believe, however, that the U.S. military must transform as one unit, not as individually separate services.

**Goldwaters-Nichols Act**

In 1986 Congress passed the Goldwaters-Nichols Act, a mandate for the military services to collaborate on developing a joint doctrine. The service chiefs fought the mandate, but without it, the U.S. military would still be laboring under a stovepiped and service-oriented system. The National Security Strategy calls for the United States to continue as a joint venture. We must educate the services to think joint at the lowest levels. Service parochialism must not be a roadblock to Transformation. The military should eliminate the distinction between commissions received from the service academies and Reserve Officer Training Corps (ROTC) and streamlining the services. For example, Army administrative personnel should be able to perform their duties in the same manner as any other service, and there should be only one standardized evaluation system for officers of all services. Doing this would ensure that officers who rise to the top have been evaluated equally.

DOD, as the executive agent of military power, must have three distinct organizations: land, sea, and air. Resource constraints, however, demand that the United States eliminate redundancy and inefficiency. To do this, the United States must indoctrinate military employees—uniformed and civilian—into a capability and effects-based joint force. These force providers must be joint-oriented, not service-oriented.

The two best joint fighters today are the Special Operations Command (SOCOM) and the Marine Corps, which is not surprising, since neither is a distinct service. SOCOM is the organizational construct that the DOD should model to accomplish missions demanding flexible, responsive capability and effects-based units. DOD must flatten and streamline modular land, sea, and air units that rapidly deploy and then integrate them into a COCOM or JTF commander’s warfighting effort. These units must be organized, trained, and led as joint entities to assure maximum effectiveness and efficiency.

DOD must adapt to change or risk extinction, so it must adapt to new warfighting techniques and the changing mindset of war. The United States is fighting a determined, resourceful, and dangerously adaptive enemy. If change does not occur, “doing business as usual” could affect the balance of power for the next millennium. **MR**

**NOTES**


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**Technology and the American Civil War**

**Major Richard D. Moorehead, U.S. Army**

German strategist General Helmuth von Moltke once described the American Civil War as “two armed mobs chasing each other around the country, from which nothing could be learned.” Despite Moltke’s disdain for America’s military efforts during the Civil War, the U.S. Army can learn a great deal about how advances in technology can change the nature of war. The conduct of war changed as a result of three technological advances during the Civil War: the rifled musket, the electric telegraph, and the railroad.

**The Rifled Musket**

During the mid-19th century, the use of the rifled musket dramatically changed how the war was conducted. Before the rifled musket came into use, Napoleonic tactics of linear frontal assault of massed forces, supported by direct-fire artillery and quick cavalry charges, was the recipe for battlefield success. European and American military leaders replicated Napoleon’s tactics because he optimized the weapons he had at that time—smoothbore muskets with a nominal effective range of 100 yards and canister artillery with a maximum range of 400 yards. In contrast, the Civil War rifle had an effective range of over 500 yards when firing the conical Minie ball bullet.

The rifled musket’s increased range and lethality had several adverse effects on Napoleonic tactics. For example, an infantryman with a rifled musket was a greater threat to artillerymen and cavalrymen. Napoleon massed his artillery and used canister fire to decimate an advancing infantry line. The Civil War infantryman, using a rifled musket could target artillerymen before they were within range of canister fire, which forced the artillery to operate further from the enemy than was optimal.

Using the rifled musket also allowed the infantryman to attack cavalry soldiers from a much greater distance, which reduced the cavalry’s shock affect and made a cavalry charge more costly to the attacker. As a result, the long-range firepower of the rifle relegated the artillery and cavalry to lesser roles than they had during the Napoleonic wars.

The change in infantry firepower shifted the tactical strength of armies from offense to defense by making frontal infantry assaults too costly.
which posed a serious problem for tacticians. Napoleonic-style warfare, as espoused by General Antoine Henri Jomini, emphasized a strong offense for a decisive victory. The problem soon became how to execute an offensive plan when the tactical defense was much stronger. Given the state of technology, the best answer was to avoid massed frontal assaults. One obvious method was to attack an enemy’s flanks.

During the battle of Gettysburg, Confederate forces attempted to attack the Union flank at the Little Round Top. They found, however, that attacking flanks using linear Napoleonic tactics resulted in disproportionately high casualties for the offense.

Toward the end of the war, units were changing their offensive tactics from massed lines to small groups. While some men provided cover, others advanced. Both sides used cover as available and sought to reinforce the skirmish line. Union forces successfully used open-order skirmish tactics to limit offensive losses during Union General William Tecumseh Sherman’s Georgia Campaign and Union General Ulysses S. Grant’s Petersburg Campaign in late 1864. 6

To further confound the doctrine, soldiers were turning to field trenches and hastily constructed earthworks to protect themselves from increasingly deadly firepower. Both forces used earth and logs to fortify their defensive fighting positions while fighting the 1864 Overland Campaign.

During the Battle of the Wilderness at Brock Road on 6 May 1864 and Laurel Hill on 8 May 1864, both sides found that prepared defensive positions allowed them to repel attacks. The key to tactical victory then became attacking an opponent before he had time to establish a defense. In the end, the tactical advantage still lay with the defender because of the rifle’s firepower.

The Electric Telegraph
The electric telegraph significantly changed the military leader’s ability to command and control fielded forces. Before the Civil War, the Army used couriers to transmit messages. Civil War commanders used telegrams to transmit messages instantly to each other over distances of a thousand or more miles. 8

The government installed its first telegraph line between Washington, D.C., and Baltimore in May 1844. By 1860, a network of telegraph wires “crisscrossed the country east of the Mississippi River.” 9

The War Department, recognizing the telegraph’s value, co-opted the existing civil telegraph structure for military use at the beginning of the Civil War, and established the U.S. Military Telegraph Corps (USMTC), in May 1861. Telegraph operators supplied the Union Army with technical expertise to transmit and receive messages; in return, the Union Army provided rations and helped operators construct, repair, and protect telegraph lines. In 1862, the Union Army constructed nearly 4,000 miles of telegraph lines that transmitted over one million military dispatches. 10

More important than the volume of messages was the Union Army’s use of the telegraph as a communication tool. Before the Civil War, information from distant battles took hours or days to reach headquarters. The telegraph permitted Civil War governments to “affect the conduct of campaigns through near-real time communications with commanders in the field.” 11 President Abraham Lincoln sent 10 to 12 telegrams each day to his generals, routinely soliciting specific, tactical information. The telegraph allowed Lincoln to order his Union Armies’ strategic repositioning, reinforcement, and pursuit tactics, allowing him to truly act as Commander-in-Chief of the Union Army and Navy. 12

Union generals used the telegraph for rapid communications; including issuing orders; reporting disposition of enemy and friendly forces; reporting progress and results of battles; and requesting reinforcements. In 1864 and 1865, Grant went a step further when he used the telegraph to coordinate the movement of all Union forces into one comprehensive plan. He received daily reports from his armies and issued orders to integrate their efforts. Lincoln and Grant used the telegraph to develop a strategic view of the entire theater east of the Mississippi River, allowing them faster, synchronized direction of fielded forces. 13

The Railroad
The use of the nascent railroad system significantly changed how men and materiel were transported to the battlefield. Before 1830, armies relied on foot and animal transport, limiting to 10 days the amount of supplies they could carry, which decided how quickly and how far armies could maneuver. The rapid movement of men and materiel by rail increased the Army’s logistical capacity tenfold. Troops and supplies arrived at their destinations quicker with less fatigue, and supplies arrived in better condition. The geographical scale of military operations also increased, allowing armies to become larger but still remain combat effective. 14

Previous wagon-haul logistics and local foraging limited the size of armies to about 30,000 men. The advent of railroad resupply permitted armies to operate effectively hundreds of miles from their supply bases. During his 1864 Atlanta Campaign, Sherman’s 473-mile railroad resupply line from Louisville, Kentucky, to Atlanta, Georgia, allowed him to wage an offensive campaign with an army of 100,000 men. 15

Other affects of railroad use included prolonging the war by making decisive operations more difficult to achieve; improving logistics, which made it more difficult for armies to annihilate their opponents; providing escape for forces by rail or by receiving reinforcements before being completely destroyed. For example, during the First Battle of Bull Run, Confederate General Joseph Eggleston Johnston’s army used the Manassas Gap Railroad to reinforce General P.G.T. Beauregard’s forces, preventing their destruction at the hands of Union General Irvin McDowell. 16

Recognizing the need to co-opt the civilian railroad for military use, in January 1862, Congress authorized Lincoln to seize control of the railroads for the war effort. The U.S. Military Rail Roads (USMRR), a subordinate agency to the War Department, was responsible for operating the rail lines. The USMRR and the USMTC provided leadership and
organizational skills that helped military leaders rapidly assimilate the new capabilities in the conduct of war.17

Military efforts in the Civil War demonstrate how new technologies can affect the conduct of war.18 Modern military forces must be able to adapt quickly to evolving technologies and use new techniques in the pursuit of war to effect peace. MR

**Training for War While Keeping the Peace**

Lieutenant Colonel William G. Phelps, Jr., U.S. Army

As the U.S. Army enters the 21st century, its primary mission remains unchanged—to fight and win the Nation’s wars. Under the rubric of peace operations (POs), the Army has participated in operations in Somalia, Haiti, Bosnia, and Kosovo.

Based on open-ended operations in Bosnia and Kosovo, the Army can expect the duration of such operations to be longer rather than shorter. The *1999 National Security Strategy of the United States of America (NSS)* and the *1997 Quadrennial Defense Review (QDR)* support this assertion.1

The Army faces a dilemma in preparing to fight and win the Nation’s wars while also conducting peace operations around the world. Some might argue that the skill sets needed to fight and win wars and those associated with conducting peace operations are not mutually exclusive.2

The significant number of tasks mentioned are substantial enough for peace operations to be considered unique and should be treated as such. The degradation of warfighting skills resulting from executing open-ended peace operations places the Army’s ability to fight and win the Nation’s wars at risk. The Army is at a crossroads in determining its 21st-century roles and missions and must strive to achieve an appropriate balance between the mandate to fight and the ramifications of conducting ever-increasing peace operations around the world. Failure to do so places the security of the United States at risk.

**Key Operating Principles**

An examination of the principles of military operations other than war (MOOTW) provides a starting point for identifying several unique PO characteristics. Joint Publication (JP) 3-07, *Joint Doctrine for Military Operations Other Than War*, identifies six MOOTW principles: objective, unity of effort, restraint, security, perseverance, and legitimacy.3 Among these, objective, restraint, and perseverance provide excellent examples of unique PO characteristics.4

**Objective.** Every military operation is directed toward a clearly defined, decisive, attainable objective. Two points of immediate conflict for commanders executing peace operations are political objectives and the influence they have on military operations and tactics.

In war, there are usually one or two clearly defined goals (objectives). However, a clearly defined objective containing the purpose, scope, end state, and mandate (if operating as part or a United Nations (UN) force) conducting a peace operation might not always be clear.

Objectives change, and mandates are often adjusted to meet new needs. Poorly defined objectives often present commanders and units with significant operational challenges, the most dangerous being insufficient assets, such as equipment and personnel, to properly achieve objectives.

U.S. involvement in Somalia proceeded through three stages, and each stage was inherently different because of additional objectives. The stages included Operation Provide Relief, a humanitarian assistance (HA) mission; Operation Restore Hope, an operation that combined HA with limited military action; and UN Operations in Somalia (UNOSOM II), a peace-enforcement mission involving active combat and nationbuilding.4

What began as an HA operation under the *Charter of the United Nations*, chapter VI, “Pacific

**NOTES**


8. Addington, 373-75; 373; Addington, 76.


10. Robertson and King, 290.


15. Ibid., 5, 6.


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**ALMANAC**

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