FORCE XXI
AND THE AMERICAN WAY OF WAR

A Monograph
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Abstract

This study examines the Force XXI concept to determine whether it overturns old paradigms of warfare or is merely a continuation of a traditional American approach to war. The study begins by identifying the characteristics of the American military system and the sources or causes for those characteristics. Next, the study draws on key Force XXI literature to describe the concepts that are shaping current and emerging Army doctrine. Finally, by analyzing the emerging concepts and the data used to illustrate them in official publications, this study assesses whether the doctrine is truly a rational extension of these empirical observations or a derivation of traditional military views.

The traditional American approach to war resulted from the convergence of American liberal ideology, the demands of the Western military profession, and an abundance of material resources. All of these factors exist today, and, not surprisingly, Force XXI continues to reflect them. Force XXI contains new ideas and places great emphasis on the incorporation of new technology, but it continues the Army's traditional emphasis on strategies of annihilation and offensive action. Rather than bringing fundamental change, technology provides the means for the Army to avoid changing its approach to warfare. Technology offers the possibility for the Army to win wars of annihilation despite reductions in its size during an era of fiscal restraint.

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Introduction

As the United States Army approaches the next century, it faces a strategic environment in which the threat has changed dramatically from that of the Cold War era. Social, economic, and cultural forces are changing relationships among peoples, governments, and economies. At the same time, many in the defense community believe new technology will dramatically overturn previous concepts of the use of military forces.[1] To meet the new strategic and technological environment, the Army is designing Force XXI—a vision of how the Army will organize, equip, train, and fight in the next century.

The Army describes Force XXI as "the reconceptualization and redesign of the force at all echelons, from the foxhole to the industrial base, to meet the needs of a volatile and ever changing world."[2] What Force XXI will look like is unclear, but it is likely to have flatter command hierarchies and smaller, more flexible units. It will be designed to exploit new technology, especially information technology. It will employ new tactics and new weapons. It will represent a dramatic change from the Army of today.

Dramatic changes are never easy to accommodate. Large, tradition-bound organizations such as the U.S. Army typically find change particularly difficult. Such organizations often to feel tempted to interpret new developments in ways that rationalize the continuation of old ways of doing things. The temptation is not necessarily conscious and the continuation of old ways is not necessarily bad. The way the Army has operated in the past reflects underlying values and beliefs about the nature and purpose of the organization. At a deeper level, the way the Army operates reflects the values and beliefs of American society. Although the strategic environment and technology may change, if American values remain the same, then so will the Army's basic approach to warfare.

This study examines the Force XXI concept to determine whether it overturns old paradigms of warfare or is merely a continuation of a traditional American approach to war. The study begins by identifying the characteristics of the American military system and the sources or causes for those characteristics. Next, the study draws on key Force XXI literature to describe the concepts that are shaping current and emerging Army doctrine. Finally, by analyzing the emerging concepts and the data used to illustrate them in official publications, this study assesses whether the doctrine is truly a rational extension of these empirical observations or a derivation of traditional military views. Ultimately the goal is to identify those aspects of current doctrine that may lack an empirical foundation and which the Army should pursue with great caution.

The American Way of War

According to the United States Army's Field Manual 100-5, *Operations*, doctrine "is the statement of how America's Army...intends to conduct war and operations other than war. It is the condensed expression of the Army's fundamental approach to fighting...."[3] Doctrine attempts to forecast the empirical battlefield requirements of current or proposed military forces. The particular approach the Army takes toward developing doctrine reflects underlying assumptions about war. These assumptions are the product of the Army's historical, social, political, and economic circumstances. The assumptions are embodied in the institutional relationships within and between the military and society.

Political scientist Samuel Huntington has described how the relationship between the military and society shape national security policy. According to Huntington, national security policy consists of two levels—institutional policy and operating policy. Operating policy consists of immediate steps to deal with the current threat. Operating policy includes the proportion of national resources devoted to military needs, the size and structure of the forces, how it is recruited, trained, and equipped, and how it is employed. The design and employment of the Force XXI Army is a matter of operating policy. Institutional policy deals with the manner in which operating policy is formed and sets the broad limits within which the nation forms operational policy.[4]

America's institutional processes for developing national security policy are the product of the society's liberal values. The processes ensure the prominent role of those liberal values in forming operating policy. Huntington notes that liberalism "has always been the dominant ideology of the United States." Liberalism is greatly concerned with

maintaining the liberty of individuals against the demands of the state. Liberals tend to regard the instruments of state coercion with fear and disdain, and no instrument of the state is more coercive than the military. Liberalism "does not understand and is hostile to military institutions and military functions."[5] Hostility to military institutions appeared in the distrust of standing armies often expressed by American political writers during the colonial period and the early years of independence. The distrust is reflected in both the Declaration of Independence and the United States Constitution. The preponderant attitude of the Founding Fathers was that standing military forces were a threat to liberty and an unnecessary drain on the country's finances.[6]

The Founding Fathers' distrust of standing military forces is codified in the Constitution's division of power over military forces between the states and the legislative and executive branches of the federal government. The Founding Fathers wanted to prevent any single element of federal or state government from using the military to coerce the other elements. The diffusion of power over the military became the central feature of America's institutional military policy. Over the succeeding two hundred years, America's fear of standing armies subsided, but not America's fear that its military forces will be abused. Constitutional arrangements ensure that the Congress, the Executive Branch, and the states each have a voice in the formation of America's operating national security policy. The result is operating policy that reflects liberal values, attitudes, and, at times, passions.

Concerned as they are with the defense of the individual against the state, Liberals are ill-equipped to justify state actions to coerce other states.[7] Liberals can justify war only if the war supports liberal objectives. According to Huntington,

> Since liberalism deprecates the moral validity of the interests of the state in security, war must be either condemned as incompatible with liberal goals or justified as an ideological movement in support of those goals. American thought has not viewed war in the conservative-military sense as an instrument of national policy. When Clausewitz's dictum on war as the carrying out of

> state policy by other means has been quoted by nonmilitary American writers, it has been to condemn it for coldblooded calculation and immorality.[8]

Americans reject war except when it promotes American ideological values, which may be vaguely described in terms of liberty, democracy, and self-determination. Americans tend to regard the preservation of individual liberty not merely a matter of philosophy but one of morality.[9] An opponent who opposes such values is evil, and the appropriate response to evil is to root it out. With this attitude toward its opponents, America tends to treat wars as "crusades." As political scientist Paul Kecskemeti notes, "This crusading ideology...is reflected in the conviction that hostilities cannot be brought to an end before the evil enemy system has been eradicated."[10]

American soldiers tend to share the society's cultural and ideological view of war. Additionally, American officers are pushed by the demands of the military profession to prefer strategies that seek the complete overthrow of the enemy. The military profession emerged because of conditions created during the Industrial Revolution. One condition was the increasing complexity of warfare. Waging modern warfare successfully required specialized expertise. Another condition was the rise of strong nation-states. These states could afford to support a standing army and provided a single recognized source of authority over the armed forces.[11]

One of the cornerstones of Western military professionalism is the separation of the military from political activity. This in part reflects the professional military's need for a single legitimate source of authority.[12] Professional soldiers must be loyal to the state, not to a particular political faction, lest competing loyalties undermine the obedience that is essential to discipline and military efficiency. On the other hand, soldiers tend to believe politicians should not interfere with military decisions. A profession must have a unique and exclusive area of expertise, which for the military is the management of violence. The military is jealous of any intrusion into its area by outsiders.

Clausewitz observed that "political" (*i.e.*, non-military) considerations always exert some influence on the conduct of war, but such considerations play a decreasing role as war approaches its absolute form. In its absolute form, war is a struggle in which each side seeks to destroy the other and violence replaces all other forms of political intercourse. In more limited war, "political" considerations play a larger role.[13] The German historian Hans Delbrück expounded upon the distinctions between "absolute" war and more limited forms. Delbrück divided military strategy into two forms, "*Niederwerfungsstrategie*" (strategy of annihilation) and "*Ermattungsstrategie*" (strategy of exhaustion). Delbrück described *Niederwerfungsstrategie* as a "one pole" strategy—the one pole being the decisive battle that seeks to destroy the enemy's armed forces. *Ermattungsstrategie* is a "two pole" strategy that combines battle with other political activity. *Ermattungsstrategie* seeks to exhaust the enemy until he decides his political objectives are not worth the costs of continuing the struggle. Battle is neither the only nor necessarily the most important means of achieving the political objectives of the war. Occupation of territory, destruction of enemy resources, or economic blockade may be as important. Delbrück emphasized that *Ermattungsstrategie* is neither inferior to nor a lesser form of *Niederwerfungsstrategie*. *Ermattungsstrategie* is appropriate when the demands made of the opponent are small or the available military means are limited.[14]

Professional soldiers tend to feel uncomfortable in applying strategies in which battle is not the sole or even primary means of advancing political objectives. The inclusion of other means reduces the autonomy of the military professional or may force him to span the separation between the military and the political spheres. A strategy of annihilation is simpler and falls more completely within the military's professional expertise. For this reason, a preference for strategies of annihilation is common among professional military forces; the United States Army is not alone. Delbrück noted the German Army's preference for strategies of annihilation in the Austro-Prussian War of

1866, the Franco-Prussian War of 1870, and the Schlieffen Plan of 1914. After the Schlieffen Plan failed, Delbrück tried to persuade the German government that a strategy of annihilation was inappropriate. Delbrück pointed out that the Germans no longer possessed the resources to overwhelm the Entente. He recommended switching to a strategy of exhaustion that would allow for a negotiated peace rather than total victory. The German Army ignored him and suffered total defeat. When the German Army began the Second World War two decades later, it again resorted to strategies of annihilation.[15]

For professionals in the United States military, the appeal of strategies of annihilation is no less strong than it was for the Germans. The destruction of the German Army during the last year of World War II was one of the U.S. Army's most satisfying experiences. The victorious campaigns from Normandy to the Elbe formed the basis of the Army's preferred self image throughout the Cold War.[16] The decisive victory against Iraq in 1991 may establish the Army's preferred self image for a generation to come. In contrast, the Army experienced tremendous frustration during the Vietnam War. The Vietnam War called for a strategy of exhaustion involving not only battle, but a host of other activities intended to "win the hearts and minds" of the South Vietnamese people. The U.S. Army was largely unsuccessful in implementing these "other activities," which many soldiers considered to be outside their responsibilities. "Political" interference in the war was common and rankled many in the military.[17] After the war, Army Chief of Staff Creighton Abrams sought to create barriers that would prevent the Army from being committed to wars like the one in Vietnam. Abrams redesigned the Army's force structure to put most logistical capabilities needed for a long war in the reserve component. The new structure made it difficult to send the Army to war without mobilizing the reserves. Abrams believed political leaders could not mobilize the reserves without first mobilizing the support of the American people.[18] Mobilizing American

popular support for war traditionally has required presentation of the war as a moral cause or crusade, which calls for the strategy of annihilation military professionals prefer.

The tendency of American liberalism to treat wars as crusades thus supports and reinforces the predispositions of the military professionals. A third factor, which the Germans lacked in 1918 and 1941, is the abundant material resources that have given America the wherewithal to pursue successful strategies of annihilation. Supported by the convergence of liberal ideology, professional demands, and abundant resources, strategies of annihilation are a central feature of what historian Russell Weigley calls "the American Way of War."[19] The preference for strategies of annihilation is so consistent and is rooted so deeply in American values that it may be considered part of the institutional element of American national security policy.

The institutional level of national security policy determines how the nation will address the issues of operating policy, including when, where, and how the nation will employ its armed forces. One of the recurring trends in American operating policy is an emphasis on offensive action. The emphasis on the offensive is an extension of the preference for strategies of annihilation.[20] Only the offensive can achieve the decisive results that a strategy of annihilation demands. U.S. Army doctrine describes the defense as a temporary posture. When the Army has sufficient strength, its doctrine calls for it to attack.[21] Weigley notes that the Army's emphasis on the offensive dates to Dennis Hart Mahan and Henry Halleck at West Point in the period from 1840 to 1861. They used Jomini's interpretation of Napoleon to teach strategy. During the Civil War, both sides emphasized offensive action, despite the high casualties that resulted from the increased deadliness of rifled muskets.[22] The U.S. Army entered World War I at the end of the period of trench warfare, in time to participate in the great offensives that ended the war. During World War II, American military leaders immediately sought offensive action, even when Japan had a temporary superiority in combat forces.

Americans have not only preferred the offensive, but have preferred a particular style of offensive, in which the Army advances on a broad front. After World War I, British military writers J. F. C. Fuller and B. H. Liddell Hart advocated the use of mechanized forces to penetrate enemy defenses as strike vital areas deep in the enemy's rear. Liddell-Hart and Fuller were proponents of "maneuver" in the "maneuver versus attrition" debate mentioned above. The Americans disagreed with the conclusions of the maneuver enthusiasts. They believed the objective of an attack was not "vital areas" somewhere to the rear, but the enemy's army. Colonel W. K. Naylor of the Army War College expressed this sentiment in a 1921 book on strategy: "Disabuse your mind of the idea that you can place an army in a district so vital to the enemy that he will say, 'What's the use' and sue for peace. History shows that the surest way to take the fighting spirit out of a country is to defeat its main army."[23]

The U.S. Army did not add "Maneuver" to FM 100-5's lists of Principles of War until 1949.[24] This is not to say the U.S. Army has preferred bullheaded strength-against-strength frontal assaults. Rather, the "broad front" strategy at the operational level forces the enemy to spread his own forces. The enemy will be weak *somewhere*, and at that place the U.S. Army can break through. Liddell Hart extolled General William T. Sherman as a practitioner of the "strategy of the indirect approach," but the Americans remembered that Ulysses S. Grant's sledgehammer blows against the Army of Northern Virginia made Sherman's march possible. As Weigley put it:

> When a belligerent possesses strength as superior to the adversary's as the Allies did in Europe and the Pacific, the whole history of American strategy since U. S. Grant confirmed that the enemy can be hit with advantage at numerous places and thus forced to accentuate his weakness through dissipation—as long as strategy aims at decisive objectives and does not waste itself in sideshows.[25]

Clausewitz stated that the best strategy was to be strong everywhere.[26] In the past, America had the good fortune to be able to implement such a strategy. The

preponderance of men and materiel that allowed America to seek strategies of annihilation encouraged "broad front" offensives.

The first requirement in waging a strategy of annihilation is to have overwhelming superiority over the opponent. In the past, America's industrial and economic strength provided such superiority. The Civil War and the Second World War offer good examples of the application of material superiority. During the Civil War, Grant defeated the Confederacy by using the North's superior resources to attack relentlessly on all fronts. During the Second World War, American agriculture and manufactures gave the Allies a material advantage that Germany and Japan could not overcome.

Relying on a strategy that requires overwhelming superiority has disadvantages. First, as Grant showed, matching strength against strength may overwhelm a weaker opponent, but the cost in dead and wounded may be high.[27] One response to the need to minimize casualties has been to emphasize materiel rather than manpower. This emphasis has taken several forms, including a reliance on indirect fires as the primary means of killing the enemy. Strong artillery support was typical of U.S. Army units in World War II, Korea, and Vietnam. The preference for indirect fires led directly to a preference for tactical air support. Aircraft offer tremendous combat power at the risk of relatively few lives. The ultimate expression of long range firepower to achieve decisive results at the risk of few Americans lives was the atomic bombing of Hiroshima and Nagasaki.

Americans have also sought technological means to minimize danger to soldiers, pilots, and crews. The United States has demonstrated a distinct preference for fielding the most modern and technologically sophisticated weapons systems. This trend has been particularly pronounced since World War II. The Air Force is the most insistent proponent of high technology equipment, but the other services share the tendency. Even the Army has developed a growing enthusiasm for high technology. The Army traditionally emphasizes its people more than its equipment, but over the last three decades

the Army has moved closer to the other services in its attachment to its equipment. This is particularly true with the fielding of the M1 Abrams tank and modern attack helicopters.[28]

The second disadvantage of relying on a strategy that requires overwhelming superiority is that mobilizing material superiority is expensive, even if it is within the nation's capabilities. The United States has been reluctant to spend large sums on defense in times of peace. During the Cold War, the Soviet Union invested a huge proportion of its gross national product in military forces. The United States could have matched the Soviet investment, but had no desire to do so. Instead, the United States sought less expensive ways to equip itself with overwhelming superiority. Once again, technology offered a solution. The atomic bomb provided relatively inexpensive superiority. The advantage was short-lived, but it demonstrated the potential for technological superiority to offset numerical inferiority.

Technology offers the Army the prospect of implementing its preferred strategy of annihilation despite reductions in its force structure. In the 1980's, the Army acquired new tanks, new infantry fighting vehicles, new attack helicopters, and the Multiple Launch Rocket System (MLRS). These modern weapons were intended to offset a perceived quantitative and qualitative advantage the Soviet Union had built during the 1970's. Operation Desert Storm appeared to validate the Army's investment in technologically sophisticated equipment. The Abrams tank appeared nearly invincible against Iraq's Soviet-built T72 tanks, and the Army's other modern equipment also performed superbly. By the end of the ground attack, the Army had achieved a lopsided victory that clearly was the result of something more than the Coalition's numerical advantage, which the Army believed to be small.[29]

The Army is justifiably proud of its performance during the Persian Gulf war. However, it cannot help noticing the contribution of the Air Force to the Coalition victory. The Air Force failed to reduce the Iraqi ground forces to less than 50 percent strength,

despite its belief it had done so. Nevertheless, the Iraqi Army was all but defeated before the Army crossed the line of departure on 24 February 1991.[30] The results of Operation Desert Storm encouraged air power enthusiasts to claim that air power alone could bring victory. Land power advocates point out that defeating an opponent from the air requires time, and future adversaries may not be as passive as were the Iraqis. Ground forces can set a faster tempo of operations or force an opponent to slow down. Furthermore, only ground forces can occupy territory or control populations.[31]

Despite affirmations of the value of ground forces, the domination of air power over Iraqi ground forces continues a historical trend. The relative combat strength of air forces compared to ground forces has increased steadily over time. If the trend follows a linear projection, eventually ground forces will be irrelevant in battle. By extension, ground forces will be irrelevant in a strategy of annihilation that uses battle to achieve victory. The situation for the Army hearkens to the 1950's, when atomic weapons seemed to cast doubt on the usefulness of ground forces. Then as now, the Air Force's advanced technological capabilities offered the most "bang for the buck" during a period of fiscal restraint. The Army attempted to adapt to the Atomic Age by experimenting with new structures and by equipping its forces with atomic weapons of their own.[32] Forty years later, the Army is again considering new structures and high-technology equipment in an effort to maintain its relevance.

Force XXI

Toward a New Doctrine

According to Force XXI's leading proponent, Army Chief of Staff General Gordon R. Sullivan, "as the size of a unit decreases, there can be a corresponding increase in the effects it is able to produce if it is equipped with the right technology used by high-quality, well-trained, and well-led troops employing proper doctrine."[33] As the U.S. Army looks to the future, it sees a world in which advanced technology will enable it to dominate opponents and attain decisive victory despite being a smaller force than it was during the Cold War. This is not to say Force XXI is simply a response to the post-Cold War drawdown. Many of the ideas that characterize Force XXI originated in the late 1970's and early 1980's, long before the collapse of the Soviet Union. In 1980 General Donn Starry of the Army's Training and Doctrine Command (TRADOC) commissioned a project called AirLand Battle 2000. Later renamed Army 21, the study contained many of the ideas that subsequently went into Force XXI. Army 21 was an effort to examine future warfighting concepts and the effects of emerging technology. It did so in the context of the Cold War, and the Soviet Union was viewed as the likely enemy.[34]

The collapse of the Soviet Union culminated a profound shift in the strategic environment. The Army suddenly found itself with a doctrine designed for a high intensity war in central Europe that was no longer plausible. The AirLand Operations doctrine promulgated in the 1986 edition of the Army's keystone doctrinal manual, FM 100-5, *Operations*, did not suit the world of the 1990's. The Army needed a new doctrine, one suited to the threats and likely missions that it faced in the last decade of the twentieth century.

In 1993 the Army published a new edition of FM 100-5. The 1993 edition of FM 100-5 departed from its predecessors' emphasis on fighting in central Europe, but it fell short of the fundamental changes that the Army envisions for Force XXI. General Sullivan believed the Army must first stabilize itself following the post-Cold War force reductions before reorganizing as the Force XXI Army. In the meantime, the Army could expect to be employed in a variety of missions and needed a doctrine to guide it. With the disappearance of the Soviet threat, the Army had no clear opponent against which to measure itself. Changes in the geopolitical environment combined with the potential opportunities and risks of new technology to demand a new look at force structure and how to fight.[35] The absence of a well-defined threat meant the Army could not depend on a single, prescribed, authoritative doctrine. With the publication of the 1993 edition of FM 100-5, the Army adopted what TRADOC called "a doctrine of *full-dimensional operations*." TRADOC contrasted the 1993 FM 100-5 with Cold War doctrine, which was deterministic and focused on Central Europe. The new doctrine was intended to be more flexible, stressing principles rather than procedures. One of the most distinctive elements of the new FM 100-5 was its extensive treatment of "Operations Other Than War," or OOTW. OOTW encompasses the entire range of military operations other than open warfare between conventional forces.[36]

For senior Army officers, the new approach to doctrine development required a difficult conceptual shift. America's military forces were no longer being asked to contain communism. Instead, they were being asked to help solve a host of other problems.[37] In an article in *Military Review*, General Sullivan identified the larger concerns of the nation that may call for military action:

- Help promote an environment conducive to political and economic stability.
- Participate in efforts to prevent the proliferation of weapons of mass destruction.

- Contribute to domestic recovery, participate in global stability operations, and retain its capability to produce decisive victory.
- Prevent crises from occurring or from developing into conflicts; resolve conflicts before they spread; or end wars decisively on terms favorable to the United States.[38]

In August 1994 the U.S. Army Training and Doctrine Command published TRADOC Pamphlet 525-5, *Force XXI Operations*. TRADOC Pam 525-5 is a conceptual draft for a future edition of FM 100-5. Just as FM 100-5 sets the broad basis for current Army doctrine, TRADOC Pam 525-5 sets the basis for Force XXI doctrine.[39] TRADOC Pam 525-5 includes ideas about force structure, the conduct of war, and the nature of war. It is necessarily vague, partly because no one can see the future with perfect clarity and partly because the future strategic environment offers many possible challenges that defy a single, specific solution.

The Environment of Conflict

TRADOC Pam 525-5 postulates a complex strategic environment in the next century. No credible near-term military threat to the United States exists, but in an age of great turmoil the United States will face numerous lesser challenges to its important interests.[40] In the twenty-first century, the U.S. military may fight the armed forces of other states, local insurgents, international terrorist groups, drug cartels, or corporations. TRADOC Pam 525-5 catalogs some of the possible threats, which range from technologically sophisticated peer competitors to primitively equipped and poorly trained local security forces.[41]

General Sullivan believes the new strategic environment may require the Army to reconsider its concept of war. He notes that Americans traditionally prefer to think of war "in terms of conventional combat: the armies of one nation-state or alliance fighting those of another." According to this tradition, every other use of violence, such as terrorism or guerrilla warfare, is characterized as something other than war. Sullivan warns military

planners not to let these definitions limit them or lead them to believe that the conditions for success in war are somehow different from the conditions for success in operations other than war. War and operations other than war may be nearly indistinguishable.[42] The United States is likely to fight conventional wars only against peer competitors or highly confident mechanized armies. Weaker, technologically less sophisticated opponents may resort to unconventional forms of war such as terrorism, insurgency, and partisan warfare.[43]

TRADOC Pam 525-5 states that the most serious challenge to U.S. military superiority will come from the proliferation of weapons and technology. Threat forces that lack overall sophistication and resources can obtain small quantities of high quality modern weapons on the international arms market. Several less-developed countries that are hostile to the United States are known or suspected to be attempting to develop atomic bombs. Many also possess the potential for developing chemical or biological weapons. Delivery systems including crude ballistic missiles such as Scuds are available from North Korea and other suppliers. Other technology that may be available includes commercial space products and the means for disrupting U.S. use of the electromagnetic spectrum. These capabilities—including weapons of mass destruction—may be wielded not only by states but by terrorist and criminal organizations.[44]

New Technology and the Future Battlefield

While the proliferation of new technology may be the most serious challenge to American military superiority, new technology is the basis for the Force XXI Army that is intended to extend American superiority into the next century. The dominant aspects of the TRADOC Pam 525-5 vision of the future battlefield are largely technological in nature. These technological aspects appear to be the driving concepts behind Force XXI.

In *Land Warfare in the 21st Century*, General Sullivan and Lieutenant Colonel James M. Dubik identify five dominant technological trends that will change the conduct of land warfare in the next century. The first of these trends is increasing lethality of weapons and greater dispersion of military forces. This trend began over a century ago with the development of the rifled musket. Improved weapons ranges meant that soldiers no longer needed to stand shoulder-to-shoulder to deliver massed fires. Increased lethality meant that soldiers who stood shoulder-to-shoulder suffered high casualties. Formations began to spread out to reduce their vulnerability. Continued improvements in small arms and artillery caused soldiers to disperse ever farther apart. This trend continues today as weapons ranges increase and munitions become more lethal.[45]

The second trend, related to the first, is the increased volume and precision of fire. This results not only from increased rates of fire but also from improved capabilities to supply weapons with vast quantities of ammunition. The improvements in precision reflect better means of fire direction and the development of guided weapons. New "brilliant" munitions continue the trend, and in the future we may see high energy weapons and electro-magnetic rail guns.[46]

The third trend is integrative technology. Integrative technology involves the use of modern high volume digital communications and computers to help commanders to see the battlefield, make decisions, and direct subordinates. Existing and emerging automated technology helps the commander to rapidly integrate intelligence, reconnaissance, and target acquisition systems with fires and maneuver. Sullivan and Dubik assert that integrative technology will increase the tempo of the battlefield. The increased tempo will increase the need for subordinate leaders to exercise decentralized control of military forces.[47]

The fourth trend is an increase in the mass and effects that smaller units can achieve. Integrative technology gives smaller units the agility to act quickly, while

improved weaponry allows smaller units to achieve much greater effects than in the past. Integrative technology facilitates the combination of different arms and services to create synergistic effects. Future combined arms and joint force packages will be smaller than they are today, but they will have a greater potential to achieve decisive effects.[48]

The fifth trend is invisibility and detectability. Land forces have improved their abilities both to hide from the enemy and to detect enemy activity at greater ranges. In Napoleon's time, armies detected enemy activity by sending spies and cavalry forward to watch the opposing army. In the Civil War, balloons increased the range at which the enemy could be observed. In World War I, airplanes extended reconnaissance many miles beyond the enemy's front lines. The introduction of radio communications brought opportunities for electronic eavesdropping. Eventually aerial photography and radar joined the list of collection capabilities. Now satellites, unmanned aerial vehicles (UAVs), Joint Surveillance and Target Acquisition Radar System (JSTARS) aircraft, and other means allow us to observe an enemy at extended distances. Meanwhile, the ability to hide or mask activity has grown more sophisticated. Napoleon's armies hid their activity by marching at night and by using light cavalry to screen their movements. Later, smoke, camouflage netting, mock equipment, dummy radio traffic, and stealth technology were developed as countermeasures to improving collection means.[49]

The importance of the five trends goes beyond the individual effects of each. Together they have a profound synergistic effect on battlefield operations. Integrative (or information) technology—modern automation and computers—provides an essential link that multiplies the effects of the other trends. TRADOC Pam 525-5 says integrative (or information) technology has already begun to revolutionize how nations, people, and organizations interact and is likely to revolutionize military operations.[50] Existing and emerging high capacity automated command and control systems allow commanders to identify and select targets quickly. Commanders can direct weapons to strike targets

within minutes of identification. Automation helps commanders know the locations and status of forces that are dispersed across a battlefield or an entire theater of war. Exploiting these capabilities and attempting to limit an opponent's use of them promises to become a vital aspect of future military operations. TRADOC Pam 525-5, General Sullivan's writings, and futurists Alvin and Heidi Toffler all emphasize "information warfare" as a potentially decisive element in future conflicts.[51]

Although Force XXI places great importance on technology, its authors emphasize that technology alone will not provide the benefits the Army seeks. The Army must combine technology with organizational adaptation and new operational concepts. Several writers have used the German Army of the 1930's to illustrate this idea. During the 1930's, the Germans, French, and British each developed mechanized forces. The Germans, however, also developed new organizations and operational concepts, while the French and British sought to graft mechanized capabilities onto existing organizations and made few changes in their military doctrine. In 1940, British and French tanks were superior in quality and about equal in numbers to the German Army's tanks, but Germany's panzer divisions and *Blitzkrieg* doctrine quickly overcame the French and British.[52]

Force XXI does not seek to graft new technology onto existing organizations and doctrine. Instead, Force XXI involves the development of new structures and operational concepts that allow the Army to exploit the potential of technology. General Sullivan writes that new concepts and designs form the "main axis" of the Army's plan to implement Force XXI, while "the supporting operation, which cannot fail, is the acquisition and assimilation of the technology to enable those concepts and designs."[53]

Force XXI Operational Concepts

Force XXI operational concepts describe how the Army plans to exploit the technology of the next century. Understanding how the Army wants to fight provides insights into the Army's view of warfare. TRADOC Pam 525-5 provides broad ideas about how the Force XXI Army will operate. More specific information is available in some of the Force XXI supporting documents.

TRADOC Pam 525-5 presents five characteristics that form the unifying concept of Force XXI. It then describes five "battle dynamics" that provide the framework of Force XXI operations. The five characteristics relate to the broad functions of the Force XXI Army. They are "*doctrinal flexibility, strategic mobility, tailorability and modularity, joint and multinational connectivity, and the versatility to function in War and OOTW.*"[54] TRADOC Pam 525-5 anticipates that the United States will continue the trend of the early 1990's of joining with United Nations or other international partners to perform a variety of missions. The Army will be based in the United States and must deploy to the theater of operations. Upon deploying, the Army may perform a variety of missions and may face a wide range of possible adversaries. Winning land battles in the next century requires flexible doctrine that enables the Army to defeat the entire range of possible opponents, from relatively primitive forces to adversaries equipped with equal or superior technology. Readiness to fight and win land wars will always be the Army's first priority, but the Army must have the versatility to respond to both war and OOTW. TRADOC Pam 525-5 states that "well-trained and disciplined units, provided with sufficient time and resources to train, can transition to OOTW as required."[55]

TRADOC Pam 525-5 anticipates that the Army of the twenty-first century will be based in the continental United States and must deploy overseas to its area of operations.

TRADOC Pam 525-5 calls for national investment in airlift, sealift, prepositioning, and transportation infrastructure, but it accepts that the Army may be unable to deploy as rapidly as it would prefer. Force XXI must therefore have light, air transportable forces. It must also have forces that are lethal and survivable. Lethality and survivability are important because the first Army units in theater may have to fight while other units are still deploying. Force XXI will use modular unit structures that allow commanders to tailor forces for specific missions. Modularity and tailoring facilitate efficient use of limited strategic lift by allowing commanders to send only force elements that are needed, as they are needed. Communications technology will allow intelligence and combat service support units to support deployed units from bases in the United States.[56]

Once Army forces are deployed to a theater, they will operate within the framework of five "battle dynamics." The "battle dynamics" are battle command, battlespace, depth and simultaneous attack, early entry, and combat service support. None of the battle dynamics are new, but they represent a different way of looking at military operations. TRADOC Pam 525-5 could have described Force XXI using the "dynamics of combat power" found in FM 100-5, but the dynamics of combat power do not provide a prominent place for information operations. TRADOC Pam 525-5 considers information operations to be critical: "The main imperative guiding future operations, from full war to domestic support operations, will be to gain information and continued accurate and timely shared perceptions of the battlespace."[57] Information will allow commanders to tailor appropriate forces, will allow soldiers to apply the right doctrine, and will enable the Army to work with other services, government agencies, and nations. TRADOC Pam 525-5 even suggests the utility of sharing information with the enemy to persuade him to surrender.

The first battle dynamic is battle command. TRADOC Pam 525-5 defines battle command as "the *art* of decision-making, leading, and motivating informed soldiers and

their organizations into action to accomplish missions at the least cost to soldiers." The peculiar editorial comment "at the least cost to soldiers" is missing from the 1993 FM 100-5 definition of battle command, which FM 100-5 uses in a different context.[58] TRADOC Pam 525-5 emphasizes the word *art* because future commanders must be able to act quickly based on intuition. Information technology will enable Force XXI to share information across the battlefield, providing a common understanding of the tactical situation. However, the rapid tempo of future battle will force commanders to act in an environment of uncertainty. Leaders will be able to detect fleeting targets and issue orders nearly instantaneously. Pausing to analyze information may allow the enemy to escape or to strike the first blow. The increased tempo of the battlefield will require new command structures that decentralize control of operations. The new structures will tend to diffuse command authority because of nearly instantaneous sharing of information across the battlefield without regard to command hierarchies.[59]

Force XXI documents do not address the alternative possibility that improved information technology will cause increased centralization. By creating an illusion of perfect knowledge, information technology may tempt commanders to centralize decisionmaking at the highest headquarters. Historical precedent supports such a possibility. The introduction of the telegraph and telephone both encouraged commanders to remain at rear area headquarters because they believed they could control the battle from there. "Chateau generalship" was egregious during the First World War, but as S. L. A. Marshall noted, the phenomenon continued to hamper U.S. operations during World War II.[60]

TRADOC Pam 525-5 says that information technology will increase the tempo of operations and will force commanders to operate on intuition. This is true only if the Army fights a similarly capable opponent. If the opponent lacks sophisticated battle command, communications, and intelligence capabilities, the Force XXI Army will be able

to establish the tempo that it prefers. In such a situation, centralization of command is likely because higher level commanders will have the luxury of being able gather information and act, not instantaneously, but faster than their opponents can.

Advanced means of battle command will allow Force XXI commanders to control forces that are dispersed over large areas. The area over which commanders exert control is the second battle dynamic, battlespace. Battlespace includes the depth, width, and height of the area in which the commander can acquire and engage the enemy. In the next century, the increased lethality of weapons and the related increased dispersion of forces on the battlefield will increase the physical dimensions of battlespace. Increasing the physical dimensions of the area the commander can control enables him to attack enemy forces before they are near enough to engage friendly forces. It also reduces the vulnerability of friendly forces by allowing them to disperse over larger areas.[61]

The designers of Force XXI believe that shared knowledge will change the way the Army looks at battlespace. Since commanders at all levels will have a common, up-to-date view of the battlefield, they will be able to replace today's rigid control measures—phase lines, boundaries, battle positions, *etc.*—with a new battlespace framework based on collective unit images.[62] Current, detailed knowledge of the locations and activities of friendly and enemy units will give commanders great flexibility. Units will be able to move and engage targets without undue concern that they will interfere with or accidentally fire upon other friendly forces.

The expansion of battlespace has profound implications for the third battle dynamic, depth and simultaneous attack. As commanders develop the ability to coordinate activities with unprecedented precision and speed, they may replace today's sequential operations with simultaneous operations. The goal of simultaneous operations is to overwhelm the opponent by presenting an unmanageable number of crises throughout the depth of the battlefield.[63] The 1989 invasion of Panama represents an early version of

a simultaneous operation. In an eight hour period on 20 December 1989, American forces struck 27 targets throughout Panama, thereby causing the near instantaneous collapse of Manuel Noriega's Panama Defense Forces.[64]

The accuracy of weapons and the ability of target acquisition systems to locate opposing forces will change the relationship between deep attack and close combat. Long range weapons and target acquisition systems will enable Force XXI to target the enemy throughout the depth of the battlefield. Increased firepower will discourage close-in combat; instead Force XXI units will locate and engage opponents from the maximum possible distance. Units will avoid long pauses and stable fronts that leave them vulnerable to massive, simultaneous attacks. Maneuver forces will physically mass for shorter periods of time, and integrative technology will allow armies to mass effects in time rather than in space.[65]

TRADOC Pam 525-5 states that "measures taken to win the information war" will be an important part of depth and simultaneous attack. Winning the information war involves denying information capabilities to the opponent while protecting our own capabilities. Integrative technologies depend heavily on use of radio communications. If an opponent is able to deny or degrade the Army's use of the electromagnetic spectrum, he could seriously impair the Army's ability to fight. TRADOC Pam 525-5 includes "spectrum supremacy" as one of the dominant aspects of the future battlefield. Gaining control of the electromagnetic spectrum may become the necessary precondition to successful operations, just as gaining control of the air is necessary today.[66]

Early entry is the fourth battle dynamic. TRADOC Pam 525-5 states that early entry is one of the battle dynamics where change is most dramatic, but it describes no dramatic changes. Force XXI will be based in the continental United States and will deploy to the area of operations. Ideally, early entry forces will conduct a simultaneous strike to seize control of the entire area of operations, as occurred during the 1989

invasion of Panama. If the limitations of strategic lift do not allow the early entry force to gain control of the entire area, it must seize a lodgment and prepare for the arrival of additional forces. Until reinforcements arrive, the early entry force must be prepared to fight. Getting capable fighting forces to the theater quickly requires that they be as light as possible within the requirements of the mission. More importantly, the forces must be tailored correctly. The forces cannot waste limited strategic lift on elements that are not needed.[67] Proposed designs for the Force XXI division facilitate tailoring by excluding from the division structure elements that do not contribute directly to combat capabilities. The intent in excluding non-combat elements is to allow the division to deploy the greatest amount of combat power using the fewest strategic mobility resources. If additional capabilities are needed, such as for OOTW, corps or echelons above corps units may be attached to the division.[68]

The fifth battle dynamic is combat service support (CSS). CSS is a significant challenge for Force XXI. The Force XXI Army will operate over great distances in unprepared theaters far from the United States. Force XXI logistics units, like combat units, will be modular in design to support force tailoring. Many of the garrison functions of CSS units will be turned over to civilian contractors to allow the units to concentrate on being ready for deployment where needed. Information technology will aid the movement of supplies. Telemetry systems will allow logisticians to know the precise location of all supplies in theater, en route, or in home station warehouses. Where possible, the Army will position supplies aboard ships or in theaters where conflict is likely. The Army will also employ split-based logistics, in which some logistics elements support the deployed force from outside the theater of operations.[69]

TRADOC Pam 525-5's discussion of the characteristics of future battle and the battle dynamics provides a broad idea of how the Army expects to fight in the next century. As the Army restructures units and fields new equipment, it will continue to

refine Force XXI operational concepts. The processes for developing Force XXI operational concepts, like the concepts themselves, reflect the Army's basic approach to war.

The Force XXI Campaign Plan

Change does not happen because the Chief of Staff of the Army orders it. The Army as an institution must accept and internalize the need for change. General Sullivan believes the Army will accept the need for change because it is a learning organization, one that "does not resist change, it welcomes it as a way to improve." He points to the Army's institutionalization of the After Action Review process as evidence that the Army is a learning organization.[70]

The Army has adopted a three-axis "campaign plan" for implementing Force XXI. The plan addresses intellectual, organizational, and technological change. The central axis of the plan is "Joint Venture," the redesign of the Army's operational forces. It includes changes in the organization of combat and combat support units, beginning with the division. TRADOC Pam 525-5 is a key element of the "Joint Venture" axis. The other axes are redesign of the institutional Army and development of information age technologies.[71]

One of the central elements of the plan is the Louisiana Maneuvers (LAM) process. Named for General George C. Marshall's experimental maneuvers that contributed to the design of the Army in World War II, LAM is a process of experimentation for designing Force XXI. The experiments include "Advanced Warfighting Experiments" and technology demonstrations. A "board of directors" guides the LAM process. The board includes the Chief of Staff, Vice Chief of Staff, regional Army commanders, the Commandant of the Army War College, and several other senior

Army leaders. A second organization is the Louisiana Maneuvers Task Force, headed by a brigadier general. The LAM task force coordinates the LAM process under the direct supervision of the Chief of Staff. A third LAM element is the General Officers Working Group. The General Officer Working Group reviews LAM concepts and makes recommendations to the board of directors. Collectively, these LAM elements cut across bureaucratic boundaries to foster organizational changes that support innovation.[72]

Another institutional instrument of change is TRADOC's Battle Laboratories. The Battle Labs are multifunctional organizations that test new ideas and methods. They are designed to avoid bureaucratic or institutional preconceptions.[73] To some degree, the Battle Labs resemble the Mechanized Force that Adna Chaffee developed to experiment with armored and mechanized warfare in the late 1920's. Like the Mechanized Force, the Battle Labs bypass or coopt elements of the Army's branch structure that might tend to obstruct change.

The Louisiana Maneuvers and the Battle Labs use computer simulations as an important tool for evaluating Force XXI concepts. Simulations are also important for training Army units. Simulations have tremendous advantages. First, they are relatively inexpensive. The original Louisiana Maneuvers in 1940 involved some 400,000 soldiers. To mount an exercise of that scale today would be prohibitively expensive and its maneuver space requirements would disrupt a large area of the country. Computer simulations allow the Army to test large scale maneuvers with relatively little investment of resources. Computer simulations also facilitate analysis of warfighting experiments and training events.

Unfortunately, computers have drawbacks as well. The results of simulations depend on the values the programmer assigns to various weapons systems. If the programmer assigns a high value to a proposed system, the simulation will demonstrate that the system is very effective. The simulation may provide evidence that a given force

structure is optimal based on assigned weapons values that are unrealistic or simply untested. Simulations also tend to do poorly in replicating the friction, fear, and fatigue of war. Simulated units do not become lost, do not panic, and do not collapse in utter exhaustion after long and continuous combat.

The difficulty of simulating human foibles leads to another shortcoming of simulations. Computers can assign combat power values and calculate the outcomes of combat between tanks, artillery pieces, attack helicopters, and infantry units, but they are less successful at simulating non-combat interactions of military forces and civilian populations. For this reason, computer simulations work better in testing concepts of warfighting than in testing concepts for operations other than war. The relative brevity of simulation-driven training exercises further degrades their usefulness in testing concepts or training for OOTW. "Operations other than war" generally require extended time and persistence to achieve success. Unfortunately, the only good way to simulate operations other than war is with live people in realistic environments. Training exercises of this nature remain prohibitively expensive if conducted on a large scale. The Army's dependence on computer simulations reinforces the Army's predilection for preparing for war rather than for operations other than war.

Despite its focus on conventional war scenarios, the Force XXI campaign plan, and especially LAM and the Battle Labs, represent an unusual and extensive commitment to change. Whether or not the Army eventually implements the TRADOC Pam 525-5 vision of Force XXI, the institutional processes and organizations created to foster change represent a healthy and valuable contribution to the Army's future.

Is Force XXI a Continuation of the American Way of War?

Having examined the characteristics of Force XXI, it is now possible to consider whether Force XXI is a continuation of the traditional American way of war or is in some way a departure. The authors of Force XXI, including General Sullivan, have postulated a strategic environment that is significantly different from the recent past. A different strategic environment should call for a different army. The Force XXI Army is significantly different from the Army of the Cold War or the Army of today. It is also, in many respects, the same. The strategic environment has changed, but American cultural and ideological values have not fundamentally changed. These values form the starting point for the American way of war.

The central feature of the American way of war is a preference for strategies of annihilation. Force XXI is clearly designed to employ battle as the primary means to achieve victory. Force XXI literature contains frequent declarations of the importance of "decisive" operations and "quick, decisive results."[74] The general orientation of Force XXI is offensive, as exemplified in the battle dynamic "depth and simultaneous *attack*." The general tone of TRADOC Pam 525-5's discussion of Force XXI operations indicates the U.S. Army expects to have overwhelming superiority. Much of the overwhelming superiority comes from Force XXI's technological capabilities, especially in battle command. Information technology will allow the Force XXI commander to receive continuous information on friendly and enemy forces throughout his battlespace. The ability to identify and counter enemy actions almost instantaneously will allow the Force XXI commander to set the tempo of the battle.[75] Setting the tempo of operations traditionally has been the prerogative of the attacker. Long range precision weapons may

obscure the distinction between offense and defense, but Force XXI will continue to depend on a mix of capabilities including short range systems.[76] For close combat units, the difference between attack and defense remains clear. Force XXI is designed to seize and maintain the initiative through offensive action, abetted by superior information technology.

Although Force XXI's emphasis on offensive action continues an American tradition, the form of offensive it envisions is not traditional. Instead of the broad front strategy that made maximum use of America's superior resources during the Civil War and World War II, Force XXI proposes simultaneous operations in depth. The broad front offensive sought to crush enemy forces. Simultaneous operations in depth aim to paralyze the enemy. The effect of simultaneous operations resembles what Liddell Hart and Fuller advocated and Colonel Naylor derided in the 1920's. However, the Force XXI concept goes beyond what Fuller or Liddell Hart imagined. Force XXI anticipates that the means will exist to strike deep without incurring undue exposure, and to strike not a single key point but multiple points. Panama and the Persian Gulf War offered glimpses into the possibilities of such operations. Force XXI is designed to exploit those possibilities.

Another way in which the Force XXI literature strays from tradition is its extensive discussion of operations other than war. The discussion continues the first steps the 1993 edition of FM 100-5 made to include OOTW as a significant part of Army operations. Since OOTW necessarily involves the employment of means other than violence, it calls for something that is at least akin to strategies of exhaustion. The military must employ other means in coordination with the threat or use of violence to "ensure...success in OOTW" (as contrasted with "quick decisive results in War.")[77]

The significance of addressing OOTW should not be overstated. The authors of TRADOC Pam 525-5 acknowledge that the Army will participate in OOTW, but they offer few ideas on how to deal with such operations. The best they can offer is the innate

versatility of well-trained, disciplined soldiers. Force XXI's recurring insistence on conducting quick, decisive operations runs counter to FM 100-5's Principle of OOTW, "Perseverance." Strategies of exhaustion in war or operations other than war normally require time and patience to achieve success. Force XXI's lack of real emphasis on OOTW appears in discussions of how Force XXI will train. Fighting and winning wars remains the first priority. Units will train for OOTW only when they must[78] The Army's increased emphasis on computer simulations in training does not support the long duration, person-to-person nature of most OOTW missions.

Despite its prominent inclusion of OOTW in the range of future Army operations, Force XXI is fundamentally a continuation of the traditional American way of war. Force XXI is designed to conduct strategies of annihilation in conventional wars. It seeks to do so by seizing and maintaining the initiative through the exploitation of sophisticated new technology, with particular emphasis on information technology. In its use of technology, Force XXI introduces new operational concepts and calls for potentially significant changes in Army organizational structures. Force XXI does not attempt to merely graft new technology onto old structures and operational concepts. Although new technology, new organizational structures, and new operational concepts are the hallmark of "revolutions in military affairs," Force XXI continues the fundamental approach to war that characterizes long-standing American traditions.

Does Force XXI Represent a Revolution in Military Affairs?

The idea that new technology may overturn the existing military power structure recurs throughout Force XXI literature. TRADOC Pam 525-5 mentions the idea of a "Revolution in Military Affairs," and a related term, "military-technical revolution" appears in Sullivan and Dubik's pamphlet.[79] TRADOC Pam 525-5 names the proliferation of technology, especially weapons of mass destruction, as the greatest challenge now facing the U.S. armed forces. Well-resourced opponents may possess technology that is superior to that of Force XXI, or they may possess technology that is only marginally inferior but is present in much greater quantity. American technological superiority is not guaranteed, and sudden technological developments in the future may quickly overturn the military balance of power. Even a second-rate opponent may have limited quantities of high technology that impart niche capabilities.[80] The Army's natural worry is that a competitor could acquire a technological advantage that would put American forces in the position of the Polish cavalry that tried to resist the German *Blitzkrieg* in 1939.

The idea of revolutions in the conduct of war is not new. Fundamental changes in the conduct of warfare have appeared at irregular intervals throughout history. Modern examples begin with the "nation in arms" during the French Revolution and the Napoleonic era. The French Revolution and the Napoleonic era introduced or accompanied major changes in agricultural productivity, social structures, and military thought. The result was a drastic change in armies and warfare and an even more significant change in the relationships between the people, the government, and the armed forces. Since the Napoleonic era the world has seen a number of changes in warfare that various writers have identified as revolutionary. During the nineteenth century the

telegraph, the railroad, the Minié ball, and the breech-loaded rifle contributed to changes that made armies of 1870 markedly different and greatly superior to armies of 1815. In the 1920's and 1930's, advances in radio, armored vehicles, and aircraft ensured the Second World War would be much different from the First. After World War II, the development of nuclear weapons, long range bombers, and intercontinental ballistic missiles changed the nature of war again.

Whether any of these changes in military affairs can be considered truly revolutionary depends on the definition of "revolutionary." Revolutions render fundamental changes. They destroy an old order to create a new one. Evolutionary changes do the same thing but may take longer. However, the time required for change to occur is not the primary distinction between revolutionary and evolutionary change. Revolution is in the eye of the beholder. Something that is old may seem new to a person who has not seen it before. *Blitzkrieg* evolved over twenty years, but it was revolutionary to the French soldiers who saw it for the first time in 1940. Changes that are considered revolutionary when their results become apparent may have developed over a long period. Twenty years passed from the storming of the Bastille to the 1809 campaign that historian Robert Epstein identifies as introducing the operational level of war; the underlying agricultural, commercial, and industrial revolutions took much longer.[81] The Minié ball, the breech-loaded rifle, the railroad, and the telegraph were invented and refined in the 1830's, 1840's, and 1850's, but the use of these technologies in war matured only in the 1860's and 1870's. From Cambrai to the conquest of Poland took twenty-two years, the entire span of a typical military career.

Revolutionary changes differ from evolutionary changes in the relative speed of change, the distinctiveness of "before" and "after," and above all in the ease with which historians can associate the change with specific, concurrent causes. Revolutions are most readily identified in hindsight. It may be impossible to identify them as they are occurring

because no one can know what "after" to compare to the "before." Nevertheless, many in the defense community believe a revolution in military affairs (RMA) is under way now.[82]

Some American defense analysts claimed that Operation Desert Storm marked the realization of an RMA the Soviets had written about in the 1980's. The Soviets suggested that combined long range precision weapons, advanced conventional munitions, and sophisticated target acquisition means seemed likely to make nonnuclear weapons as effective as tactical nuclear weapons.[83] The Gulf War Air Power Survey commissioned by the U.S. Air Force after the war considered the question of whether Desert Storm represented an RMA. The Survey concluded, cautiously, that a transformation of warfare may have begun, but the more difficult aspects of change—adapting operational concepts and organizations—had not yet occurred.[84]

If an RMA is occurring, it has important implications for the U.S. Army. Revolutions are by nature discontinuous. They overturn old ideas, old organizations, and old power structures. They destroy in order to rebuild. Despite ongoing reductions in size, the U.S. Army in 1995 may claim to be the finest army in the world. No army has more to lose by a revolution in military affairs. The U.S. Army has built a rich lore of military expertise and experience that represent one of its most valuable assets. It is equipped with the best equipment and has well-trained personnel. A revolution could render the Army's experience, expertise, equipment, and training obsolete.

On the other hand, technological advances may offer the Army opportunities to extend its superiority into the next century. This prospect is particularly appealing in the face of size reductions that the Army has faced since the end of the Cold War. Whether or not an RMA is occurring, the Army is strongly motivated to seek the advantages technology may provide. The eagerness with which the Army leadership appears to be embracing change suggests that the Army sees technological developments not as a threat but as an opportunity. TRADOC Pam 525-5 warns that competitors may seize upon

technological change to acquire advantages over the U.S. Army, but it does not dwell on the possibility. Instead, TRADOC Pam 525-5 and other Force XXI documents extol the advantages new technology will bestow upon the U.S. Army.

Does Force XXI represent a revolution in military affairs? The answer depends largely on what suffices to be called revolutionary. Force XXI does not change America's basic approach to warfare. It positions the Army to continue to pursue the strategies of annihilation that are a central aspect of the American way of war. It maintains the Army's traditional emphasis on offensive operations. It continues the long-standing tendency for the United States to seek technological solutions to military problems. On the other hand, Force XXI calls for significant changes in Army structure, equipment, and operational concepts. If implemented, the Force XXI concept may radically change the pattern of military operations. Force XXI also continues the initial steps the 1993 edition of FM 100-5 took toward accepting the Army's role in operations other than war. Force XXI surpasses FM 100-5 in implicitly acknowledging that strategies of exhaustion may have utility in some circumstances. Perhaps the most significant aspect of Force XXI is the institutional elements of the Force XXI campaign plan, including the Battle Labs and the Louisiana Maneuvers process.

Assuming that Force XXI proceeds to fruition (a rather shaky premise in today's political environment), it is likely to appear evolutionary to contemporary observers. Most of today's lieutenants and captains will be ready to retire before Force XXI is fully implemented. If Force XXI is watered down by bureaucratic friction and funding shortfalls, it is even less likely to appear revolutionary. Future historians, on the other hand, may look at Force XXI and see it as being of the same order of revolution as the *Blitzkrieg*. Only they will have the perspective to make that judgment, and the judgment must therefore be left to them.

Conclusion

The traditional American approach to war resulted from the convergence of American liberal ideology, the demands of the Western military profession, and an abundance of material resources. All of these factors exist today, and, not surprisingly, Force XXI continues to reflect them. Force XXI contains new ideas and places great emphasis on the incorporation of new technology, but it continues the Army's traditional emphasis on strategies of annihilation and offensive action. Rather than bringing fundamental change, technology provides the means for the Army to avoid changing its approach to warfare. Technology offers the possibility for the Army to win wars of annihilation despite reductions in its size during an era of fiscal restraint.

Rapid changes in technology offer both dangers and opportunities for the United States Army. One of the most worrisome dangers is that opponents will use new technology to gain an advantage over the United States. TRADOC Pam 525-5 mentions ballistic missiles, weapons of mass destruction, and strategic psychological warfare as potential Force XXI vulnerabilities.[85] Another vulnerability is that well-resourced opponents may possess technology that is superior to that of Force XXI or is only marginally inferior but is present in much greater quantity. General Sullivan maintains that rapid technological change favors the United States because competitors cannot keep up.[86] This may not be true. As technology continues to improve, much of it also becomes less expensive. Whoever buys last buys best (or cheapest). This phenomenon is familiar to today's buyers of personal computers. An Intel 486-based computer that cost two thousand dollars a year ago now costs twelve hundred dollars; today two thousand dollars will buy a Pentium computer that is nearly twice as capable as last year's 486. Today the

U.S. is the world's only superpower, so our national strategy is essentially defensive—to preserve the status quo in which U.S. is top dog. A defensive strategy cedes to the attacker the choice of when and where to attack. We must be ready always; competitors must be ready only at the moment they choose to act. While we spend billions annually to maintain the latest technology, competitors may conserve their resources and then buy more or better systems when they want to challenge us.

The Army has two ways to defend itself from such an eventuality, and it is likely to pursue both. The first line of defense is vigilance. The United States must stay aware of technological developments in potential adversaries. The second line of defense is solid doctrine and well-trained soldiers. A competitor may steal a technological lead very quickly, but developing appropriate doctrine and training soldiers to apply it takes years—long enough for an alert U.S. Army to respond.

Another danger is that the Army will merely graft new technology onto existing structures. The whole Force XXI campaign plan is designed to ensure the Army develops organizations and doctrine that are appropriate to the technology of the next century. Nevertheless, bureaucratic pressures could thwart structural and doctrinal changes. A more likely danger is that the Army will develop technology, organizations, and doctrine that are inappropriate to the nation's needs. The result could be that the United States wastes large sums by buying the wrong technology. In an era of fiscal restraint, money wasted buying the wrong technology not only fails to meet the nation's security needs, but makes the funds unavailable for buying more appropriate technology. This danger is most likely to manifest itself in a vain search for a technological "silver bullet" that either does not work or cannot be economically purchased in sufficient quantity.

Yet another danger is that the Army will invest heavily in technology that is useless in the kinds of conflicts that the Army is most likely to face in the next century. The technological advances that the Army believes will enable Force XXI to be more effective

will increase the effectiveness and lethality of air power to an even greater degree. More effective and lethal air forces could render heavy ground forces irrelevant in a high intensity conflict. In a war of annihilation, the Army could be relegated to the role of occupying territory after the Air Force has destroyed the enemy's combat units. On the other hand, the Force XXI Army is poorly suited to conduct strategies of exhaustion that will remain outside the Air Force's capabilities.

Although new technology presents dangers, it also presents opportunities. The Army believes technology presents the opportunity for it to remain a relevant and capable combat force into the next century, despite reductions in its size. New technology may enable a smaller Army to overcome the large, well-equipped armored and mechanized armies of the Middle East and Asia. New technology may enable the Army to counter threats that develop as existing technology inevitably falls into the hands of America's adversaries. New technology may assist all of the armed forces to ensure that future wars remain "over there" and not over here. For the Army as an institution, the greatest opportunity of new technology is it allows a smaller Army to fight the kind of wars America wants it to fight. The preference for strategies of annihilation is not the Army's alone, but is a product of American culture and ideology.

Notes

[1] Jeffrey R. Cooper, *Another View of the Revolution in Military Affairs* (Carlisle, PA: U.S. Army War College Strategic Studies Institute, 1994), 1.

[2] U.S. Department of the Army, *Force XXI: Meeting the 21st Century Challenge* (Pamphlet; Washington DC: U.S. Government Printing Office, 1995), 1.

[3] United States Army, Field Manual 100-5, *Operations* (Washington, DC: U.S. Government Printing Office, 1993), 1-1.

[4] Samuel P. Huntington, *The Soldier and the State: The Theory and Politics of Civil-Military Relations* (New Haven: Yale University Press, 1968), 2.

[5] Huntington, 143.

[6] It is important not to oversimplify when describing the dominance of liberal ideas in American ideology. When Huntington discusses liberalism, he is referring to classical liberalism, not merely the philosophy generally held by the left wing of the Democratic Party in contemporary American politics. Liberalism encompasses a broad range of political philosophy, and it has always competed with other philosophies whose influence has varied over the years. During the early Constitutional period, the conservative Federalists exerted considerable influence. The Federalists favored a relatively strong military establishment. They overcame liberal resistance and established a small navy during the administrations of Washington and Adams. When Thomas Jefferson became President, Federalist influence waned, as did the strength of the navy (Donald R. Hickey, "Federalist Defensive Policy in the Age of Jefferson," *Military Affairs*, vol. 45, April 1981, 65). Since the decline of the Federalists, other conservative and pro-military factions have emerged, disappeared, and reemerged. Despite the existence of such factions, the various strains of liberalism have remained dominant.

[7] Huntington, 149.

[8] Huntington, 151.

[9] The moral basis of individual liberty can be found in the writings of Puritan leaders such as John Winthrop. The later Puritans (mid-1700's) coincided with the liberal philosopher John Locke in their belief in the relationship between individuals and society; the Puritans differed from Locke in the degree of emphasis they placed on God as the

source of individual liberty. See Edmund S. Morgan, ed. *Puritan Political Ideas, 1558-1794* (Indianapolis, IN: Bobbs-Merrill, 1965, reprint 1976), xli, 133.

[10] Paul Kecskemeti, *Strategic Surrender: The Politics of Victory and Defeat* (New York, 1964), 26; quoted in Michael Walzer, *Just and Unjust Wars: A Moral Argument with Historical Illustrations,* Second Edition (United States: BasicBooks, 1992), 111.

[11] Huntington, 32-35.

[12] Ironically, the diffusion of constitutional authority over the military served to delay the rise of a professional and apolitical military in the United States. After the victories of the Prussian Army in 1866 and 1870, the U.S. Army, led by Emery Upton, sought to professionalize itself according to the Prussian model. One aspect of this model was that the Prussian military did not involve itself in politics. Upton endorsed this idea, which had the benefit of allowing a larger and more professional standing army without unduly threatening civil authority.

[13] Carl von Clausewitz, *On War*, ed. and trans. by Michael Howard and Peter Paret (Princeton, NJ: Princeton University Press, 1984), 88.

[14] Gordon A. Craig, "Delbrück: The Military Historian," *Makers of Modern Strategy*, ed. Peter Paret (Princeton, NJ: Princeton University Press, 1986), 341.

[15] Craig, 3444-352.

[16] Carl Builder, *The Masks of War: American Military Styles in Strategy and Analysis*. Foreword by Sam Nunn; a RAND corporation research study (Baltimore: Johns Hopkins University Press, 1989), 38.

[17] Andrew F. Krepinevich, Jr., *The Army and Vietnam* (Baltimore: Johns Hopkins University Press, 1986), 14.

[18] Lewis Sorley, "Creighton Abrams and Active-Reserve Integration in Wartime." *Parameters*, Vol. XXI, No. 2, Summer 1991.

[19] Russell F. Weigley, *The American Way of War* (Bloomington: University of Indiana Press, 1973), xxii.

[20] The trend toward offensive action since the Civil War also reflects the advantages of geographical isolation. America goes to war, war does not come to America.

[21] FM 100-5, 7-0.

[22] Weigley, 84-88.

[23] W. K. Naylor, *Principles of Strategy with Historical Illustrations* (Fort Leavenworth: General Service Schools Press, 1921.), 49; quoted in Weigley, 220.

[24] Review of FM 100-5 archival editions maintained at Combined Arms Research Library, Fort Leavenworth KS. The Principles of War appear under that title for the first time in the 1949 edition of FM 100-5. Before 1949, the Principles were described as principles of combat, "doctrines of combat," or "General Principles for the Conduct of War" and were not reduced to a list of single words. Weigley, 213, notes that "movement" appeared as a principle of war in a 1921 War Department training regulation. The regulation listed the principles without comment; they appear to have been copied from the work of J. F. C. Fuller. Weigley equates "movement" to today's "maneuver." The following table lists the principles as they appeared in FM 100-5 and its predecessors.

EDITION	TITLE	PRINCIPLES
1923	Principles of Combat	Objective, Concentration, Offensive, Surprise, Security, Simplicity, Fire Superiority, Superior Leadership, Economy of Force, and (listed separately) "Unity of Command is essential."
1939	General Principles for Conduct of War	Objective, Concentration of Forces, Offensive, Surprise, Security, Simplicity, Friction, Economy of Force, and Unity of Effort
1941 1944	Doctrines of Combat	Objective, Concentration of Forces, Offensive, Surprise, Security, Simplicity, and Unity of Command
1949 1954 1962	Principles of War	Objective, Mass, Maneuver, Offensive, Surprise, Security, Simplicity, Economy of Force, and Unity of Command
1976	Not Included	
1983 1986	Principles of War	Objective, Mass, Maneuver, Offensive, Surprise, Security, Simplicity, Economy of Force, and Unity of Command
1993	Principles of War	Objective, Mass, Maneuver, Offensive, Surprise, Security, Simplicity, Economy of Force, and Unity of Command
	Principles of OOTW	Objective, Legitimacy, Perseverance, Restraint, Security, Unity of Effort

[25] Weigley, 352.

[26] Clausewitz, 204.

[27] Weigley, 144.

[28] Builder, 24.

[29] At the beginning of Operation Desert Storm, the Defense Intelligence Agency estimated Iraqi forces in the Kuwaiti Theater of Operations numbered about 540,000; postwar analysis revised the number to about 336,000. On 16 January 1991, Coalition ground forces numbered about 540,000; total Coalition forces numbered over

660,000. The Coalition thus had a nearly 2:1 numerical advantage. Thomas A. Keaney and Eliot Cohen, *Gulf War Air Power Survey Summary Report*, U.S. Department of the Air Force (Washington, DC: U.S. Government Printing Office, 1991.), 7-12.

[30] Keaney and Cohen, 246.

[31] Frederick J. Brown, *The U.S. Army in Transition II: Landpower in the Information Age*. (Washington, DC: Brassey's, 1993), 12.

[32]A. J. Bachevich, *The Pentomic Era: The U.S. Army Between Korea and Vietnam* (Washington, DC: National Defense University Press, 1986), 55.

[33] Gordon R. Sullivan and James M. Dubik. *Land Warfare in the 21st Century* (Carlisle Barracks, PA: Strategic Studies Institute, U.S. Army War College, 1993), 22.

[34] The AirLand Battle 2000 project was started by General Donn Starry in the late 1970's. It was later renamed Army 21. One of AirLand Battle 2000's primary authors was Brigadier General Don Morelli, whose ideas inspired Alvin and Heidi Toffler to write *War and Anti-War: Survival at the Dawn of the 21st Century* (Boston: Little, Brown, and Company, 1993). Yoav Ben-Horin and Benjamin Schwarz. *Army 21 as the U.S. Army's Future Warfighting Concept: A Critical Review of Approach and Assumptions* (Santa Monica, CA: RAND, 1988), v-vii.

[35] Gordon R. Sullivan, "Ulysses S. Grant and America's Power-Projection Army." *Military Review*, January 1994, 10.

[36] TRADOC Pam 525-5.

[37] Sullivan and Dubik, 8.

[38] Sullivan, "Ulysses S Grant...," 11.

[39] U.S. Department of the Army, TRADOC Pamphlet 525-5, *Force XXI Operations* (Fort Monroe, Virginia: U.S. Army Training and Doctrine Command, 1994), iii.

[40] TRADOC Pam 525-5,1-1.

[41] TRADOC Pam 525-5, 2-5.

[42] Sullivan and Dubik, 10, 25.

[43] TRADOC Pam 525-5, 2-5.

[44] TRADOC Pam 525-5, 2-7.

[45] Sullivan and Dubik, 12.

[46] Sullivan and Dubik, 15.

[47] Sullivan and Dubik, 16. Sullivan and Dubik do not mention the alternative possibility that commanders may become fixated on the illusion of perfect information and will try to centralize decisionmaking at the highest headquarters.

[48] Sullivan and Dubik, 19.

[49] Sullivan and Dubik, 22.

[50] TRADOC Pam 525-5, 1-5.

[51] TRADOC Pam 525-5, 2-7; Sullivan and Dubik, 19; Alvin and Heidi Toffler, *War and Anti-War: Survival at the Dawn of the 21st Century* (Boston: Little, Brown, and Company, 1993), 139-150.

[52] Cooper, 26; Keaney and Cohen, 238; Gordon R. Sullivan and Anthony M. Coroalles. "Seeing the Elephant: Change and America's Army." Undated essay (1995), 16. The description of the contrast between French and British versus German doctrine is simplistic but conveys the concept they intend.

[53] Message to Army leaders, "Building the Force for the 21st Century—Force XXI," 7 March 1994; Reproduced in Sullivan and Coroalles, 61.

[54] TRADOC Pam 525-5, 3-1. The italics are in the original.

[55] TRADOC Pam 525-5, 3-2.

[56] TRADOC Pam 525-5, 3-2.

[57] TRADOC Pam 525-5, 3-2.

[58] TRADOC Pam 525-5, 3-3. FM 100-5 includes "battle command" as a combat function (formerly known as battlefield operating system). The FM 100-5 definition of battle command leaves off the trailer "at the least cost to soldiers." FM 100-5, 2-14, Glossary 1.

[59] TRADOC Pam 525-5, 2-8; Sullivan and Dubik, 19.

[60] S. L. A. Marshall, *Men Against Fire: The Problems of Battle Command in Future War* (Gloucester, Mass: Peter Smith, 1978), 102.

[61] TRADOC Pam 525-5, 3-8, 3-9.

[62] TRADOC Pam 525-5, 3-4.

[63] TRADOC Pam 525-5, 2-9, 3-10.

[64] Thomas Donnelly, Margaret Roth, and Caleb Baker, *Operation Just Cause: The Storming of Panama* (New York: Lexington Books, 1991), 401.

[65] TRADOC Pam 525-5, 2-9.

[66] TRADOC Pam 525-5, 2-8, 4-6. Curiously, the paragraph titled "spectrum supremacy" on page 2-10 addresses the importance of the media in military operations. Elsewhere TRADOC Pam 525-5 uses "spectrum supremacy" according to its more logical definition, domination of the electromagnetic spectrum.

[67] TRADOC Pam 525-5, 3-12.

[68] TRADOC Memorandum, 9, 16.

[69] TRADOC Pam 525-5, 3-15; TRADOC Memorandum, 19, G-1, G-5, G-6.

[70] Sullivan and Coroalles, 18, 29, 30. The Army conducts After Action Reviews after all major training events and operations to identify what did or did not work and why.

[71] U.S. Department of the Army, *Force XXI: Meeting the 21st Century Challenge*, Pamphlet (Washington DC: U.S. Government Printing Office, 1995), 11.

[72] Sullivan and Coroalles, 35.

[73] Sullivan and Coroalles, 30.

[74] For example, the Force XXI slogan, "Vision: America's Army, Trained and Ready, a Strategic Force, Serving the Nation at Home and Abroad, Capable of Decisive Victory...into the 21st Century." U.S. Department of the Army, *Force XXI: Meeting the 21st Century Challenge* (Pamphlet; Washington DC: U.S. Government Printing Office, 1995), 3; see also TRADOC Pam 525-5, 2-2.

[75] TRADOC Pam 525-5, 3-21.

[76] Harold S. Orenstein, "Warsaw Pact Views on Trends in Ground Forces Tactics," *International Defense Review*, Sep 89, 1152.

[77] TRADOC Pam 525-5, 1-6.

[78] TRADOC Memorandum, 33.

[79] TRADOC Pam 525-5, 2-5; Sullivan and Dubik, 12.

[80] TRADOC Pam 525-5, 2-5, 2-2.

[81] Robert Epstein, *Napoleon's Last Victory: 1809 and the Emergence of Modern War* (Reprint, Fort Leavenworth KS: U.S. Army School of Advanced Military Studies, 1992), 11.

[82] Cooper, 1.

[83] Stephen Peter Rosen, *Winning the Next War: Innovation and the Modern Military* (Ithaca, NY: Cornell University Press, 1991), 258.

[84] Keaney and Cohen, 243, 247.

[85] TRADOC Pam 525-5, 3-19.

[86] Sullivan and Coroalles, 10.

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