Chapter 7

CONTINUITY AND CHANGE

Specialist Fourth Class Steven Slocum, his khakis rumpled after the 17-hour flight from Tan Son Nhut, looked pensively through the window of his "freedom bird" as it dropped low over Travis Air Force Base, California. Twelve months earlier and only one month after his eighteenth birthday, he had joined the 1st Battalion, 327th Airborne Infantry, near Phan Rang, Vietnam. After five months in the jungle, he had taken two AK rounds in the groin in an ambush outside Chu Lai. His best friend, Corporal Robert Groom, had been killed. Instead of returning to the States, Slocum had insisted on recuperating in Japan so that, after recovering, he would be sure to return to his buddies in Charlie Company. He caught up with them in the A Shau Valley in February just in time for the 1968 Tet Offensive. The company's mission was to block Highway 547, which ran east out of the valley toward Hue, and to prevent the NVA from reinforcing the city. Troops called this muddy jungle path "the yellow brick road." Charlie Company's 110 paratroopers collided with an NVA regiment there late one February morning. After a day-long firefight, Slocum was the senior of 32 paratroopers who were still alive and unwounded.

Slocum deplaned at Travis and was moved with a herd of soldiers through the usual lineups and tiresome debriefings. Still in his khakis, he picked up a few hundred dollars travel money and caught a cab to San Francisco International Airport for the trip home to Panama City, Florida. A few passengers watched curiously as he stood in line to buy his ticket. No big deal. He was one of the lucky ones; he wasn't accosted or hassled...he was just ignored.

Twenty-three years later, on March 18, 1991, Command Sergeant Major Slocum returned from another war. The big Pan American 747 broke through the overcast as it lined up to land at Pope Air Force Base, North Carolina. Slocum's 2d Brigade, 82d Airborne Division, the

DRB-1, had been the first American combat unit to deploy to Saudi Arabia. Eight grueling and uncertain months of digging fighting positions and humping 80-pound rucksacks in up to 120-degree heat followed. The discomforts of living in holes for months at a time with no showers, no latrines, and no hot food were as bad or worse than Vietnam. But more than years separated the experience in Desert Storm from that in Vietnam. For one thing, Slocum took 2,000 young paratroopers to the Gulf and brought them all back. Throughout the assault on as-Salman and the clean-up operations that followed, he watched the young infantrymen he had trained go about their business with a professionalism and self-confidence far different from what he had seen on the yellow brick road.

This homecoming was also a great deal different from his return from Vietnam. Ten minutes out, the flight attendants moved through the cabin checking seat belts and occasionally high-fiving the raucous crowd of cocky young infantrymen, who by now were hooting and grunting and pushing each other back and forth in their seats. The attendant in Slocum's aisle was about his age, maybe a year or two older. As she walked by, she put her hand gently on his shoulder and leaning over just a bit to look him squarely in the eye, said, simply, "Thank you, Sergeant Major."

Far from being ignored when they arrived, the troops could see thousands of people with fluttering flags and banners, shouting and waving madly. The hangar was dressed in bunting, and the band was barely audible above the shouts of the crowd. As Slocum formed up his planeload of infantrymen, he scanned the crowd, hoping to spot his wife, Faith, and son, Steven. The speeches lasted only a few moments, but they seemed interminable. As Slocum stood at restless attention, his thoughts drifted to the yellow brick road and then to the flight attendant's kind words, which summed up what all these people were really trying to say.

Nearly a quarter century separated Slocum's return from the two wars—about the same interval that separated two distinctly different armies. A product of both, Sergeant Major Slocum was witness to a revolutionary era of institutional reform. He represents many thousands of selfless professional soldiers who remained with the Army through the tough years and committed their professional lives to making General Abrams' vision of reform a reality. That vision was founded on a unique melding of traditional values with the changing strategic and technological environment that followed Vietnam. The Army's subsequent performance in Grenada, Panama, and during Desert Storm would testify to the completeness of that transformation.

The photo above was taken in November 1967 just days before Specialist 4 Steven Slocum (left) was wounded and his best friend, Corporal Robert Groom (right) was killed. Below, Command Sergeant Major Slocum and his wife, Faith, March 18, 1991.

CONTINUITY

Command Sergeant Major Slocum's story reaffirms this book's central tenet that Army reform began not with a narrow focus on new equipment or doctrine, but with a holistic view of the Army as an institution. Realizing that wars are won by quality soldiers, the Army committed itself to developing them.

Two themes of continuity emerge from this story. The first lies in the paradox that change itself is constant. Armed forces in the past have had to change their doctrine in order to respond to new technologies. Both sides in World War I, for example, fell into the trap of attrition warfare while leaders adjusted to the new dimensions offered by machine guns, tanks, and airplanes on the battlefield. In Desert Storm, however, quality soldiers and leaders at every echelon, well-grounded in solid doctrinal foundations, modernized on the move. They harnessed the sometimes unknown or untested capabilities of their weapons systems to great advantage in the worst of weather and under the most violent combat conditions. The American Army's ability to operate at such a tempo and depth demonstrated a second enduring truth: that in joint operations, land combat plays a decisive role in winning wars with minimum casualties. Indeed, in an age of unprecedented technological advances, land combat is now, more than ever, the strategic core of joint war fighting. Despite 41 days of almost continuous aerial bombardment, the Republican Guard remained a cohesive and viable military force able to fight a vicious battle and survive to fight insurgents in northern and southern Iraq. Driving the Guard from Kuwait and rendering most of its units combat-ineffective took the joint and combined efforts of all Coalition forces.

Other equally immutable truths inherited by the Army from past wars were also reaffirmed in the Gulf. The Army's recommitment after Vietnam to traditional soldierly values of moral and physical courage and discipline was vindicated in full by the performance of numerous leaders and soldiers. Captain John Abizaid, who pushed his company up the hills surrounding Port Salines in Grenada, and who later, as a lieutenant colonel, confronted and backed down Iraqi formations in Northern Iraq *during Provide Comfort is one example. Captain Szabo and Sergeant First* Class Steede, both of whom refused to permit a damaged tank to keep them from leading their soldiers against the enemy, are two more. The accounts of soldiers and leaders in these pages demonstrate the discipline and mental agility that derive from mutual respect and confident, competent leadership, not from fear of punishment.

The Army's aggressive program to provide for soldier welfare served as an essential catalyst for unit bonding and coalescence. Frontline Iraqi soldiers fought poorly because they were neglected. On the other hand,

the Republican Guard—better led and well supplied—fought well, even ferociously. Soldiers fight best when led by effective, caring leaders. Modern combat demands, to an unprecedented degree, creative, adaptive leadership. It also requires a love of soldiers and of soldiering that has been a hallmark of the American Army for more than two centuries. Though American soldiers suffered great hardships in the Gulf, officers and noncommissioned officers shared their discomfort. Leaders provided thorough training and set high standards by their example. Moreover, American soldiers were assured that their families were secure and well cared for in their absence. The Army in the field held itself together under trying and dangerous circumstances because units from squad to corps maintained a sense of cohesion and teamwork that had been nurtured over the years by constant exercise and realistic training. The long established value of placing soldiers on the ground to stake out America's national interests was demonstrated convincingly during Desert Shield.

Whether or not Saddam planned to continue his attack into Saudi Arabia, American paratroopers blocked his path. The rapid deployment of heavy armored units and attack helicopters caused Saddam to dig in and hide behind a formidable barrier in order to protect his gains from attack. The presence of soldiers on the ground during Desert Shield and the decisive joint air and ground operations that ultimately ejected Saddam from Kuwait during Desert Storm again demonstrated that determined enemies can only be defeated with certainty by decisive ground action. Nevertheless, the success of any maneuver depends on the ability of land, sea, and air forces to make conditions as favorable for the ground combat soldier as possible. The more an enemy is battered, blinded, and deceived, the more surely a ground force can end the conflict at the lowest possible cost. The Gulf War again demonstrated that wars can best be ended decisively by occupying our enemy's territory.

Aggressors are often driven to conflict by intangibles such as greed, ideology, or hatred. Once committed, a leader like Saddam Hussein stakes his political and physical existence on standing up to international pressure, and he is not likely to be deflected from that course just because he witnesses the destruction of his hastily mobilized, third-line forces. Likewise, competent armies in the field can be remarkably adaptive and resilient when subjected to physical attack and can, in fact, be tempered and hardened by such adversity. As these pages have shown, Iraq's operational center of gravity, the Republican Guard, and to a lesser extent, the heavy divisions of the regular army, remained a viable fighting force in spite of significant physical damage caused by air attack because their will to fight was not broken. Only by vanquishing an enemy and displacing him on the ground can a military force break the enemy's will and ensure ultimate victory. ***Maintaining an immediately deployable capability for decisive land combat to end a conventional conflict***

successfully is the single most enduring imperative of the Gulf War. It is a lesson that has been repeated with unbroken fidelity through all of America's wars. Writing after the Korean War, T. R. Fehrenbach dealt with exactly the same reality when he wrote:

> *You may fly over a land forever; you may bomb it, atomize it, pulverize it, and wipe it clean of life—but if you desire to defend it, protect it, and keep it for civilization, you must do this on the ground, the way the Roman legions did, by putting your young men into the mud.*[1]

CHANGE

The partner of continuity is change. Every war is unique because the variables that influence the conduct of war, such as the strategic environment, technology, and the global factors of METT-T, change continuously. The cardinal sin of any military organization is planning to fight the next war like the last.

Many aspects of Desert Storm may not apply directly to future conflicts. The combat dynamic in desert terrain differs markedly from that in jungles and mountains. Sorting through the catalog of nations likely to cause mischief or threaten our national interests, it seems unlikely that the United States will again face an enemy as poorly led as the Iraqis. It is equally unlikely that the United States will find such willing allies unless a vital strategic commodity like oil is at risk. Neither can we count on a wealth of regional logistics facilities like Saudi Arabia's, nor expect as much time to prepare for combat.

While specific insights into the future cannot be derived from a single snapshot—even one with the exceptionally fine resolution of Desert Storm—some distinct and powerful threads of continuity begin to emerge from a collage of all post-Vietnam conflicts. From this collage surfaces the outline of a fundamental change in the nature of American wars since Vietnam and a concomitant shift in the manner in which these wars have been fought. While its character remains indistinct, a few tentative generalizations can be made about what increasingly appears to be a new and unique style of fighting wars.

The new style of war fighting is marked first and foremost by relatively small groups of carefully selected, carefully trained, tightly disciplined, and skillfully led fighters equipped with state-of-the-art equipment. They achieve dominance on the battlefield not through numbers but through a continuously high tempo of operations and the skillful employment of superior weapons. Second, in the new style, forces from around the world are concentrated along global lines, using air and sea transport to overwhelm a distant enemy with speed and violence. Third, the enemy is blinded and bewildered by the use of technologically sophisticated means

of deception, an unprecedented knowledge of his capabilities, and, to an increasing degree, of his intentions. Perhaps the trait that most distinguishes the new method of war fighting is the competent conduct of joint and coalition operations. While much has been aired publicly about the problems experienced in orchestrating the various Service components in recent wars, other militaries of the world recognize the United States for demonstrating an exceptional ability to meld land, sea, air, and space components to achieve a synergistic power on the battlefield that far exceeds individual Service capabilities.

As Desert Shield and Desert Storm demonstrated, the American Army has effectively adapted to the evolving character of American war fighting. That ability to adapt is the foundation that will continue to undergird our country's unparalleled military excellence. Inherent in this ability are those sinews or solid, resilient strengths that must be identified and nourished if the Army is to continue to provide a decisive land power dimension in future wars.

Quality Soldiers

Neither two decades of Army reform nor the desert victory it spawned could have occurred without quality soldiers like McMaster, Reagan, Stephens, Lloyd, Steede, Jones, O'Neal, and Purvis in company with the many others whose accomplishments are portrayed here. They vindicated reformers like Abrams and DePuy who rejected the notion that our lessons on the battlefield should be bought in blood and commemorated by monuments to our dead.

Quality soldiers are smart, healthy, fit, and resilient. Only carefully conditioned and disciplined soldiers could have functioned effectively when inserted into the 120-degree heat of Saudi Arabia with less than a day's warning. Early deploying forces like Slocum's paratroopers not only acclimated themselves quickly but were ready to march and fight on arrival. They maintained themselves for months in the most primitive conditions imaginable. Not one of the 315,000 soldiers deployed to Southwest Asia died of heat injury, and the overall sickness rate was the lowest of any Army in history.[2] On the battlefield, well-trained crewmen, aviators, and infantrymen demonstrated steadfastness, tenacity, and propensity for action in close combat. A telling mark of their discipline was their self-control and reluctance to kill Iraqi soldiers who could do them no harm and their overnight metamorphosis from warriors to humanitarians after the cease-fire.

Successful application of AirLand Battle doctrine relies on quality soldiers. Complex equipment cannot be transported to a theater and flung across a battlefield with the velocity and intensity of Desert Storm unless it is crewed by soldiers who understand how it works and how to keep it going when established procedures fail. AirLand Battle demands

flexibility, creativity, and individual initiative of leaders from sergeant to general—traits that can only be developed within a body of exceptional human talent.

Quality soldiers permit developmental technology to be inserted directly on the battlefield. The bold decision to modernize the Abrams and Bradley fleets in theater was made mainly because the Army leadership recognized that exceptional combat arms crewmen could exchange the equipment quickly without any loss in fighting ability. The appearance of GPS during Desert Shield obliged combat units to change tactics and operating procedures in order to realize the full potential of precision-locating devices. The successful employment of prototypes and nondevelopmental items such as TROJAN, JSTARS, ATACMS, and aerial drones was due in large measure to soldiers and leaders who quickly grasped how to operate the equipment after only rudimentary familiarization and then, on their own, devised tactics and techniques to employ it to best advantage.

In a volunteer army, quality soldiers are a precious commodity. In peace, they have the option of voting with their feet and will do so if they are not rewarded adequately for their service or sufficiently challenged in their jobs. When committed to a distant theater, they must receive the best possible care that limited infrastructure and transportation will support. Better field feeding, clothing designed for specific climates, proper hygiene facilities, temporary shelter, and in-country recreation constitute the most pressing requirements. In war, soldiers deserve, and American society increasingly demands, extraordinary efforts to limit the human cost of conflict. While the soldiers are deployed, their families must be cared for at home. Recent history has shown that quality soldiers, led by caring, competent, confident leaders, are better able to cope with the stress imposed by close combat—an edge honed by realistic force-on-force training at combat training centers—and are thereby able to survive longer.

Training, Education, and Leader Development

The Army was prepared to fight in Desert Storm because it made the commitment through two decades of reform to train realistically, and it willingly paid the price in dollars and sweat to fulfill that commitment. Leaders were prepared to lead because the Army invested in schools that developed officers and noncommissioned officers by motivating them to pursue self-development, rewarding competence, and giving them the confidence to lead. Units fought well in the desert because they had been bonded and exercised realistically in the field during deployments, ARTEPs, and live-five exercises. Most importantly, combat units had undergone the necessary combat inoculation that can only come from realistic force-on-force mock combat at the NTC at Fort Irwin, California, JRTC recently relocated to Fort Polk, LA, CMTC at Hohenfels, Germany,

maneuver exercises, and simulation. War gaming and command post exercises using BCTP had supplemented live-fire and maneuver exercises and honed the less tangible skills of decision making and coordination that are so critical to higher-level commanders and their staffs.

If wars are to be won at the lowest possible cost in the future, soldiers must learn to fight realistically before deployment. Despite the luxury of more than two years' predeployment training, some World War II units such as General DePuy's 90th Division suffered terribly once exposed to the realities of combat. In a force projection army, units may have only hours' notice before they find themselves engaged in direct combat. In times of shrinking budgets, the temptation will always exist to reduce training expenditures because the tangible value of training dollars is difficult to measure—difficult, that is, until a force inadequately prepared for the realities of combat is again sent into harm's way. General Abrams' warning is clear. The price paid for unpreparedness will not be in dollars but in blood and sacrifice.

A common view among military writers following Vietnam was that the Army exhibited a singular inability to adapt its doctrine and training to the unique character of that war. A perception emerged of Army leaders who continued to emphasize larger-scale operations using massive amounts of firepower while only a few chose to fight the insurgent on his own terms. Whatever the fairness of this accusation, the perception of intellectual ossification that lingered after the war compelled the Army to change fundamentally the way it trained and educated soldiers and leaders.

The battlefields of Iraq and Kuwait demonstrated the completeness of the Army's training revolution. The officer and NCO educational systems not only improved the professional skill of leaders, but inculcated and nourished in them the initiative and confidence to extend themselves beyond the bounds of set procedures and doctrine. Leaders from corps commanders to squad and section leaders demonstrated an unprecedented ability to focus their intellectual energy to solve thorny problems and to adapt themselves to a completely foreign combat environment. In October 1990 no procedures existed for moving a European-based corps 5,000 miles and transforming it into a contingency force on the fly. Yet within three months, General Franks' VII Corps deployed, with some units moving almost immediately after debarkation directly from port to attack positions. While an armored division commander might command a 90-degree turn on the move, smooth execution demands that tens of thousands of soldiers respond quickly and solve among themselves an equal number of problems and unforeseen difficulties that inevitably accompany such a complex maneuver. To succeed, an operation as complex and dangerous as the passage-of-lines executed by the 1st Infantry Division through the 2d ACR demands exceptionally well-trained units.

In another example, only confident, self-reliant soldiers like Lieutenant Jerry Biller's "Team Jerry" could have pressed on without orders through the darkness and mud of the Euphrates Valley to locate landing zones for the helicopters of the 101st. Major Lloyd Gilmore's transformation of a helpless mob of Kurdish refugees into an organized hierarchy is yet another example of initiative and adaptability—one that helped save thousands of lives in the process. A future contingency-based Army will continue to place a premium on soldiers who are flexible, adaptive, and self-reliant—traits that can only be engendered by a system of education and training that continues to be progressive, innovative, and adequately resourced.

Dominant Overmatch in Weapons Technology to Achieve Quick Victories with Low Casualties

In 1942 the M-4 Sherman was a fine tank, but by the time the European campaign started in earnest two years later it had been seriously outclassed by German Panther and Tiger tanks. In an often told story, a German antitank officer who was captured after a particularly bloody engagement with American armor during the Italian campaign professed that his unit lost the fight because it ran out of projectiles before the Americans ran out of tanks. This perhaps apocryphal story makes the point that in the conscripted army of World War II, to have many more of a lesser weapon was acceptable because America could always produce enough men and materiel to inundate an enemy with quantity if not quality.

That ethos no longer applies. With each post-World War II conflict, the patience to suffer through a protracted conflict of attrition warfare and to tolerate combat deaths has decreased dramatically. In fact, the tremendous success of Desert Storm may have created unrealistic expectations in the public's mind concerning the American Army's conduct of ground operations. Only fortuitous circumstances of enemy and location might allow the Army to repeat a victory won so quickly and so cheaply. The challenge to do as well next time will be complicated by future antagonists learning from the egregious mistakes of Saddam Hussein.

If our nation's armed forces are to win quickly at low cost, they must begin to control an enemy's movements and to defeat him psychologically and physically well before the eye-to-eye, direct fire battle begins. Desert commanders used air operations and deception to lay down a deep carpet of destruction to mask attacking units and to break the Iraqis as early as possible. General Peay's technique for deep attack focused on mobility. The surprise appearance of a substantial combat force 180 kilometers into Iraq unhinged Iraqi forward defenses and created an obstacle whose destruction would require an immediate and complete reorientation of substantial enemy ground forces—a task beyond the Iraqis' capabilities.

Generals Griffith, Funk, Rhame, and Franks struck deep with firepower and mobility. Successive waves of tactical air power and missiles, followed by Apaches and finished with MLRS, fixed the enemy in place and weakened him for subsequent destruction.

In the new style of war, simultaneous attack in depth will be accomplished expeditiously and more cheaply using long-range tactical missiles. Capable of killing point targets with smart precision munitions guided by millimeter wave and infrared seeker technology, these missiles can selectively destroy critical targets. Such technologies, indeed, have already changed the dynamics of the battlefield. Yet, ATACMS will only be effective against fleeting targets if a UAV or JSTARS or a clandestine Special Operations team can track the target and send a mission directly to the firing unit within minutes.

In addition to threatening the enemy throughout his operational depth, the desert commanders sought simultaneously to eliminate all Iraqi capabilities that might impede the positioning and maneuver of Coalition forces. The process took three forms. First, the Iraqis were blinded, principally by being denied use of the air. They could not get high enough to see into the Coalition sector, nor could they exploit their own aerial mobility to insert special operations forces into Coalition rear areas. XVIII Airborne Corps and VII Corps pre-G-Day raids into the security area robbed Iraqi frontline commanders of their ability to see over the berm. Fear of certain detection and destruction also kept most of Iraq's state-of-the-art electronics surveillance, detection, and jamming devices off the air. Second, air and artillery specifically targeted the Iraqi reserves capable of counterattack to fix them in place for later destruction by maneuver forces. The annihilation of the "go-away brigade" during the air phase of the operation is an example of how effective air power, concentrated and relentlessly applied to a single operational objective, can be in paving the way for a ground maneuver force. Third, longer-range Iraqi artillery was detected and destroyed by immediate counterbattery fire. The war clearly demonstrated the success of the side that fully integrates its intelligence, fire control, and communications with devastating effect. With modern target acquisition means such as UAVs and counterbattery radars, any artillery unit that fires can be detected instantly, no matter how well emplaced or hidden. The Iraqi experience confirmed that if artillery is to survive, it must move quickly and continuously about the battlefield between missions. Although the Iraqis were never able to adjust fires to capitalize on the superior range of many of their artillery cannon weapons, they did highlight the pressing need to increase the reach of American cannons from the present 30 to at least 40 kilometers or more.

Regardless of our estimates of how successful the firepower system has been in weakening the physical strength and breaking the

psychological will of an enemy, decisive victory—the achievement of the given objective to destroy the Iraqi army—was only achieved when the enemy was engaged in ground combat. The unstoppable Coalition ground attack destroyed the Iraqis along the barrier line, physically ejected them from Kuwait, and forced them to retire from the field of battle in the face of certain death. In previous conflicts, most American casualties occurred in close combat, largely from artillery and mortar fire. In Korea, 82 percent of all Army combat deaths were infantrymen. In Vietnam, a war supposedly without fronts, the figure was 65 percent. Infantrymen, in fact, accounted for more than half of all combat deaths from all Services in Vietnam even though they comprised less than 4 percent of the armed forces. Close combat deaths were proportionately much lower in Desert Storm because combat soldiers, infantrymen, tankers, artillerymen, and Apache pilots collectively possessed a predominant "overmatch" in weaponry and mobility and because the Iraqi chemical threat failed to materialize. Precision killing power, protection, and mobility were so superior that even the Republican Guard units, equipped with the best that the Soviets could provide, were unable to exploit any technological edge they possessed.

Army combat forces did possess some vulnerabilities that the Iraqis could have exploited. As mentioned previously, light forces still do not have sufficient means to defeat the best Soviet-design tanks. Had Saddam seized the opportunity to attack through to ad-Dammam in late August, the 82d might have held off his tanks with TOWs and Dragon missiles, but the cost may have been unacceptably high. Incomplete modernization left some combat arms units with many armored fighting vehicles that were a generation out of date. Older versions of the venerable M113 personnel carrier used to carry TOW launchers, mortars, and artillery forward observers (or FISTs) were often left behind in battle because they could not keep up. The Vietnam-era AH-1 series Cobra attack helicopter could not join Apaches in fighting at night and remained extremely vulnerable to ground fire. Soldiers still need surer protection against chemical and biological threats that will permit them to fight efficiently and survive in a chemical environment. Had Saddam defended his barriers more resolutely, the mines he sowed and the obstacles he constructed could have caused many more casualties. The Army must continue to institutionalize all it has learned about negotiating barriers and crossing minefields and train to the highest standards so it can maneuver through or around them successfully.

Casualties were kept low in the direct firefight in large measure because American combat forces owned the night. Thermal and infrared sights permitted combat vehicles and helicopters to engage Iraqi armor while completely masked by darkness. However, the thermal imaging technology employed in Iraq and Kuwait did not give high enough

resolution for gunners to differentiate friend from foe at extreme ranges. Most incidents of fratricide occurred because gunners and pilots mistook American for Iraqi equipment in the heat and confusion of combat. The Army must improve the resolution of night sights and night vision devices.

Overmatch in the direct firefight was achieved largely by three of the Big Five weapons systems. The Apache striking from ranges of up to 8 kilometers was seldom seen by the enemy. It proved to be both lethal and survivable on a mid-intensity battlefield, especially at night. Similarly, the Abrams achieved great stand-off detection and engagement ranges. Both the Abrams and the Bradley also achieved remarkable results in crew protection and, though not tested, would also have saved lives in chemical warfare.

The other two Big Five systems acquitted themselves equally well. The Blackhawk has become a true workhorse, shouldering the load once carried by the older UH-1. With its greater range and speed, larger loads, and improved survivability, the UH-60 gave the 101st Airborne its unprecedented mobility. While the final count on Scuds downed by the Patriot may never be determined, the missile clearly provided an umbrella of security immensely appreciated by those it protected. Perhaps more importantly, the Patriot played a significant role in keeping the Israelis out of the war.

Even though the American Army possessed a distinct technological lead in direct fire systems, most of the technology that gave the Abrams its superiority was already 30 years old. In fact, many of the basic technological advances incorporated into the Abrams, the Bradley, and the Apache had already been purchased by the Iraqi army on international arms markets. The lessening of the great powers' arms race will likely slow the pace of developing new weapons technology, but it will not stop the proliferation and replication of existing technology throughout the developing world.

Decisive victory in the direct engagement is not enough. The Army has a moral obligation to the American people to lessen the cost of the battle in American blood. To honor such an obligation, there can be no such thing as a fair fight. An eye-to-eye battle is not a boxing match or a football game. An even match in either quality or quantity only serves to prolong the horror with needless casualties on both sides. The object of future wars, therefore, will be to collapse an enemy by maneuvering an overwhelming joint force against him so that his will to resist is broken and close-in killing becomes a coup de grace rather than a bloody battle of attrition.

Combined Air and Ground Forces Employed in Synergy to Achieve a Single Operational Objective

In modern war, the new high ground belongs to the side that controls the air—and space. The United States has been fortunate to achieve and maintain air superiority in every war it has fought in this century, and it has been more successful in exploiting the advantage of air superiority than any other warring power. Since the end of World War II, the sure possession of the new high ground has changed fundamentally the way the American Army fights. After every war, the Army has sought better ways to exploit the third dimension in joint operations. In every case, the Air Force has been drawn more deeply into joint prosecution of land operations: first, following World War II and Korea with close air support and then, after Vietnam, with battlefield air interdiction.

The Coalition bombing of the Iraqi army, prosecuted with great tenacity and professionalism, was terribly destructive. Iraqi losses from the air may never be truly known but, while less than the CINC's 50-percent objective, were sufficient to demoralize and disrupt all but the best of the Iraqi ground forces. Lower-quality, recently drafted frontline troops were so demoralized from the unrelenting day-and-night bombardment that as many as half of some units fled before the ground attack began. Interdiction of road resupply was so effective that supplies to frontline troops were drastically curtailed. Coalition air forces so dominated the air that enemy ground units were largely prohibited from maneuvering and only dared to reposition at night or in bad weather. Yet the air operation, even though it lasted 41 days, failed to break the will of the Republican Guard, to stop it from responding to the Great Wheel, or to prevent it from retiring some of its elements to safety. The traditional rule of thumb says that if a unit suffers 30 percent casualties in close combat it is no longer combat-effective. On the other hand, a first-rate unit with high morale and good leadership can reconstitute its fighting strength if the destruction occurs gradually through attrition rather than suddenly through decisive, unrelenting close-in combat. Fighting units fail when their will is broken, not when some of their equipment is destroyed. The Iraqi battalion that lost 37 tanks in six minutes in its fight with the 2d ACR clearly demonstrated that good units can only be broken in direct combat.

The ATO with its characteristic 72-hour cycle seemed unresponsive to battlefield commanders, particularly to corps commanders, in both the early air operations and in the frustrating last-day effort to destroy the Republican Guard inside Kuwait. In World War II, Korea, and Vietnam, the preplanned mission cycle against deep targets required 24 hours to complete—one-third the time required in Desert Storm. Fortunately, the Iraqis were obliging enough to remain relatively static during most of the air phase of the campaign. Prior to G-Day, however, whenever they did move, even if just to reposition slightly, the decrease in target kills was

significant. Generals Luck and Franks were continually frustrated by their inability to influence target selection for the ATO. Franks in particular was concerned because he had developed an elaborate program for attack in depth. He intended air power to play a key role by destroying operational reserves that might strike his corps in the flanks before it closed on the Republican Guard. As the ground war drew nearer, Franks received more sorties and managed indeed to crush the "go-away brigade" with concentrated air power. Nevertheless, frustration with the rigidity of the air support system increased as the war of movement began. The 20-grid-line restriction imposed by CENTCOM air planners kept 11th Aviation Brigade helicopters from preventing the escape of Iraqi armor. As a result, the Coalition was unable to exploit the synergy of deep attack with the unique ability of Apache helicopters to kill large numbers of moving targets at night in conjunction with integrated airpower attacks.

The launch of 32 Army tactical missiles during the air phase went largely unnoticed. Too few missiles were available to cause extensive damage and the complex clearance procedures necessary before each launch made them relatively unresponsive. Likewise, the missiles were so new that targeteers in the corps deep battle cells and at ARCENT often did not know how best to employ them. Yet ATACMS demonstrated its potential for assuming many of the more difficult and crucial time-sensitive, deep-strike missions. Unlike fighter-bombers, the missile needs no ATO to program its launch, no elaborate penetration aids, refueling tankers, AWACS command and control aircraft, ELINT jammers, or HARM missiles to penetrate and hit the target. Nor are pilots' lives put at risk. In fact, because an ATACMS rocket pod is interchangeable with an MLRS pod, deep attack missions can be accomplished with a simple fire mission to the corps artillery deep battle cell.

The "flow" close air support system worked quite well in practice. The A-10 in particular was devastating once the ground war began and once the aircraft dropped low enough to provide effective 30mm cannon support. However, CAS seldom descended below 10,000 feet due to the still effective Iraqi antiaircraft defenses. Nor did CAS fly closer than 5 kilometers to friendlies because the armored forces were moving too quickly for ground FACs to work with any less separation. Also, after Khafji, the fear of further aerial fratricide caused most ground commanders to employ close air very cautiously if they used it at all. In any case, the weather was so bad on February 25 and 26 that most tactical aircrews could not see to bomb accurately. Most significantly, the presence of substantial organic aerial firepower in the form of Apaches and Cobras lessened greatly the traditional Army reliance on close-in delivery of tactical air power. The impromptu JAAT operation that the 101st Airborne Division performed on G-Day illustrates that only an organic attack helicopter unit could have spotted the dug-in Iraqis, landed next to

the infantry company commander to coordinate the attack, and then immediately participated in the destruction of the target. As in past wars, once tactical aircraft arrived over the battlefield, pilots provided supporting fires to advancing troops with great tenacity and skill. The task for the future will be to shorten the ATO cycle and streamline the system of control between air and ground forces so that pilots can get to the battlefield more quickly and, once on station, keep track of the swirling, fast-paced battle below.

Problems with procedure and philosophy, however, should not diminish the fact that in Desert Storm the United States raised the execution of joint warfare to an unprecedented level of competence. In land combat, the term "joint" centers almost exclusively on the integration of ground and air combat forces. In years to come, the single most distinguishing characteristic of joint land combat will be the presence of aerial vehicles from every Service and in support of every battlefield function. It is essential that all aerial and ground platforms, regardless of the Service of origin, be blended together into an effective, seamless striking force.

An Unblinking Eye to Provide A Continuous and Unambiguous Picture of The Battlefield

Just as the Army must achieve and maintain a dominant overmatch in the direct firefight, it must also do so in intelligence, achieving a more complete understanding of the foe while rendering the enemy blind. Field Marshal Erwin Rommel's defense of Fortress Europe rested ultimately upon divining where and when the Allied main landing would occur. Rommel sought to defeat the invasion at the water's edge. Similar to Desert Storm, the success of the invasion of France—Operation Overlord—depended upon the ability of the Allies to deny the Germans that critical piece of intelligence until a solid beachhead had been established. The Allies successfully kept the veil of secrecy drawn around the invasion plan by conducting the most intensive deception ever mounted up to that time. The Enigma code-breaking machine that allowed them to read the Germans' most sensitive traffic, assured them that the secret was safe. The absolute dominance of the air over France in 1944 allowed daily reconnaissance flights to study the German defenses. The striking difference between the two campaigns was that the preparation for Overlord required more than two years, that for Desert Storm only six months.

The high-technology intelligence-gathering capability of the United States today is without equal. Yet the burgeoning technologies of surveillance, data processing, and global communications offer even greater technological leverage for future exploitation. The level of intelligence support for Desert Storm should be viewed as a starting point, not a model for the future. The technology traditionally devoted to strategic intelligence must be turned downward and adapted to a tactical focus. In

any future contingency, the Army will require detailed intelligence before the arrival of an intervening force. Particularly in the case of early arriving light forces, commanders need a clear picture of what awaits them on the ground. As the Army shifts increasingly to a force projection Army, the ability to observe, analyze, and understand potential enemies and the operational environment in any area of the globe must be enhanced and adjusted to better support such operations.

Our efforts must seek an unblinking eye, constant in its watch over the battlefield and guided by the needs of the theater commander. Failure to do so carries great risk. The ability of intelligence at times to plot Iraqi tactical deployments down to individual weapon systems before the ground operation began benefited from a cooperative enemy and a benign environment. The Iraqi military machine moved into the desert of the Kuwaiti theater of operations and turned it into the world's largest parking lot. For months, most units remained in place, making only minor positional adjustments as they worked feverishly to create Fortress Kuwait. Once the Great Wheel began to turn, the severe weather and smoke meant that JSTARS became the cornerstone for both situational development and targeting. Future enemies and battlefields may not be so easy to examine. The answer to supporting a contingency force is to maintain a blend of tactical and strategic surveillance systems like satellites, JSTARS, U-2, RF-4, and UAVs that can readily be adapted to the situation. Those systems must, however, be positioned early enough to maintain coverage over the theater, wherever it may be.

Tactical forces have specific intelligence requirements that joint national agencies cannot satisfy. Organic Army intelligence proved absolutely necessary to meet the needs of ground tactical commanders in Desert Storm. Only intelligence professionals with a background in land warfare could have made the key estimates that allowed commanders to decide on the correct course of the campaign. An example is Saddam's operational center of gravity. Very early in the crisis, Army intelligence developed an accurate assessment of his military strategy and correctly forecast that ground operations would have to target the Republican Guard before Saddam would withdraw from the KTO. That assessment drove campaign planning, which ultimately arrived at the concept of the Great Wheel. Once that plan was formulated, only Army intelligence professionals had the cultural experience to devise the "key read" series of assessments that allowed General Franks to slam his armored fist into the Republican Guard at the optimum time and place.

Dissemination proved to be the Achilles heel of the intelligence system in Desert Storm. Combat commanders demanded an unprecedented volume of precise hard-copy imagery. Intelligence was generated in such great quantity that existing communications proved incapable of pushing the required hard-copy imagery and information down below division

level. The demand also reinforced the need for a responsive tactical imagery collection system that includes JSTARS, UAVs, and a method to provide wide-area, high-resolution imagery that can both "freeze the battlefield" and provide targetable data. While pictures of the battlefield are important, they can be misleading without analysis. Graphic intelligence displays, either in hard copy or transmitted by electronic means, are the way of the future. Carefully written intelligence estimates are useful for long-term analysis, but commanders need something they can read at a glance. The highly accurate templates provided by the ITAC showed the way to achieve that goal. But the capability to update such templates locally in a moving battle must be further developed.

Closely related to the dissemination problem is the issue of obtaining off-the-shelf "nondevelopmental" items and prototypes that have yet to be fielded. In Desert Storm, JSTARS, UAVs, TROJAN, and a host of other systems gave US Army intelligence an overwhelming edge in the intelligence battle. The intelligence problem is particularly suitable to nondevelopmental, off-the-shelf technological solution because intelligence collection and dissemination demand low densities of highly complex equipment that can be placed in the field very quickly. Although a great tribute to the mental agility of our soldiers and their leaders, the process for putting nondevelopmental systems in the field should be institutionalized and streamlined to maintain the tactical intelligence overmatch. The "Big Red One" should not have had to learn to use TROJAN just 24 hours before the ground war.

The focus and design of US intelligence organizations is shifting from the cold war defense of Europe to a force projection Army capable of supporting offensive operations. The intelligence units that deployed in Desert Storm were largely designed to support the Army in a defensive battle in Europe over completely familiar terrain. Intelligence units at division and below must focus on providing targetable data to field commanders in offensive operations over terrain which is in all likelihood totally unfamiliar. To do so requires a more balanced collection capability within military intelligence units and instant and reliable communications to firing units. Moreover, military intelligence units must be able to keep up in a fast-paced action. Combat units that outrun their intelligence coverage face increased risk just as they do by outrunning their fire support. Even so, collection means like UAVs and JSTARS will always be limited. They will have to satisfy both targeting and situational development needs in accordance with tactical commanders' requirements. Experience in Desert Storm indicates that the targeting function should be first priority for those systems capable of producing target-quality intelligence.

Desert Storm leaders often expected too clear a picture of the enemy, in part because the capabilities of the intelligence system were oversold.

Battle staffs in peacetime exercises, conditioned by their focus on Europe and the Warsaw Pact, had grown accustomed to deriving from available data a clear and distinct picture of the enemy that could not be reasonably matched in Desert Storm. Future battle staff training at BCTP and elsewhere should inculcate a sense of uncertainty in the enemy situation so that commanders are accustomed both to dealing with uncertainty and risk as an inherent component of leadership in battle and to placing a demand on national systems to provide operational and tactical intelligence. The intelligence challenge is to catch up with and ultimately get ahead of the escalating demand for high-quality, targeting-level tactical intelligence.

Operational Agility to Permit Movement About the Battlefield with Unprecedented Speed and Surprise

A commander introducing a different war-fighting style for the first time can fatally upset the psychological equilibrium of his opponent. The French corps commander responsible for the defenses of Sedan on May 13, 1940, knew that Guderian's XIX Panzer Corps was coming. Yet the French commander was ejected from his strong river-line defense in large measure because he was simply never able to adjust his own internal clock to match the accelerated pace of the German advance. From his post atop the Heights of Marfee, the French commander could observe Guderian's bold daylight river crossing perfectly, and he had more than 200 guns available to crush the attack. Guderian was outnumbered and most of his artillery was snarled behind him along roads leading out of the Ardennes. Yet he and a force comprised mostly of engineers and infantry crossed to the far bank of the Meuse successfully in rubber boats. Any staff college student doing a simple correlation of forces would have given Guderian little chance of success. He succeeded because he always arrived at unexpected points of crisis before the French could set their defenses. Then he employed unconventional tactics that psychologically unhinged his enemy and fractured his will to resist.

In Desert Storm the story was much the same. The Great Wheel surprised the Iraqi high command because from their own experience they believed that such a grand maneuver was impossible. The Iraqi commander who opposed General Funk's 3d Armored Division declared later that even though he knew the Americans were near, he believed that he had another five hours before they could begin an assault. The Hammurabi Division was still sending tanks to the rear loaded on HETs after the 24th Division obstructed their route of escape on Highway 8. The 2d ACR caught elements of the Tawakalna facing in the wrong direction, and Griffith's deep Apache strikes surprised and decimated the Adnan, which had survived extensive attempts at aerial attack. The Iraqis completely misjudged the ability of American crewmen to maneuver at

night and kill at extremely long ranges in darkness, rain, and blowing sand.

The psychological dominance of American land combat forces came from their agility—the ability to rush forward quickly, yet maintain the overall pace of the advance without interruption and react with lightning speed to unexpected threats or opportunities. In the American style of war, agility is as much a mental as a physical quality. The American soldier's ability to "think on his feet" has been enhanced by a military educational system that emphasizes mental flexibility and self-confidence rather than learning by rote. Realistic force-on-force training at combat training centers and other areas has embedded in a generation of commanders the lesson that battles are won when subordinate commanders possess an intuitive propensity to act and when their authority to do so is limited only by the commander's general intent. A generation of officers has grown up in the Army sharing a common cultural bias and the ability to translate that bias into operational plans and "audibles" that can be instantly understood and acted upon by field commanders.

The physical side of agility was enhanced by technology that provided unprecedented air and ground mobility. No other army in the world could have moved over such vast, inhospitable terrain so quickly. Collectively, four of the Big Five weapons systems developed during the past 20 years offered a quantum leap ahead in the ability to outmaneuver an enemy.

The 180-kilometer aerial vault to the Euphrates made by the 101st again proved that the helicopter remains our most agile all-weather platform for fire support and maneuver. It also proved that the American Army remains preeminent in helicopter employment. The psychological dislocation that occurs from placing and sustaining a major maneuver force in the enemy's backyard more than justifies an air assault operation's complexity, tactical risk, and high cost. The Desert Storm air assault also demonstrated the reliance of such operations on joint fighter-bomber and airlift support. Weather plays an uncertain hand in aerial combat, and Desert Storm was no exception. Throughout the first few days of the assault, marginal weather continually delayed movement and hindered resupply. While fixed-wing aircraft might have been able to interdict Highway 8, assault landings by the 101st cut it off completely and controlled the surrounding terrain both day and night.

The Abrams and Bradley fighting vehicles effectively doubled the cross-country speed and range of the older M60 and M113. Yet as Desert Storm demonstrated, a serious gap in ground mobility still exists between direct fire combat systems such as the Abrams and Bradleys and systems that make up following echelons. Self-propelled cannon artillery can accompany the general pace of the advance but lack the "dash" speed to

conform to the close-in maneuver of modern direct fire fighting vehicles. Likewise, the older combat engineer vehicles cannot keep up. The experience of the 24th Infantry Division in the "great dismal bog" graphically demonstrated the problems experienced by the Army's road-bound tactical truck fleet. The operational agility of ground forces was seriously impaired by a shortage of heavy equipment transporters necessary to move tanks quickly across long distances. Until the end of the war the Iraqis still possessed more HETs than the American Army could scrape up worldwide.

To exploit the agility of the force completely, the Army must be able to move freely at night. General Funk's 3d Armored Division gained its five-hour advantage over the Tawakalna by maintaining the tempo of its advance during darkness. The 101st overcame Iraqi antiaircraft defenses by exploiting darkness for cover. While the armored tip of the combat spear possesses excellent night vision capability through the use of night vision goggles and thermal sights, the rest of the spear, including fire support, logistics, and transportation, requires extensive additional night equipment in order to maintain the tempo of night movement. Since many potential adversaries already possess comparable night vision capabilities, all Services must continue to exploit and expand night fighting doctrine to retain the advantage.

Modern command, control, and communications technology forms the neurons and synapses that make agility possible by tying together the brains and muscles of a field army. Although much of the command and control structure that the Army took to the Gulf was originally designed for defensive operations in Europe, it was extraordinarily successful in fast-paced, continuous, all-weather ground operations. To accommodate sustained faster-paced offensive operations, command posts and battle staffs must be made leaner and more agile. The Army tactical communications system was also structured to support defensive operations in Europe. The wider fronts, greater maneuver depths, and tremendously greater tempo of movement associated with desert offense hampered the ability of General Franks' corps to maintain contact while on the move. The problem was lessened to some degree by subordinate commanders' thorough understanding of Franks' intent, the ability of VII Corps units to operate with considerable autonomy, and the availability of some tactical satellite terminals. The image still lingers in the minds of many senior tactical commanders of radio operators trying to punch through to adjacent units using 30-year-old FM radios and of operations sergeants drawing grease-pencil graphics on acetate overlays much as their grandfathers did in World War II. Agility should be limited only by the mental and physical capacity of the force, not by the communications that link them together. The technology is available and, in many cases, on hand to

provide the necessary degree of control a commander needs to exploit the intrinsic agility of his force.

Logistics as the Engine of Global Envelopment

As any Latin student who has read *The Battle for Gaul* will recall, in 55 B.C. Julius Caesar constructed a bridge across the upper Rhine in 10 days. He built the bridge not to conquer but to intimidate. As the restless German tribes on the far bank watched the soldiers complete an engineering feat far beyond their comprehension, they realized the futility of resisting the power of Rome. After 18 days of marching about on the opposite shore, Caesar, having never fought a battle, recrossed the Rhine and dismantled the bridge behind him. He had made his point.[3]

The global air and sea bridge constructed by the transporters and logisticians in Desert Shield served the same purpose. The Iraqi army stood by and watched on television as the American Army assembled a sophisticated combat force in front of them with efficiency and dispatch. The act of building the logistics infrastructure during Desert Shield created an atmosphere of domination and a sense of inevitable defeat among the Iraqis long before the shooting war began. In the new style of war, superior logistics becomes the engine that allows American military forces to reach an enemy from all points of the globe and arrive ready to fight. Speed of closure and buildup naturally increases the psychological stature of the deploying force and reduces the risk of destruction to those forces that deploy first. In contrast, dribbling forces into a theater by air or sea raises the risk of defeat in detail. XVIII Airborne Corps' first three weeks' buildup prior to the arrival of heavy armored forces by sea were the most critical of the campaign. A sea bridge can only be built as quickly as the availability and steaming speed of ships will allow.

Sealift is the weakest link in today's global bridge. Not only are there too few high-speed ships, but experience in Desert Shield indicates that maritime forces must become far more responsive, flexible, and accommodating if heavy Army forces are to close quickly in theater in shape to fight. The 24th Division would have found it very difficult to fight on arrival in ad-Dammam had they loaded to maximize efficiency or had they adhered to established regulations and procedures intended for a NATO-like contingency prior to departure. As our Army is increasingly based in the United States, more fast sealift ships are needed. At the same time we must modernize our "fort-to-port" infrastructure to handle the demands of a crisis-response Army. The ability to carry two full armored divisions and part of a light division to any point on the globe within 30 days is both prudent and necessary.

Once the sea bridge is complete, the theater campaign must quickly begin to exploit the psychological leverage gained from rapid deployment. In Southwest Asia, much of the theater infrastructure had to be built

from scratch. General Pagonis and his team of logisticians refined the model for theater building to support the new style of warfare. Limited shipping space and the demand to build combat power quickly impeded the establishment of a theater structure using methods that had sufficed in World War II and for most of the Cold War. Nor will logisticians of the future be able to build a plan of support based only on concrete, predictable factors of METT-T. Although uncertainty may demand ad hoc solutions, Pagonis' adaptive use of building blocks for theater building in distant regions should be streamlined and institutionalized. Once the decision to deploy has been made, essential support may have to be assembled on the fly, projecting just what is needed when it is needed to preserve as much space as possible for combat forces. Decisions made on the front end concerning what to send will directly affect fighting effectiveness on the other end. Not enough stevedores and ship-handling equipment forward early enough in building the theater might delay the unloading of combat vehicles and ultimately defeat the intended purpose of putting the vehicles on the ground first.

Disciplined and controlled improvisation in theater building can be greatly enhanced by technology that will provide more effective communications, better and more compatible data processing systems, and more responsive sea and air transportation. Technology, in fact, will allow a fighting CINC to build and sustain a theater while carrying with him to the theater significantly less of the logistics needed to support the campaign. Most of what in World War II was termed the communications zone, or the theater rear area, can be moved back to the United States or perhaps positioned in a forward region. The CONUS COMMZ concept to support the new style of war has several intrinsic advantages. Technology exists today in modern coding techniques and satellite communications to supply spare parts and critical items of supply from depots in the United States across an aerial bridge directly to the foxhole. Many if not all administration and housekeeping chores can be accomplished from a CONUS COMMZ, including personnel, administration, finance, and other record-keeping, as well as depot-level repair and major medical services. Present technology also offers a solution to the problem of tracking supplies that so seriously plagued logisticians in the Gulf as they tried to identify the contents of shipping containers.

The concept depends for success on strategic stockpiles of bulk items such as ammunition, both in POMCUS sites overseas and afloat aboard maritime pre-positioned ships. The flexibility and mobility of strategic stockpiles would be greatly enhanced if they could be reconfigured into discrete modular units. Modularity gives the logistics commander the option of mixing and matching support packages to conform to the particular crisis and the regional environment. The Army must efficiently use what is already available in theater. Pagonis' logisticians did this

through aggressive pursuit of host-nation support wherever they could find it. Quick exploitation of host-nation support in the future requires early deployment of contract representatives and survey and liaison officers to organize and begin procurement of indigenous supplies. The Army must lighten the load of deploying forces. As previously mentioned, much can be left behind, such as base support structure. Modern packaging technology developed by civilian industry should be incorporated for most commodities, particularly ammunition.

Logistics planners must ensure that a future contingency can be supported throughout the campaign either from stockages on hand or from civilian off-the-shelf sources. Increasingly, off-the-shelf technology must be incorporated into Army materiel not just because it is potentially cheaper, but because the commodities in the civilian economy greatly increase existing sources of supply.

Wrangler's switch from jeans to DBDUs and Raytheon's doubling of Patriot production are evidence of civilian industry's ability to meet the needs of a wartime crisis. But the more complex the technology, the longer it takes to gear up to increased production rates. Fortunately, Raytheon was already producing the PAC-2 in August 1990 and could, by extraordinary measures, build and ship 600 missiles by January 1991. Other ordnance, such as the 25mm penetrator round, could not be produced so quickly. Clearly the industrial base must be kept in a state of readiness for future contingencies.

Logistics has always assumed a degree of importance far beyond that of merely sustaining the force in the field. As the previous chapters have shown, the strength of the logistics engine determines the pace at which an intervening force makes itself secure. In distant regions like the KTO, the length of a CINC's operational reach will be determined largely by his logisticians. Finally, the act of building the global bridge begins the process of moral intimidation against a waiting enemy. As they watched the inexorable pace of the American buildup in the Gulf, the Iraqis, like the German tribesmen in 55 B.C., must surely have asked themselves, "If they can do this so well, how much better can they fight?"

Reserve and Regular Units Able to Deploy Quickly and Arrive Prepared to Fight

The performance in Desert Storm of units like the 212th Engineer Company from Dunlap, Tennessee, and the 352d Civil Affairs Command that helped to restore civil government in Kuwait testify to General Abrams' commitment made 18 years before to a fully integrated force of Active and Reserve forces. By war's end, more than 70 percent of all theater combat service support would come from the Army National Guard and the Army Reserve.

While the Reserve component combat service support structure tailored for the reinforcement of Europe proved to be too large and too cumbersome for the Gulf War, at times the logistics manning was too thin. Had more supply soldiers been available earlier at ports and supply points, the Army would certainly have done a better job of accounting for materiel and moving it forward. While General Pagonis' 38,000-soldier infrastructure might have been too small for the campaign, that number, substantially reinforced, would still fall far short of the doctrinally "correct" 120,000 originally projected for deployment. If required to deploy on short notice into a theater where METT-T factors are indistinct, the Army must retain the flexibility to draw from the available pool of predominantly Reserve component combat support units. It must call forward those whose capabilities are needed most to form discrete logistics building blocks. Once on the ground, the building blocks should be assembled using a minimum of overhead to keep pace with the needs of arriving combat forces.

The greatest practical leverage to be gained from the Reserves will come from Reservists who perform tasks in war similar to those they practice daily in peace. Sergeant Ken Stephens' years of practical experience as a plumber and heavy equipment operator could not be replicated by an 18-year-old engineer soldier just out of high school and advanced individual training at Fort Leonard Wood.

Desert Storm demonstrated several significant structural shortfalls where civilian skills could easily be exploited. The shortage of long-haul truckers was almost a war stopper. One air defense battalion was converted to a battalion of truck drivers and sent to Saudi Arabia. Yet, had the Saudis not provided thousands of trucks and drivers, Schwarzkopf would not have been able to shift two corps westward in three weeks. Civilian communications workers would speed up transcontinental satellite linkages between a theater and bases in the United States. Supply and inventory control clerks, as well as stevedores, computer operators, and transportation management specialists of all varieties, had they been available in greater numbers earlier, would have greatly eased General Pagonis' difficult job of theater building. A less well developed theater would have required many more soldiers with construction and engineering skills to build ports, airfields, and roads.

While Reservists accounted for the majority of support troops in Desert Storm, very few Reserve component combat troops fought in the war. Those who did fight, fought well. The 142d Field Artillery Brigade, Arkansas National Guard, went into combat from the docks at ad-Dammam and acquitted themselves well in support of the 4th Mechanized Brigade, 1st British Armoured Division, on February 27. However, while three roundout brigades—the 48th Infantry Brigade (Mech) from Georgia, the 155th Armored Brigade from Mississippi, and the 256th

Infantry Brigade (Mech) from Louisiana—were activated for 180 days, for several reasons none made it to the desert. With no comparable civilian skills, the Guardsmen have to learn the complexities of fire and maneuver in close combat during their meager 39 days of training per year. The combat skills that Desert Storm soldiers and units had to master in order to be combat-ready were far more complex and demanding than just a decade before. Long-range tank and TOW gunnery, rapid maneuver, and complex electronic equipment all require skills that take a great deal of time to learn and maintain.

Leader training is most complex in the combat arms. The incomplete preparation of combat arms officers and NCOs in Reserve component combat units presents the greatest obstacle to combat readiness. Ground combat is extraordinarily complex and mentally challenging. Commanders must synchronize thousands of disparate pieces, each moving at higher and higher velocities and engaging at greater and greater distances while avoiding damage to friendly forces. In addition to dexterity and technical competence, a leader must inspire confidence in his soldiers so that they will trust him with their lives. In addition, he must be able to perform flawlessly with little sleep, under extremely uncomfortable conditions, and in significant personal danger. Notwithstanding the proven abilities and great patriotism of our citizen-soldiers, skills such as these are best developed over many years of schooling, daily training, and practical application.

Army leaders like General Vuono insisted that the lives of young National Guardsmen not be placed at risk until they and their leaders had been exposed to the stresses of war in training to the same degree as regular units. As a minimum, Reserve combat maneuver units at battalion level and higher deserve the opportunity to train at the National Training Center or other suitable combat training centers prior to combat. The time required to become combat-ready may be shortened through liberal use of simulations, but the remarkable combat skills demonstrated in the Gulf can only be honed to sharpness through realistic field exercises. Combat units in particular require more time to coalesce and harden into tight, confident fighting teams. While unit building can be accelerated, it must not be done at the peril of soldiers' lives.

An Army Prepared to Form the Center of a Fighting Coalition

In Desert Storm, the Army was prepared to provide the institutional glue that held together a remarkably disparate yet effective Coalition. Special Forces soldiers like Master Sergeant Joseph Lloyd proved just as adept at training Kuwaitis and building confidence in the Coalition as they were in providing the chain of command the unadulterated ground truth concerning the fighting prowess of their charges. The success of the

US-led Coalition provided the world a hopeful example of how future aggression might be defeated. With the decline of great power influence, collective bodies, particularly the United Nations, may offer threatened states a variety of political alternatives for deterring aggression. Nevertheless, as the Gulf War again demonstrated, active participation of the US in any global system of collective security will be essential. Future alliances, however, may have few of the assurances and foundations of NATO. Few, if any, formal treaties or standardized agreements may exist. Any similarities in military culture or commonalities of equipment could be coincidental, especially in light of the proliferation of military technology since the Berlin Wall came tumbling down.

While the composition of a future coalition effort will most certainly be joint, the central nature of ground operations in achieving decisive victory will inevitably thrust the US Army into a leading role. American soldiers must be prepared to deal successfully with unfamiliar strategic arrangements. As in Desert Storm, partnerships are formed to meet the partners' agendas. While each nation has an agenda, each also brings value to the coalition even if it does nothing more than add legitimacy to the enterprise. Soldiers will have to tread carefully in such environments. As the CINC's principal agent, the Army must be able to assess the practical value of each coalition member while building as much rapport and instilling as much competence as the partner will permit.

General Yeosock's C^3IC in Riyadh served as a model for future coalition-building efforts. The team acted as both a conduit to report military information to the CINC and as an informal sounding board for allies to make themselves heard within CENTCOM headquarters. At the same time, officers carefully selected from throughout the Army established a series of liaison teams with every major Coalition partner. The new style of war, therefore, demands a new set of guidelines for doing business with allies. The guidelines should be as flexible as the prospective coalition. Those selected to act in a crisis as regional liaison officers should be groomed to possess a balance of solid military experience and knowledge of a particular region.

The Army's experience with the Patriot 2 missile deployment to Israel in January 1991 demonstrated how a tactical weapon can have both strategic and political influence on a campaign. The Patriot's antiballistic missile capability demonstrated tangible evidence of US resolve to defend Israel against Iraqi Scud attacks. Such resolve served in large measure to forestall an immediate counterstrike by the Israelis against Scud-launching sites in western Iraq and, in the process, averted a possible collapse of the anti-Saddam Coalition.

The Army must continue to maintain a meaningful presence abroad. Security assistance not only equips potential allies with common

hardware, but through the infusion of mobile training teams and nation-assistance exercises establishes bonds with them, while at the same time exposing soldiers to unfamiliar regions. Large-scale exercises such as BRIGHT STAR flex the deployment muscles of larger units and establish solid army-to-army relationships. In the post-Cold War world, the US Army will find itself increasingly engaged in peacekeeping and humanitarian operations similar to Provide Comfort and CENTCOM's efforts in southern Iraq. Such efforts are useful, not only because the Army is uniquely qualified to accomplish them effectively, but also because such experiences continue to enhance the image of the Army abroad as an institution for fostering international cooperation and goodwill.

The challenges inherent in leading temporary alliances will be daunting, encompassing differences in equipment, training, and culture. In Desert Storm, the Egyptians, Syrians, Kuwaitis, and others possessed some equipment identical to that of the Iraqis. The Iraqis, in turn, flew F-1 fighter aircraft and Gazelle and Puma helicopters, built and also flown by the French. General Schwarzkopf and the CENTCOM staff devoted a great deal of energy to keeping the Coalition together and focused on the task at hand. Some tasks involved the establishment of an elaborate liaison and integration structure that sought to rationalize and synchronize as much as possible the myriad of languages, radio sets, encryption equipment, and styles of warfare that the 37 Coalition partners brought with them.

THE LEGACY OF DESERT STORM

To those familiar with Vietnam and other major American wars of the twentieth century, the image of certain victory that emerges from the Gulf War stands in dramatic contrast to the performance of American arms in previous conflicts. This time, the American Army was clearly better prepared to fight the first battle than its adversary. It took to war a doctrinally based, modernized force trained to a standard of excellence the Iraqis could never comprehend, much less match. The Army went to war with a war-fighting, training, and leader development doctrine that not only withstood the initial clash of arms but emerged substantially intact and completely vindicated.

The United States projected a major land force directly into a combat theater with unprecedented speed and efficiency. Often with little in-theater preparation, soldiers went into battle fully prepared to fight in one of the world's most inhospitable climates. Not only did US forces win the first battle, they won the campaign with an operational concept that sought in a single climactic operation to destroy the enemy's center of gravity. For the Total Army the first battle proved to be the last battle of the war.

In Desert Shield the Army created a military metropolis half a world away in less than 90 days. Soldiers operated and maintained advanced weaponry in desert sand yet kept more than 90 percent of it in action throughout the campaign. The Great Wheel proved to be the largest single land battle in American history won in the shortest time. In 100 hours of combat, American forces destroyed or captured more than 3,000 tanks, 1,400 armored carriers, and 2,200 artillery pieces. The Great Wheel swept over and captured almost 20,000 square miles of territory. The conflict terminated with a loss of only 140 soldiers in direct combat, roughly equivalent to the deaths suffered by US forces in two days of combat during the peak of the war in Vietnam.

The Army that went to Desert Storm represented the resurgence of an institution crippled both by the Vietnam War and the subsequent period of societal neglect. No victory so complete and unprecedented could have been achieved without an even more fundamental metamorphosis within American military institutions. A young 1st Armored Division soldier charging into the Tawakalna had very little save bravery, patriotism, and tradition in common with his grandfather who last took "Old Ironsides" into battle against the Germans nearly half a century before. In fact, Desert Storm represents the culmination of a more gradual process of change that has emerged from all the conflicts fought by the American Army since Vietnam. Our nation was fortunate indeed to have an army that produced leaders not only of extraordinary wisdom in successfully preparing for war in peacetime, but also leaders with great politico-military acumen such as General Schwarzkopf and the Chairman of the Joint Chiefs of Staff, Colin Powell.

To fight similar wars successfully in the future demands, more than ever, a trained army ready for combat on a moment's notice. The experience of the American Army in post-World War II conflicts has shown time and time again that an army can be effectively dismantled in months or allowed to atrophy through neglect in a few short years. Although easily lost, a trained and ready army takes a great deal of time to rebuild. Fifteen years are needed to develop a competent, confident battalion commander or platoon sergeant or to design, build, and field a new tank. Desert Storm demonstrated conclusively that an army kept sharply honed can win quickly at minimum cost. Other, less sanguine experiences show that the only alternative to peacetime readiness is to gain combat proficiency through bloody practical experience on the battlefield. The second alternative might be cheaper in peacetime, but the cost in war, particularly among the nation's soldiers who must pay the price, will surely exceed what the American people are willing to spend in the blood of their sons and daughters.

Certain Victory is the Army's story—a story of extraordinary success wrought by men and women better prepared than any before for the

demands of war. Backed by the American people in a righteous campaign, the Army joined its sister Services and Coalition allies in a massive response against aggression. The campaign, like the victory itself, has many parents, and the lasting legacy is a credit to all of them. As the world order changes and the American Armed Forces reshape to face an uncertain future, *Certain Victory* will be a lasting touchstone for generations to come.

Notes

1. Fehrenbach, T. R., *This Kind of War: A Study in Unpreparedness* (New York: Macmillan, 1963).

2. Office of the Surgeon General, Department of the Army, briefing slides entitled "Non-Battle Injury Rates from Desert Shield and Desert Storm, September 1, 1990 to June 3, 1991."

3. Julius Caesar, *The Battle for Gaul*, trans. by Anne and Peter Wiseman (Boston: D. L. Godiva, 1980), pp. 78-79.