

THE EMERGING STRATEGIC ENVIRONMENT

Challenges of the Twenty-First Century

Edited by
WILLIAMSON MURRAY

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Introduction

Williamson Murray

This volume addresses two fundamental issues—first, elements of the emerging strategic environment in Europe and the Middle East as a counterpoint to recent emphasis on Asia and its strategic problems; then, the second half of this volume examines the U.S. military both as organizations and from the point of view of the individual services. Two fundamental problems emerge—the prospects for sustained long-term peace in areas such as the Balkans or the Middle East appear worse than they did a decade ago. It is also doubtful whether the Europeans are going to be able to keep their house in order without substantial help and leadership from the United States. Second, there is not much to be hopeful in terms of how the services are adapting to the radical changes effected by the end of the Cold War. War, conflict, and military force will be all too prevalent in the next century, and it is questionable whether the U.S. military will be prepared for the challenges of the twenty-first century.

The Coming Decades

With the ending of the Cold War, the American military confronts a new and challenging world, a world it has not faced since the beginning of the twentieth century. Then, it confronted the challenges raised by the emergence of the United States from an isolation formed by the constraints of ideology

and geography. Despite the protection of vast oceans east and west, technology robbed the United States of the luxury of remaining aloof from the rest of the world. Not only had the steamship shrunk the world, but the airplane made vulnerable even the far distant shores of the United States. Still, it would take the American polity until 7 December 1941 to recognize the cold hard fact that the United States was at risk in a world where technology was shrinking distances while increasing the lethality and range of weapons.

Nevertheless, the greatest difficulty the U.S. military confronted was not technological change in 1900, but the problem of figuring out who its opponent or opponents might be, where conflicts might occur, and what the objectives of military forces might be. Would the threat come from a great power in the Pacific (Japan) or from a European power such as Britain, or the rising, strident, new German Reich? It says much for the flexibility and adaptability of the American military that for the most part it met the strategic challenges that confronted the nation for much of the rest of the century.

In some ways, the current U.S. situation is analogous to that of the American military in 1900. The country does not know who its opponents will be in the next century; the only thing that history can suggest is that they *will* be there. It does not know when, or where, or even what kind of war its military will confront. Americans may like to believe that their empire rests simply on economic and political interconnection. Ultimately, it rests on the ability of the military to protect the nation and its allies. And Americans are not in a position to surrender the burdens of leadership, because there are those throughout the world who bear them deep and abiding hatred.¹ For military planners, then, the challenge is to prepare forces with the capacity not only to utilize the considerable technological changes taking place in the world, but also to hold on to the fading knowledge as to the fundamental nature of war. The danger of history is that it is all too easy to pull up irrelevant analogies from the past. The misuse of the Munich analogy in the early 1960s to justify U.S. involvement in a strategically misbegotten intervention in Vietnam should suggest the dangers. The great Greek historian, Thucydides, emphasized that his purpose in writing the *History of the Peloponnesian War* was to create a work that would help those who “want to understand clearly the events which happened in the past and which (human nature being what it is) will, at some time or other and in much the same ways, be repeated in the future.”² The difficulty in using history as a guide to the future, however, is that we never know which events and which patterns are going to repeat themselves. We have now once again entered an interwar period, one where there is every prospect of continued decreases in defense budgets, no clear opponent, and considerable technological change.

This editor was involved in a project for the Office of Net Assessment that studied the processes of innovation in the 1920s and 1930s.³ Even in that study, there was a tendency to suggest that there is a straight analogy between that interwar period and our current situation.⁴ Analogies to the 1920s and 1930s have a nice symmetry to today; the captains and majors who fought in World War I fought in the next conflict as generals; similarly, the captains and majors of Desert Storm also will fight in the next war as generals. Yet, the analogy to the 1920s and 1930s presents dangers. Instead of entering an interwar period like the 1920s and 1930s, we may well be entering a period more like that which confronted the British in 1815. They and their continental allies had just finished an exhausting conflict of almost twenty-five years' duration—one that finally broke the power of Revolutionary and Napoleonic France. Similarly, we and our allies have recently emerged from an exhausting and debilitating struggle with the Soviet Union. Then, too, there was general agreement about common interests among the allies of the victorious coalition at the Congress of Vienna. No external power remained with the economic and military power to challenge their mastery for control over the world. With few exceptions, that consensus was to last in a relatively stable fashion for the next fifty years, and almost one hundred years would elapse before the catastrophic conflict we call World War I exploded.

During that period, however, European military institutions atrophied. They forgot the harsh lessons learned at such costs on a hundred battlefields between 1792 and 1815. By 1900, the Prusso-Germans were entirely dismissive, to their own cost, of the writings of Clausewitz. As a pre-1914 graduate of the *Kriegsakademie* wrote to Liddell Hart after World War II: "The opinion on Clausewitz in our general staff was that of a theoretician to be read by professors."⁵ Thus, the Germans repeated virtually every mistake of World War I on the strategic level during the next conflict and lost both wars in a fashion that had a catastrophic impact not only on themselves, but also on European civilization.

But it was the Royal Navy that suffered the heaviest price for the long, attenuating years of peace following the Congress of Vienna. In 1815 the Royal Navy had come through twenty-three harsh years of combat—"those far distant, storm-beaten ships, upon which the Grand Army never looked stood between it and dominion of the world" in Alfred Thayer Mahan's words.⁶ During those years it had abandoned the regimented and unimaginative "line ahead" tactics of the eighteenth century. Led by Admiral Horatio Nelson, undoubtedly the greatest naval commander of all time, the Royal Navy adapted innovative battle tactics that demanded initiative and imagination from subordinate commanders to execute the designs of the fleet commander.

On a number of occasions, most notably at Trafalgar, Nelson and his “band of brothers” had devastated the French.

During the long years of peace, however, the Royal Navy forgot those combat lessons.⁷ It paid lip service to Nelson, but in place of his realistic, opportunistic approach—one entirely based on a Clausewitzian view of the world—those in command of the peacetime navy introduced a mechanistic, top-down doctrine for fleet tactics that proved admirably suited to “looking good” in the harbors of Britain’s empire. No longer were subordinates expected to display initiative; the dominant culture actively punished those who went beyond the rules of the system. Admittedly, in the period from 1850 to 1914, naval technology experienced a radical transformation from fleets still equipped with sails to the great monster battleships and battle cruisers of the Grand Fleet. But instead of using technology as a means to extend the tactical possibilities offered to fleet action, the Royal Navy’s culture minimized the technological possibilities. As a result, the Grand Fleet failed to take advantage of the great opportunities offered at Dogger Bank in December 1914 and particularly at Jutland in May 1916.

The danger for U.S. military institutions then is clear. In the coming years of minimal budgets, long peacetime deployments, and few serious threats, the officer corps of the U.S. services and their leaders must not forget the fundamental lessons of history. War is an uncertain and ambiguous undertaking. As Barry Watts underlined in his essay in the 1997 *Brassey’s Merston American Defense Annual*, friction in its widest sense will haunt the conduct of military operations until there are no longer men to wage war. This introduction then addresses two basic problems that will confront the American military during the next four to five decades (and perhaps longer)—the changing culture of the American military, and what history suggests about “revolutions in military affairs.”

The Changing American Military Culture

One of the unstudied subjects crucial to understanding the history of military institutions concerns the cultures through which officers confront the complex, dynamic, and ambiguous problems of peace and war. Institutional cultures largely determine the strategic, operational, and tactical paths that they follow. During wartime, the actual events of the battlefield exert a check on assumptions and perceptions, although in a number of cases in the twentieth century, military institutions have proven astonishingly resistant to learning from their experiences.⁸ But in peacetime military institutions confront the intractable problem of preparing for what they cannot replicate in training—

namely, the harsh and dangerous world of death, disfiguration, and destruction where plans and events will go disastrously wrong. That peacetime environment makes it doubly important that the culture of military institutions frame the right kind of questions as well as possessing an understanding of war based on real experience. The historical record, however, suggests that military organizations postulate answers rather than questions and adopt assumptions that deviate substantially from reality.

Military cultures change over time—usually slowly, but on occasion with considerable speed. The culture of U.S. military institutions has undergone considerable change over the past hundred years. In some cases the shifts have been dramatic. The current debate within the American military suggests that another cultural shift is underway—one that does not bode well for the future, particularly if that future involves a sustained period of peace. Before we turn to the current situation, however, it will be useful to observe the cultural patterns of the U.S. military over the course of the century that is ending. That will provide an historical perspective for the crucial issues in the current debates.

At the turn of the century, the U.S. military reflected the peculiar insularities of the republic it served. Before 1900, the nation had fought two great wars; the first, the Revolutionary War, hardly presented any standard of military professionalism. The second, the American Civil War, involved considerable tension between the nascent professional services, with officer corps largely educated at West Point and Annapolis, and the demands on the political side for a massive mobilization of citizens and military power. But after the destruction of the Confederacy, no serious threat to the continental United States existed. Thus, for the most part, the American military chased Indians and sailed on lonely stations where it served as an annex to the Royal Navy.

At the turn of the century, the American military professionalized in a fashion that realized many of the dreams of Civil War soldiers such as William Tecumseh Sherman and Emory Upton. Serious institutions appeared for the *education*, as opposed to the training, of officers, such as the staff college at Leavenworth and the army and navy war colleges. By the 1920s, the American military had established itself as a serious profession, one possessing a body of significant knowledge that officers could obtain only through systematic training, service, and education. During the interwar years the services received minimal funding from their civilian masters—to the extent that when war broke out in 1939, the army ranked in capabilities and numbers with the South American nations rather than with its future opponents and allies. Yet, within three years of September 1939, the navy had destroyed much of the Japanese Navy's carrier force, the marines had executed an amphibious landing on Guadalcanal, and the army was preparing for major

landings in North Africa. Within another two years the American military would bestride the world from the ravaged cities of Germany to the battlefields of Normandy and the Central Pacific.

How to explain this extraordinary transformation? Undoubtedly, the massive economic engine of American industry was a crucial factor. But equally important was the cultural and intellectual atmosphere of the officer corps. During the interwar period it was within the war and staff colleges as well as in the various schools that the U.S. military had prepared for war. The institutional ethos behind such personnel policies held that it was important that the best officers not merely attend school, but also that they serve on the faculties of educational institutions of professional military education. The future admiral Raymond Spruance *served* two *separate* tours on the faculty of the Naval War College, which he also attended as a student. The difference in the institutional culture between the interwar navy and today's could not be clearer—a substantial number of today's admirals have not attended the Naval War College as students; even more damning, it is improbable that a single serving admiral in today's navy has served a day on the faculty at Newport.

The Spruance example is not an isolated one. Ernest King was promoted to rear admiral while a student at the war college; a substantial number of World War II's army air force commanders not only attended the Air Corps Tactical School at Maxwell, but served on that school's faculty. Similarly, a significant number of senior army generals in World War II were on the faculties of the Army War College and Command and General Staff College. These educational institutions were not just repositories for book learning: the Naval War College played a crucial role in the development of carrier aviation in the 1920s and 1930s.⁹ The Infantry School at Fort Benning under George Marshall's leadership identified many of the brightest, most competent officers in the army and attracted them to its faculty. The marine corps schools at Quantico developed the amphibious concepts and doctrine without which the Pacific campaigns would have been impossible. And one should not credit just the schools. The culture of the various services encouraged serious professional reading and thinking that in turn influenced the best among the officer corps. How else to explain George Marshall's deeply perceptive comment that one could not understand strategy unless one had read Thucydides?

When World War II was over, this educated military elite praised that education for preparing them for the trials of war. Nimitz would write: "I credit the Naval War College for such success [as] I achieved in strategy and tactics during the war."¹⁰ For his last assignment, Spruance returned by choice to become president of the Naval War College, while Dwight Eisenhower founded the National War College. That institution began its life with lumi-

naries such as George Kennan on its faculty and brigadier generals among its students.

Yet, by the early 1960s the cultural attitudes within the U.S. military had changed entirely. The faculties of the war and staff colleges now became repositories for officers whose careers were over. It became the kiss of death to receive assignment to teach on the faculty of any senior-level school. In the United States Navy, it became fashionable—and it remains fashionable—for officers to be selected for school, but not to attend. From the mid-1950s to the present, service cultures (with the exception of the marine corps and, to a lesser extent, the army) have retained a solid belief that assignment to teach at any institution of professional military education was anything but career enhancing. How had this change come about? It was primarily the result of the emerging leadership in the 1950s and early 1960s having gone to war in 1941 as first lieutenants and junior captains with *no exposure* to professional military education (even as students). By 1945 these officers were colonels (or navy captains) and, in some cases, even brigadier generals (or rear admirals). Their attitude seems to have been that *they* had not needed professional military education; look at how successful *they* had been in *their* careers.

By the mid-1960s the American military had been fundamentally corrupted by the domineering personality of Robert Strange McNamara and his approach to America's defense policy as secretary of defense. McNamara's expertise as a systems analyst had pushed him to the presidency of Ford Motor Company, and he brought with him to the defense department the current methods of American business (which were about to lose America its economic primacy), a cost-accounting mentality, and a rigid engineering view of the world. In his astonishing memoirs,¹¹ he claims that in Vietnam "the military tried to gauge its progress with quantitative measurements such as enemy casualties (which became infamous as body counts), weapons seized, prisoners taken, sorties flown, and so on."¹² But of course, it was precisely such statistical, quantitative measures of efficiency that McNamara demanded the military use to judge every situation from weapons procurement to the face of battle. And without an educational or cultural compass to guide its response, the American military cloned themselves from the secretary of defense. By the mid-1960s, they were out-McNamaraing McNamara.

The military culture thus addressed the strategic and operational questions raised by Vietnam in terms of quantitative and technological measures: how many weapons captured, how many villages pacified, how many enemy killed, how many tons of bombs dropped. The only thing that mattered were the quantifiable measures of efficiency. Issues such as history and the uncertainties and ambiguities of the battlefield disappeared into a technological and

quantitative set of assumptions. Thus, the United States floundered into the Vietnam War knowing less about its opponent than it had known about any previous opponent whom it had fought in all its wars. The nation and its military were incredibly ignorant about their opponents (in 1960, there was one teacher of the Vietnamese language in the entire United States), the military capabilities of the North Vietnamese, the weaknesses of those whom it was supporting, and the combination of local nationalism with the ferocious intellectual traditions of the French Revolution and Communist ideology that Ho Chi Minh and his followers brought to the conflict. With little knowledge of the language, culture, traditions, and history of the people in whose behalf the United States intervened, the American military failed to defeat an elusive and ruthless opponent by military means—an opponent fighting an unlimited political war, while America had only limited aims.

Molding the U.S. military's approach to war in the 1960s was a belief that technology would provide an easy war against an opponent who enjoyed no apparent technological sophistication. That belief in U.S. superiority and its advantages was shared by most Americans, including the politicians and media. In a remarkably upbeat article in October 1965, *Time* magazine waxed eloquent about U.S. technological superiority:

Today South Vietnam throbs with a pride and a power, above all an *esprit*, scarcely credible against this summer's somber vista. . . . The remarkable turnabout in the war is a result of one of the swiftest, biggest buildups in history. Everywhere today South Vietnam bustles with the U.S. presence. Bulldozers by the hundreds carve the sandy shore into vast plateaus for tent cities and airstrips. Howitzers and trucks grind through the once-empty green highlands. Wave upon wave of combat-booted Americans—lean, laconic, and looking for a fight—pour ashore from armadas of troopships. Day and night, screaming jets and prowling helicopters seek out the enemy from their swampy strongholds. . . . The Viet Cong's once-cocky hunters have become the cowering hunted as the cutting edge of U.S. fire power slashes into the thickets of Communist strength.¹³

But it was not only Lyndon Johnson, McNamara, and the military who created the mess in Vietnam: the American academic community also contributed greatly to the catastrophe. Academic theories, particularly within the political science community, proliferated like mutant ebola viruses. Game theory, deterrence theory, and signal-sending all exercised considerable influence over policy makers—especially as civilian academics flocked to Washington in 1961 to remake not only American society but its foreign policy as well. The arrival of the computer in the social sciences only served to reinforce the predilection of academics to believe that they were on the

trail of predictive capabilities with regard to human affairs. That predictive, reductionist mentality fit in particularly well with McNamara's world view. Thus, it is not surprising that the secretary of defense would find such work and such theories attractive. A common theme in American defense policy was that technology and the coming computer age had rendered irrelevant factors such as history, culture, and the traditional understanding of war. Henry Ford's remark that "history is bunk" was the watchword of the hour. It was American ahistoricism run amok.

The Vietnam War was a disaster at every level. On the battlefield, we may have "never [been] defeated,"¹⁴ although that claim is now open to considerable doubt.¹⁵ The mechanistic, firepower-intensive operations that characterized much of the war against a political enemy were hardly a mark of military effectiveness. The political and strategic consequences of a fundamentally flawed national grand strategy were twofold. The United States almost lost the Cold War, and the trust between government and people necessary to any democracy nearly collapsed.

The American military came back from Vietnam with deep scars. Particularly, army and marine corps officers who had survived two or three tours possessed a healthy suspicion of the predictive universe that McNamara and their seniors had imposed on the war's conduct. Drugs, indiscipline, and bad morale all exacerbated the feeling of malaise that drove a reexamination of the service cultures by midlevel and junior officers. To a great extent, the American military overcame the collapse that followed the end of the war. The intellectual ferment that marked the postwar period represented a substantial departure from the attitudes that had characterized much of the 1960s. There was an instinctive reaction among many of the returnees against the measures of efficiency that had marked the conduct of their war.

The changes in America's military culture were not immediately apparent in the postwar Vietnam period, since such changes in any society—and military organizations are societies—take time to develop. The army's first cut at a new edition of its basic operations manual, FM100-5, represented a regurgitation of the mechanistic, firepower-intensive approach that had dominated the army in Vietnam. Yet, at the same time that the senior leadership embraced the old, the culture of the emerging leadership in the officer corps was embracing Michael Howard's and Peter Paret's new edition of Clausewitz's *On War*. That translation made Clausewitz accessible to military historians, military pundits, and, especially, a generation of officers who had returned from the wreckage of Vietnam. Those officers who had fought that bitter and unforgiving war in the front lines found in Clausewitz's writings an intellectual statement for their *deepest* feelings, molded by their experiences in the war.

Indeed, as one author has recently emphasized, Clausewitz's continuing relevance is largely owing to the fact that he is a profoundly nonlinear thinker, and the world in which we live—of which war is a considerable part—is based on nonlinear processes.¹⁶ As Clausewitz coldly put it:

If one has never personally experienced war, one cannot understand in what the difficulties constantly mentioned really consist. . . . Everything looks simple; the knowledge required does not look remarkable, the strategic options are so obvious that by comparison the simplest problem of higher mathematics has an impressive scientific dignity. Once war has been seen, the difficulties become clear; but it is still extremely difficult to describe the unseen, all-pervading element that brings about this change of perspective. Everything in war is very simple, but the simplest thing is difficult. The difficulties accumulate and end in producing a kind of friction that is inconceivable unless one has experienced war. . . . Countless minor incidents—the kind you can never foresee—combine to lower the general level of performance, so that one always falls short of the intended goal.¹⁷

That Clausewitzian understanding of friction, uncertainty, and chance—gained at such cost in Vietnam—dominated the American military in the last decade and a half of the Cold War. American grand strategy sought to turn the competition with the Soviets onto grounds that represented *our* strengths, not those of our opponents. The “competitive strategies” of the Office of Net Assessment in the Pentagon found a willing audience among the services. And in choosing whether or not to use military force—the most crucial of military decisions—the Weinberger and Powell doctrines appeared. One can argue that those doctrines were so restrictive that the United States would not have fought the Revolutionary War, the Civil War, World War I, or even World War II. Yet, whatever their problems in overstating the hope that wars will occur only with overwhelming popular support and superiority, they also reflected a Clausewitzian belief in the primacy of politics.

Foremost among the neoClausewitzians in the American military was Harry Summers whose book, *On Strategy*, attempted to analyze the Vietnam War within a Clausewitzian framework. At the beginning of his work, Summers has a wonderfully wicked story that underlined his contempt for McNamara's approach:

When the Nixon administration took over in 1969 all the data on North Vietnam and on the United States was fed into a Pentagon computer—population, gross national product, manufacturing capability, number of tanks, ships, and aircraft, size of the armed forces, and the like.

The computer was then asked, “*When will we win?*”

It took only a moment to give the answer, “*You won in 1964!*”¹⁸

It is not that the emerging leadership rejected the use of technology, or of computers, or of science. Rather, they placed those factors within a larger framework, a realistic appreciation of the centrality of the human factor in war. Probably most had never read Tolstoy's *War and Peace*, but they instinctively would have understood the discussion between Pierre and Prince André on the evening before the Battle of Borodino:

'And yet they say that war is like a game of chess?' [Pierre] remarked.

'Yes,' replied Prince André, 'but with this little difference, that in chess you may think over each move as long as you please . . . and with this difference too, that a knight is always stronger than a pawn, and two pawns are always stronger than one, while in war a battalion is sometimes stronger than a division and sometimes weaker than a company. . . . Success never depends, and never will depend, on position, or equipment, or even on numbers, and least of all on position.'

'But on what then?'

'On the feeling that is in me and in him,' he pointed to Timokhin, 'and in each soldier.'¹⁹

The most impressive monuments to the U.S. military's Clausewitzian understanding of war were the basic doctrinal manuals that came out of the army and the marine corps in the mid-to-late 1980s. The army's FM100-5 of 1986 represented a fundamental revolt against the mechanistic, predictive, and top-down approach of the 1970s' iteration of that document. General Al Gray, commandant of the marine corps, then drew heavily from the army's approach in casting a new basic doctrinal statement for the marine corps, FMFM 1. Similarly, the various training centers, led by the army's National Training Center, but also including the marine corps' Twentynine Palms, the air force's Red Flag, and the navy's Top Gun, represented a substantial and successful effort to grapple with a world in which friction, fog, and chance are *dominant* factors. The Gulf War represented the culmination of the Clausewitzian era in the U.S. military. In every respect the services had prepared themselves over the course of the 1980s to fight within a Clausewitzian framework. Their success in the Gulf War represented the payoff for an officer corps that had learned at great cost that the world offers little of the predictive, mechanistic philosophy that had so enamored their superiors, political as well as military, throughout the Vietnam War.

In the glow of the success of American arms in the Gulf, one heard echoes in the military as well as in the press of President George Bush's comment that "the specter of Vietnam has been buried forever in the desert sands of the Arabian peninsula."²⁰ Indeed, at present, the United States is thirty-two years past the escalation of 1965. Those standing at the outset of World War II were only twenty-five years away from what they called the

Great War, while the marines coming ashore at Danang in 1965 were only twenty years distant from the end of World War II. By the turn of the century, time will have washed virtually all of the Vietnam experience out of the officer corps of the various services; only a few very senior generals will have had the Vietnam experience. The primary experience of war for the American officer corps is already the Gulf War, and one can ask how realistic that conflict is to the molding of our expectations. The expectation that the next war will reflect our experiences in the Gulf is extraordinarily dangerous. Can we really expect our opponents, no matter how low their level of technological sophistication, to provide us with five months to get ready, to fight us out in open desert, to do nothing to jam our command and control and navigational systems, and to provide the maximum possible opportunities for our propaganda to depict them as monsters?

With the passing of the Vietnam War generation, a major shift in the cultural and intellectual framework is already occurring. The Clausewitzian framework is under attack by a new generation that had no experience in the Vietnam War. The leader of this revolt is Admiral William Owens, only recently the vice chairman of the joint chiefs of staff. As I pointed out in the 1997 *American Defense Annual*, Owens has been making extraordinary claims—claims that fly directly in the face of everything that is contained in Clausewitz's *On War* as well as everything that has occurred in the history of Western war since the Greeks. But Owens is not alone; his views represent a major trend in the culture of the American military. This new *Weltanschauung* (world view) represents a return to the McNamara paradigm, a belief that American technological superiority will allow U.S. forces to achieve quick, easy victories over their opponents with relatively few casualties. Not surprisingly, the air force is heading the charge toward the technological utopia of "battlespace dominance."²¹ But the air force is not alone. In 1995 a senior army general announced to a group of marine officers that "the digitization of the battlefield means the end of Clausewitz." And just recently the army chief of staff has commented that, if the army had possessed the information technologies available today, the United States might well have prevailed in Vietnam.²²

These trends, not surprisingly, have found a receptive echo in the academic world as well. This past April, the dean of the Kennedy School at Harvard University, Joseph S. Nye, Jr., and the recently retired Admiral Owens collaborated on an article that took Owens's arguments about battlespace dominance and transferred them to the world of international affairs:

This information advantage can help deter or defeat traditional military threats at relatively low cost. . . . [T]he information advantage can strengthen the intellectual link between U.S. foreign policy and military power and offers new ways of maintaining leadership in alliances and ad hoc coalitions. . . . America's

emerging military capabilities . . . offer, for example, far greater pre-crisis transparency. If the United States is willing to share this transparency, it will be better able to build opposing coalitions before aggression has occurred. But the effect may be more general, for all nations now operate in an ambiguous world, a context that is not entirely benign or soothing.²³

The danger in the belief that technology will offer us total battlespace (and foreign policy) dominance in the next century does not lie in the technology. In the wars of the next century, technology offers us substantial leverage against our future opponents, as it is our strength, but only if we understand that it is a tool—a means—not an end. What is particularly dangerous about the Owens-Nye, technocratic-mechanistic view of the world that is gaining such wide currency throughout the culture of the American military is that it is disconnected from the real world. It is particularly dangerous because Americans have a long track record of overestimating their technological superiority and underestimating the ability of their opponents to figure out methods to short-circuit our many advantages. Vietnam is a case in point.

Inherent in the Owens's approach is the belief that what military organizations need is more quantifiable data, more "information." Thus, a vast array of sensors and computers all tied together will provide the margin of error and remove friction from the military equation—or at least reduce the frictions of war and life to *manageable and controllable* levels. From a cynical viewpoint, the processing of ever more information will clog up military organizations with a flood of data that is simply indigestible. The larger problem, however, is that many of the current claims about information dominance are missing the essential difference between information and knowledge. We did not need more information in the case of the Pearl Harbor attack; and it is doubtful whether we will need more information in the future. What we will need in the next century is a deeper understanding of the fundamental nature of war and the very different set of assumptions that our opponents will bring to the table. To succeed in the next century, the services will require a real understanding and knowledge of foreign languages, different cultures and religious beliefs, and especially history—precisely the subjects that technocrats have no interest in, because such knowledge cannot be measured. And what matters in war, as Tolstoy suggested, is what is in the mind of the soldier. As a number of marine generals stood over a relatively undamaged Iraqi bunker complex that Coalition forces had captured with minimum casualties and a large haul of prisoners, one quietly commented, "thank God the North Vietnamese weren't here!"²⁴

It is precisely the fact that the emerging military culture is throwing this historical sense and the intangibles of experience overboard that is so dangerous.

History does matter. We have 2,500 years of recorded Western history that suggests combat between two opponents *always* involves uncertainties, ambiguities, and friction. As one commentator has recently noted on a Pentagon war game based on perfect knowledge:

We will *never* really achieve perfect (or even near perfect) information no matter how much data we collect, how fast we can process and distribute it, or how much artificial intell, fusion, etc., we have. The reasons lie in 1) human sensory and cognition limits; 2) the fact that wars ultimately serve political purposes; and, 3) the two-sided, interactive nature of combat processes which produces, among other things, fundamental unpredictability in the sense of nonlinear dynamics or 'chaos.'²⁵

History does not carry the warning alone that the future will remain uncertain and cloudy. The entire thrust of modern science, from quantum physics to evolutionary biology and mathematics, suggests that friction in Clausewitz's widest sense is the *fundamental basis for much of how the world itself works*.²⁶ And if we think about combat between major military forces in the future, we must think in terms of unmappable complexities that will inevitably give rise to inconsistent and unpredictable encounters and outcomes.

The great tragedy of the post-Vietnam War history of the American military was that its understanding of the real nature of war was not institutionalized. Despite the instinctive attraction of the Clausewitzian world for American officers in the post-Vietnam period, there was no change in cultural attitudes among the American military toward education. Despite considerable interest in the subject during the late 1980s (lead by Representative Ike Skelton) little has changed in attitudes toward the long-range benefits of serious study of the profession of arms. Teaching duty on the faculties of schools of professional military education has not become "career enhancing." The navy continues to refuse to send its future admirals either to staff college or war college.²⁷ The Army War College, despite an impressive faculty, remains an institution where war rarely appears in the curriculum; in fact, the students devote almost as much time to the study of New York City's problems in the national security block as to the study of war. Moreover, the army has turned one of the few truly innovative educational experiments of the 1980s in the American military, the School of Advanced Military Science, into a humdrum planning exercise. After a short period of effort, the Air War College has once again returned to the golf course. Finally, the National War College provides time for officers to better manage their careers across the river in the Pentagon. Only the Air Command and Staff and the Marine Staff Colleges have shown some considerable improvement from their educational standards of the mid-1980s. This contempt for education has contributed, and will continue to contribute, to this shift in the American military culture away