sheer availability . . ." He adds that, with "the exception of the Tet Offensive, 70 percent of U.S. artillery rounds in Vietnam were fired in situations of light or inactive combat."
49. Bailey, *Field Artillery*, 380; Carafano, "Letters," 29.
50. Carafano, "Letters," 28.
51. Bailey, *Field Artillery*, 381-82.
52. David Ewing Ott, *Field Artillery, 1954-1973*, Vietnam Studies (Washington, DC: Department of the Army, 1975), 231-32.
53. For the lessons of Vietnam as applied to field artillery and for the developments in field artillery during the 1970s and 1980s, see Dastrup, *King of Battle*, 290-312; Ott, *Field Artillery*, 231-36; Bailey, *Field Artillery*, 383-84.
54. Major Scott R. McMichael, "Urgent Fury: Looking Back and Looking Forward," *Field Artillery Journal* (March-April 1985), 10-11.
55. Mark Adkin, *Urgent Fury: The Battle for Grenada* (Lexington, MA: Lexington Books, D.C. Heath and Company, 1989), 282-83.
56. McMichael, "Urgent Fury," 8-13.
57. The advantages and disadvantages of the M198 155-mm howitzer in its role

- as a light division's direct support weapon are discussed in Major Walter B. Brown II, "The M198: New Howitzer For Light Divisions," *Field Artillery* (July-August 1982), 26-29.
58. XVIII Airborne Corps, OPLAN 90-2 (BLUE SPOON), 3 November 1989.
  59. This brief assessment of the role of artillery during UNITAF operations in Somalia from December 1992 to May 1993 is based on Robert F. Baumann and Lawrence A. Yates, "*My Clan Against the World*": *US and Coalition Forces in Somalia, 1992-1994* (Fort Leavenworth, KS: Combat Studies Institute Press, 2004, 45; draft histories of UNITAF, one by Dennis P. Mroczkowski, another by David Dawson; US Army Forces, Somalia, *10th Mountain Division (LI) After Action Report Summary*, 9, 61-62.
  60. Carl F. Ernst, "The Urban Area During Support Missions Case Study: Mogadishu—The Operational Level," in Russell W. Glenn, ed., *Capital Preservation: Preparing for Urban Operations in the Twenty-First Century* (Santa Monica, CA: RAND, 2001), 384.
  61. Baumann and Yates, *My Clan*, 188-89.
  62. Walter E. Kretchik, Robert F. Baumann, and John T. Fishel, *Invasion, Intervention, "Intervasion": A Concise History of the U.S. Army in Operation Uphold Democracy* (Fort Leavenworth, KS: CGSC Press, 1997), 51, 58-59, 102; 10th Mountain Division (LI), *Operation Uphold Democracy After Action Report*, nd, 60-63.
  63. On the use of artillery in Operation JOINT ENDEAVOR, see U.S. Army Center for Lessons Learned (CALL), *Operation JOINT ENDEAVOR: Task Force Eagle Initial Operations* (Fort Leavenworth, KS: CALL, May 1996; Robert F. Baumann, "IFOR Redefines the Bosnian Situation," draft chapter in a larger CSI study of the US role in Bosnia coauthored by Dr. Baumann; Major James W. Vizzard, "Field Artillery in Stability and Support Operations," paper for A645: Case Studies in U.S. Interventions and Contingency Operations, Fort Leavenworth, KS, May 2004.
  64. Oral History Interview, Lieutenant Colonel Roderick M. Cox, 17 May 2004, CSI, Fort Leavenworth, KS, interviewed by Dr. Lawrence A. Yates.
  65. For the controversy surrounding the decision to not to deploy field artillery pieces with the 10th Mountain Division and the 101st Airborne Division, see Anthony H. Cordesman with Patrick Baetjer, *The Ongoing Lessons of Afghanistan: Warfighting, Intelligence, Force Transformation, and Nation Building* (Washington, DC: Center for Strategic and International Studies, 2004), 110-11; Bailey, *Field Artillery*, 425-27; Captain Joshua D. Mitchell, "A Case for Howitzers in Afghanistan," *Field Artillery* (November-December 2003), 6-9; Robert H. McElroy with Patricia Slayden Hollis, "Afghanistan: Fire Support for Operation Anaconda," *Field Artillery* (September-October 2002), 5-9.
  66. The McElroy and Hollis article cited in the previous note contains the interview with Major General Hagenbeck.
  67. Lieutenant Colonel Dennis D. Tewksbury and Major Joel E. Hamby, "Decentralized Fires in Afghanistan: A Glimpse of the Future?" *Field Artillery* (November-December 2003), 12.

68. What follows on the use of artillery after Operation ANACONDA is based on *Ibid.*; Mitchell, "Howitzers"; Joshua D. Mitchell, "Afghanistan: Firing Artillery Accurately with Air Force Met Support," *Field Artillery* (January-February 2003), 38-41; Scott E. Prochniak and Dennis W. Yates, "Counterfire in Afghanistan," *ibid.* (September-October 2002), 15-18.
69. Tewksbury and Hamby, "Decentralized Fires," 13. One method used to facilitate the airlift of howitzers in the field was to load them *inside* a CH-47 Chinook helicopter, rather than have them slung below the aircraft.
70. Cordesman with Baetjer, *Ongoing Lessons of Afghanistan*, 111.
71. Bailey, *Field Artillery*, 440.
72. See various articles in *Field Artillery* (January-February 2004).
73. Robert Hodieme, "Ready to return fire: Artillery unit watches, waits, targets enemy rockets," *Army Times*, 23 February 2004.
74. FM 3-07, 2-6.
75. The reader may note at this point that the MOOTW category of domestic support operations, raised earlier in this paper because artillery was often employed, has been dropped from the discussion. Once artillery became capable of indirect fire, its size and capabilities are far in excess of anything that a political leader would wish to see employed in domestic disturbances, even if only for its psychological effect.

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