

JFQ

1998-1999
ESSAY CONTEST
ON MILITARY
INNOVATION

Techno-Warfare

Military Education

Crisis Management

Joint Doctrine
after Kosovo

99
Summer



*The men and women of the Armed Forces
continue their record of achievement in
serving the Nation.*

—Henry H. Shelton



A Word from the Chairman

This issue of *JFQ* features a number of articles on military innovation, a matter of critical importance as the Armed Forces enter the 21st century. It requires leadership, creative thinking, and insight to counter threats to the United States. Looking to the future, one trend that will affect technological innovation, doctrine, and organization is the increasing interdependence of nations.

This interdependence, often labeled globalization, is being fueled by revolutionary changes in communications and information technology and means the world is being tied closer together than ever before. To understand the extent of this trend, consider that a decade ago most people had never heard of the Internet. Today, an estimated 200 million people are using it, a number that is growing by some 300,000 a week.

Globalization is far from complete. Although many people still are not “on the Net,” and millions more do not know what it is, the rise of an interdependent global economy has made nations around the world vulnerable to distant shocks and

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globalization is far from complete

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(U.S. Navy/McNeely); and directing F-14 aircraft (U.S. Navy/Stephen Batiz). The back inside cover features B1-B aircraft (U.S. Air Force/Lem Robson). The back cover captures H-46 conducting mine countermeasure training (Fleet Combat Camera, Atlantic/Brian McFadden); soldier securing vehicle, Foal Eagle '98 (1st Combat Camera Squadron/Jim Varhegyi); and AV-8B taking off from *USS Wasp* (26th Marine Expeditionary Unit/Cheresa D. Clark); and B-2 during refueling, Allied Force (1st Combat Camera Squadron/Ken Bergmann).

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Joint Force Quarterly

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JFQ is published for the Chairman of the Joint Chiefs of Staff by the Institute for National Strategic Studies, National Defense University, to promote understanding of the integrated employment of land, sea, air, space, and special operations forces. The journal focuses on joint doctrine, coalition warfare, contingency planning, combat operations conducted by the unified commands, and joint force development.

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ISSN 1070-0692

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This publication has been approved by the Secretary of Defense. All previous issues have been published electronically and are available over the Internet at the address indicated below. Paid subscriptions to *JFQ* are offered through the U.S. Government Printing Office.

The editors invite articles and other contributions on joint warfighting, interservice issues that support jointness, and

topics of common interest to the Armed Forces (see page 124 for details). Please direct all editorial communications to:

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August 1999

Joint Force Quarterly

GEN Henry H. Shelton, USA
Publisher

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A PROFESSIONAL MILITARY JOURNAL

A WORD FROM THE CHAIRMAN

(continued from page 1)

disruptions. The Asian financial crisis spread across the region and eventually impacted the entire planet. In addition, the globalization of media has transformed local events into international news with worldwide repercussions. We live in an age when real-time images can be transmitted into homes and offices anywhere in



U.S. Navy (Andrew McKaskle)

we must pay greater attention to asymmetric capabilities

the world, applying a powerful influence on policymakers. The so-called CNN effect is real.

New threats also will be shaped by globalization. The ever-increasing ability of individuals and groups to rapidly collect, analyze, disseminate, and act on information is breaking down traditional barriers between domestic and international affairs and, in the process, shrinking the power of the nation-state. In the next century we will see the further expansion of the roles of non-governmental organizations and independent actors which make contributions to international crises through humanitarian programs (such as Doctors Without Borders and CARE) and criminal gangs, drug cartels, and terrorist groups which exercise a sinister influence over all sectors of society without reference to national borders.



U.S. Navy (James Staughenaupt)

1st Combat Camera Squadron (Stephen Faulstich)

Advances in information and communication technologies provide like-minded groups with the ability to coordinate action, solicit funds from sympathetic patrons, garner media attention, and acquire access to additional resources, including advanced conventional arms and perhaps weapons of mass destruction. One dramatic example of such change is the Ikonos satellite. This system will furnish those who can afford it with high resolution pictures of a one-meter area of any place on earth.



1st Combat Camera Squadron (James D. Mossman)

Until recently this type of capability was reserved for only a few nations.

Although globalization has certainly blurred the line between the capabilities of state and non-state actors, the distinction has not been erased. This development does not mean that nation-states will disappear from the scene; nor will their land, sea, and air forces. We must still prepare to defeat conventional forces.

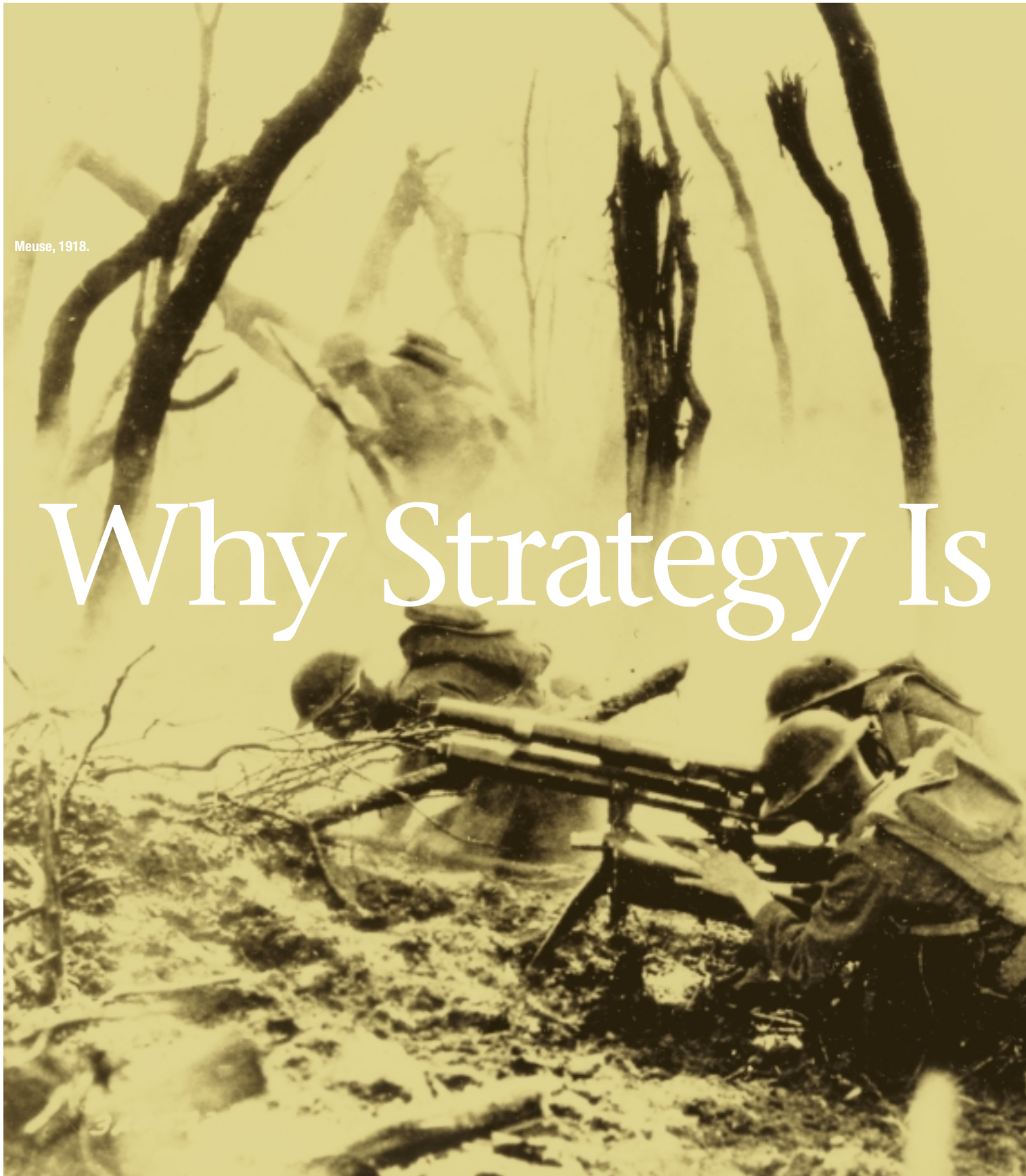
Threats posed by the proliferation of weapons of mass destruction mean that we must pay greater attention to how U.S. military strategy could be thwarted by asymmetric capabilities. Such threats have long been a factor in warfare, and there are many cases of militaries using asymmetries to avoid enemy strengths and exploit their weaknesses. What globalization has changed is the ability of state and non-state actors to leap ahead and acquire means previously unattainable.

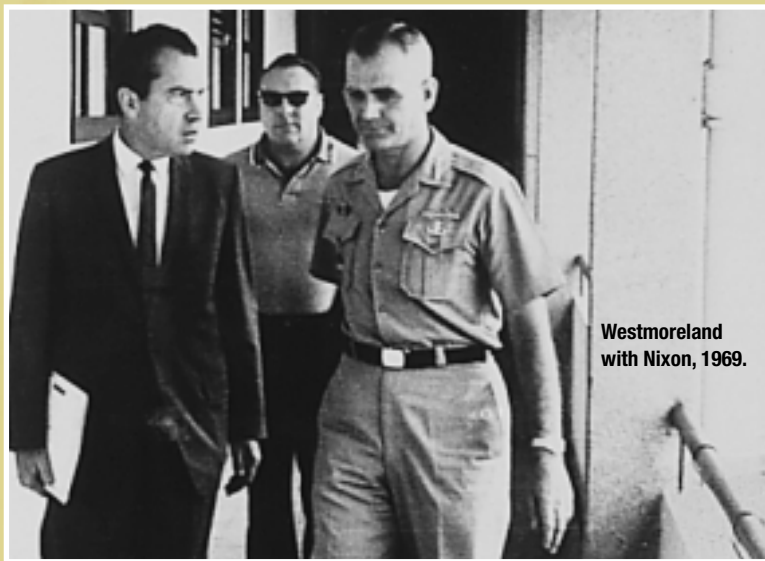
Maintaining a robust, credible force demands awareness of how new capabilities unleashed through globalization can be used, an understanding of our vulnerabilities in light of these changes, and innovative thinking about how we can succeed no matter how great the challenge. Innovation is never easy, but the articles in this issue of the journal should assist us as we move into the 21st century.

HENRY H. SHELTON
Chairman
of the Joint Chiefs of Staff

Meuse, 1918.

Why Strategy Is





Westmoreland
with Nixon, 1969.

DOD

Difficult

By COLIN S. GRAY

My aim is to relate the nature of strategy to the character of its artistic application and to the unknowable context of the 21st century. The immodesty, even arrogance, of this endeavor is best conveyed through an anecdote about a meeting between Hannibal Barca and an armchair strategist. Hannibal suffered from what in this last century has been the German failing—winning battles but losing wars. Hannibal won all of his battles in the Second Punic War except, sadly for a Carthage that did not deserve him, the last one, against Scipio Africanus at Zama in 202 BC. He is reported to have had little patience with amateur critics.

*According to Cicero (de Oratore), the great general when in exile in Ephesus was once invited to attend a lecture by one Phormio, and after being treated to a lengthy discourse on the commander's art, was asked by his friends what he thought of it. "I have seen many old drivellers," he replied, "on more than one occasion, but I have seen no one who drivelled more than Phormio."*¹

The theme of this article lurks in the ancient strategic aphorism that "nothing is impossible for the man who does not have to do it." When I was contributing to the *Defense Guidance* in the early 1980s its basic direction for the Armed Forces could be reduced to "be able to go anywhere, fight anyone, and win." To repeat my point, to those who do not have to *do* strategy at the sharp, tactical end of the stick, the bounds of feasibility appear endless.

True wisdom in strategy must be practical because strategy is a practical subject. Much of what appears to be wise and indeed is prudent as high theory is unhelpful to the poor warrior who actually has to do strategy, tactically and operationally. Two classic examples make the point.

Colin S. Gray is director of the Centre for Security Studies at the University of Hull; among his books is *The Leverage of Sea Power: The Strategic Advantage of Navies in War*.

U.S. Army

Carl von Clausewitz advised us that there is a “culminating point of victory,” beyond which lies a decline in relative strength.² Great advice—save, of course, that political and military maps, let alone physical terrain, do not come with Clausewitz’s “culminating point” marked. Imagine that you are a German and that it is anytime between late June 1941 and late August 1942. You have read Clausewitz. Where is the culminating point—at Minsk or Smolensk, on the Dnieper, Don, or Volga? How can you find a culminating point of victory until adverse consequences unmistakably tell you where it was?

The other example of great strategic wisdom that is difficult to translate into practical advice is the insistence of Clausewitz (and Jomini) that “the best strategy is always to be very strong; first in general, and then at the decisive point.”³ Naturally the challenge is not to comprehend the all but sophomoric point that one needs to be very strong at the decisive point. Rather it is to know the location of that point. What did Clausewitz’s advice mean for Germans in the late summer and fall of 1941? Did they need to concentrate their dissipating strength on the Red Army in the field, on the road to Moscow, or both?

For a tougher call, consider the American military problem in Southeast Asia in the second half of 1965. General William Westmoreland somehow had to identify military objectives to match and secure the somewhat opaque political objectives. Mastery of the arguments in the classics of strategic theory was unlikely to be of much practical help.

The Argument

Before expounding the central elements of my argument, which appear pessimistic, let me sound an optimistic note. Terrible though the 20th century has been, it could have been far worse. The bad news is that the century witnessed three world wars—two hot, one cold. The good news is that the right side won each of them. Moreover, threats to peace posed twice by Germany and then by the Soviet Union were each seen off at a cost that, though high, was not disproportionate to the stakes nor inconsistent with the values of our civilization. Western statecraft and strategy in two world wars was not without blemish. One needs to remember the wisdom of Lord Kitchener who said during World War I: “We wage war not as we would like but as we must.” Strategically, notwithstanding errors, the Western World did relatively well. Now for a darker view.

My key argument is organized around three reasons why it is difficult to do strategy well:

- its very nature, which endures through time and in all contexts⁴
- the multiplicity and sheer variety of sources of friction⁵
- it is planned for contexts that literally have not occurred and might not occur; the future has not happened.

This argument is essentially optimistic, even though that claim may appear unpersuasive given that the high-quality strategic performance is always challenged by the nature of strategy—not only by its complexity but by the apparent fact that whatever can go wrong frequently does. Also, strategy can fail because it may apply the wrong solutions to incorrectly framed questions because guesses about the future were not correct. If, despite this, the bad guys were beaten three times during the course of the 20th century, there are grounds for hope.

Before explaining the many sources of difficulty for strategy, it is necessary to highlight the recurrence of a serious fallacy. Lest this point appear unfairly focused on the United States, I will sugar coat the pill by citing an American who got it right, and two others—one American and one German—who got it wrong. Samuel Griffith, who got it right, was a scholar of Chinese military theory from Sun Tzu to Mao. He once observed that “there are no mechanical panaceas” when commenting on a *Newsweek* report in July 1961 about a fuel-air explosive to destroy bunkers.⁶ The American and German, who got it wrong, allowed themselves to be seduced by the promise of “mechanical panaceas.” One must hasten to add that these two warrior-theorists were exceptionally able men. The point is that, writing ninety years apart, they made almost the same mistake.

The issue underlying both views is whether much of the fog and thus friction that undoes applied strategy can be thwarted by modern technology. Writing in 1905, Lieutenant General Rudolf von Caemmerer, a member of the great general staff working under Field Marshal Alfred Graf von Schlieffen, offered this claim:

The former and actually existing dangers of failure in the pre-concentrated action of widely separated portions of the army is now almost completely removed by the electric telegraph. However much the enemy may have succeeded in placing himself between our armies, or portions of our armies, in such a manner that no trooper can get from one to the other, we can still amply communicate with each other over an arc of a hundred or two hundred or four hundred miles. The field telegraph can everywhere be laid as rapidly as the troops marching, and headquarters will know every evening how matters stand with the various armies, and issue its orders to them accordingly.⁷

Western statecraft and strategy in two world wars was not without blemish



U.S. Air Force

B-52 bombing north-west of Saigon, 1965.

to tackle the fog and friction of war is not akin to exploring unknown terrain

Caemmerer proceeded to admit that the telegraph might dangerously diminish the initiatives allowed to army commanders. The irony is that poor communications, lack of coordinated action,

and a general loss of cohesion by the all important armies on the right wing of the German assault in early September 1914 allowed an Allied

victory with the miracle on the Marne.⁸ The telegraph was a wonderful invention, but it could not reliably dissipate the fog of war.

An American example of a functionally identical error is drawn from the magical “system of systems” invoked by Admiral William Owens, former Vice Chairman of the Joint Chiefs of Staff. In 1995 he wrote, “The emerging system . . . promises the capacity to use military force without the same risks as before—it suggests we will dissipate the fog of war.”⁹

New technology, even when properly integrated into weapons and systems with well trained and highly motivated people, cannot erase the difficulties that impede strategic excellence. A new device, even innovative ways to conduct war, is always offered as a poisoned chalice. Moreover, scarcely less important, strategy cannot be reduced to fighting power alone.¹⁰ Progress in modern strategic performance has not been achieved exclusively through science and technology.

Consider this argument: strategists today have at their disposal technological means to help dissipate the fog of war and otherwise defeat friction that previous generations could only imagine. Modern strategists can see over the hill, communicate instantaneously with deployed forces around the world, and in principle rapidly destroy enemy assets wherever they are located—at least in fine weather and provided no innocent civilians are colocated with the targets. The problem is that war can’t be reduced simply to the bombardment of a passive enemy.

Despite electro-mechanical marvels it is no easier—in fact it is probably harder—to perform well as a strategist today than a century ago. Consider the utility of railroads, telegraph, radio, and aircraft to the strategist. The poison in the chalice of each is that other polities have acquired them; each has distinctive vulnerabilities and worse (recall the radio intercepts of World Wars I and II); and none of them can address the core of the strategist’s basket of difficulties.

Strategy is not really about fighting well, important though that is. To follow Clausewitz, it is about “the use of engagements for the object of the war.”¹¹ The fog of war and frictions that harass and damage strategic performance do not comprise a static set of finite challenges which can be attrited by study, let alone by machines. Every new device and mode of war carries the virus of its own technical, tactical, operational, strategic, or political negation.¹²

To tackle the fog and friction of strategy and war is not akin to exploring unknown terrain, with each expedition better equipped than the last to fill in blanks on the map. The map of fog and friction is a living, dynamic one that reorganizes itself to frustrate the intrepid explorer.

Why So Difficult?

Field Marshal Helmuth Graf von Moltke—victor in the wars of German unification—had it right when, in *Instructions for Superior Commanders*, he wrote that “strategy is the application of common sense to the conduct of war. The difficulty lies in its execution”¹³ The elder Moltke was rephrasing the words of the master. Clausewitz advises that “everything in strategy is very simple, but that does not mean that everything is very easy.”¹⁴ Why should that be so? Five reasons can be suggested.

First, strategy is neither policy nor armed combat; rather it is the bridge between them. The strategist can be thwarted if the military wages the wrong war well or the right war badly. Neither experts in politics and policymaking nor experts in fighting need necessarily be experts in strategy. The strategist must relate military power (strategic effect) to the goals of policy. Absent a strategic

brain—as was the case of the United States and NATO vis-à-vis Bosnia and Kosovo—one is left with an awkward alliance of hot air (policy statements) and bombardment possibilities (the world is my dartboard view of aerial strategists).¹⁵ Strategy is difficult because, among other things, it is neither fish nor fowl. It is essentially different from military skill or political competence.

Second, strategy is perilously complex by its very nature. Every element or dimension can impact all others. The nature of strategy is constant throughout history but its character continually evolves with changes in technology, society, and political ideas. Success in

strategy is not really about securing a privileged position in any one or more of its dimensions—such as technology, geography, or leadership—because it is always possible an enemy will find

ways to compensate for that strategic effect from its special strengths. This is a major reason why information dominance in a technical-tactical sense cannot reliably deliver victory. Triumph in war does not correlate with superior technology nor mastery in any allegedly dominant dimension of conflict.

Third, it is extraordinarily difficult, perhaps impossible, to train strategists. Consider these words of Napoleon Bonaparte:

*Tactics, evolutions, artillery, and engineer sciences can be learned from manuals like geometry; but the knowledge of the higher conduct of war can only be acquired by studying the history of wars and the battles of great generals and by one's own experience. There are no terse and precise rules at all; everything depends on the character with which nature has endowed the general, on his eminent qualities, on his deficiencies, on the nature of the troops, the technics or arms, the season, and a thousand other circumstances which make things never look alike.*¹⁶

Napoleon was in a position to know. Like Hannibal he was good at winning battles, but he failed catastrophically as a strategist. Like Imperial Germany, Nazi Germany, and the Soviet Union, Imperial France pursued political goals that were beyond its means. That is a failure in strategy.

Basic problems in training strategists can be reduced to the fact that no educational system puts in what nature leaves out, while the extraordinary competence shown by rising politicians or soldiers in their particular trades is not proof of an aptitude for strategy. The strategist has to be expert in using the threat or use of force for policy ends, not in thinking up desirable policy ends or in fighting skillfully.

Fourth, because strategy embraces all aspects of the military instrument (among others), as well as many elements of the polity and society it serves, the maximum possible number of things can go wrong. To illustrate, sources of friction that can impair strategic performance include those familiar to the military realm (incompatibilities among the levels of military activity and specialized functions such as operations, logistics, and weapons production) and, conceivably the most lethal of all, a mismatch between policy and military capabilities. In the world of strategists, as opposed to that of tacticians, there is simply much more scope for error.

Finally, it is critical to flag an underrecognized source of friction, the will, skill, and means of an intelligent and malevolent enemy. Andre Beaufre defines strategy as “the art of the dialectic of force or, more precisely, the art of the dialectic of two opposing wills using force to resolve their dispute.”¹⁷ Recall Clausewitz’s dictum: “War is thus an act of force to compel our enemy to do our will.”¹⁸ Yet it is easier to theorize about new ways of prevailing than to speculate honestly and imaginatively about possible enemy initiatives and responses.

Further Thoughts

There is a sense in which this article reinvents the wheel. It is no great achievement to appreciate that strategy is difficult to do well. Indeed, my point is not dissimilar from that made by Lawrence Freedman, who takes 433 pages in *The Evolution of Nuclear Strategy* to state that there is no truly strategic solution to the dilemmas of nuclear strategy.¹⁹ When armchair strategists tell military practitioners that their task is difficult on the level of strategy, they should not expect much praise. After all, strategy does have to be done. Academics can vote undecided and write another book. Practicing strategists must make decisions regardless of the uncertainty.

Next, one must stress the strategic ignorance of even practical people. Clausewitz wrote:

*It might be thought that policy could make demands on war which war could not fulfill; but that hypothesis would challenge the natural and unavoidable assumption that policy knows the instrument it means to use.*²⁰

The challenge is that before undergoing trial by battle, no one really knows how effective military power will be. Every passage of arms remains unique. A capability that appears lethally effective in peacetime exercises will not translate automatically into a violent elixir to solve political issues. That the Armed Forces appear lethally potent against a conventional enemy in open warfare could prove irrelevant or worse in urban

before undergoing trial by battle, no one really knows how effective military power will be

Inspecting beaches at Normandy, 1944.



U.S. Navy



DOD (Bill Kinoble)

Allied Force, 1999.

Military professionals must simplify, focus, decide, and execute. Politicians, by virtue of their craft, perceive or fear wide ramifications of action, prefer to fudge rather than focus, and like to keep their options open as long as possible by making the least decision as late as feasible. Although commanders are gripped by operational requirements, planners—especially if unschooled by real operational experience—are apt to live in an orderly world where a model of efficiency and compromise is acceptable, indeed is a driver.

The tension becomes acute when a soldier who is only a planner finds himself in a position of high command. The classic example is Dwight Eisenhower, a superb staff officer and military politician who lacked the experience and the aptitude for command, let alone supreme command.²¹ As to the terrain between theorists and doers of strategy, the former are skilled in the production of complexity and are unlikely to enjoy the empathy for operational realities that makes

areas. In peacetime, militaries train against themselves, and that has to comprise a major source of uncertainty concerning future effectiveness.

It is vital to recognize potential tension in three sets of relationships: between politicians and commanders, between commanders and planners, and between commanders and theorists (recall Phormio's efforts to educate Hannibal).

strategic ideas readily useful. For example, the nuclear strategist might conceive of dozens of targeting options yet be unaware that his theory passed its “culminating point of victory”—actually its “culminating point of feasibility”—at a distinctly early stage. A President thoroughly uninterested in matters of nuclear strategy until suddenly confronted at dawn some Christmas with the necessity for choice can’t likely cope intellectually, morally, politically, and strategically with many options. Probably he would find it useful to have alternatives: shall we go now, shall we go later, shall we go big, or shall we go small. But those broad binaries may be close to the limits of Presidential strategic thinking. Many strategists have presented seemingly clever briefings to policymakers and senior officers whose eyes crossed and brains locked at the sight of the third Power-Point slide.

The many reasons why strategy is so difficult to do well can be subsumed with reference to three requirements. For strategic success:

- forces must be internally coherent, which is to say competently joint
- be of a quantity and provide a strategic effect scaled to the tasks set by high policy
- be employed coercively in pursuit of military objectives that fit political goals.

Competence cannot offset folly along the means-ends axis of strategy. Military history is littered with armies that won campaigns in the wrong wars.

Since the future is unforeseeable—do not put faith in the phrase “foreseeable future”—we must use only assets that can be trusted. Specifically, we plan to behave strategically in an uncertain future on the basis of three sources of practical advice: historical experience, the golden rule of prudence (we do not allow hopes to govern plans), and common sense. We can educate our common sense by reading history. But because the future has not happened, our expectations of it can only be guesswork. Historically guided guesswork should perform better than one that knows no yesterdays. Nonetheless, planning for the future, like deciding to fight, is always a gamble.

To conclude on a positive note, remember that to succeed in strategy you do not have to be distinguished or even particularly competent. All that is required is performing well enough to beat an enemy. You do not have to win elegantly; you just have to win.

JFQ

NOTES

¹ J.F. Lazenby, *Hannibal's War: A History of the Second Punic War* (Warminster, UK: Aris and Phillips, 1978), p. 275.

² Carl von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), pp. 566–73. See also Antulio J. Echevarria II, “Clausewitz: Toward a Theory of Applied Strategy,” *Defense Analysis*, vol. 11, no. 3 (December 1995), pp. 229–40.

³ Clausewitz, *On War*, p. 204; Antoine Henri de Jomini, *The Art of War* (London: Greenhill Books, 1992), p. 70.

⁴ This argument is the central theme of Colin S. Gray in *Modern Strategy* (Oxford: Oxford University Press, 1999).

⁵ Clausewitz, *On War*, pp. 119–21.

⁶ Samuel B. Griffith, *On Guerrilla Warfare* (New York: Praeger, 1961), p. 31.

⁷ Rudolf von Caemmerer, *The Development of Strategic Science During the 19th Century*, translated by Karl von Donat (London: Hugh Rees, 1905), pp. 171–72.

⁸ Holger H. Herwig, *The First World War: Germany and Austria-Hungary, 1914–1918* (London: Arnold, 1997), pp. 96–106, is excellent.

⁹ Williamson Murray, “Does Military Culture Matter?” *Orbis*, vol. 43, no. 1 (Winter 1999), p. 37.

¹⁰ See Martin van Creveld, *Fighting Power: German and U.S. Army Performance, 1939–1945* (Westport, Conn.: Greenwood, 1982).

¹¹ Clausewitz, *On War*, p. 128.

¹² For lengthy musings, see Edward N. Luttwak, *Strategy: The Logic of War and Peace* (Cambridge: Harvard University Press, 1987). Luttwak argues that what works well today may not tomorrow exactly because it worked well today. Because Clausewitz insists war is essentially a duel, one may face an enemy capable of reacting creatively to one’s moves and perhaps even anticipate them.

¹³ Caemmerer, *Strategic Science*, p. 276.

¹⁴ Clausewitz, *On War*, p. 178.

¹⁵ This is a fair reading of the underlying premise of airpower theory. See Giulio Douhet, *The Command of the Air*, translated by Dino Ferrari (New York: Arno Press, 1972), p. 50; and John A. Warden III, “Success in Modern War: A Response to Robert Pape’s *Bombing to Win*,” *Security Studies*, vol. 7, no. 2 (Winter 1997/98), pp. 174–85. To the air strategist targeting is strategy.

¹⁶ Caemmerer, *Strategic Science*, p. 275.

¹⁷ André Beaufre, *An Introduction to Strategy* (London: Faber and Faber, 1965), p. 22.

¹⁸ Clausewitz, *On War*, p. 75.

¹⁹ Lawrence Freedman, *The Evolution of Nuclear Strategy* (New York: St. Martin’s Press, 1981), p. 433.

²⁰ Clausewitz, *On War*, p. 75.

²¹ Dominick Graham and Shelford Bidwell, *Coalitions, Politicians and Generals: Some Aspects of Command in Two World Wars* (London: Brassey’s, 1993), chapters 9–16, is pitilessly Anglo-Canadian in its critical view of Eisenhower as commander and serves as a partial corrective to the “patriotic” school of military history of the European campaign that finds undue favor among American writers such as Stephen E. Ambrose in *The Victors: Eisenhower and His Boys: The Men of World War II* (New York: Simon and Schuster, 1998).

Computing effects of impact on targets.



Army Research Lab (Douglas G. LaFon)

Techno-Warfare

Innovation and Military R&D

By JOSEPH I. LIEBERMAN

The Armed Forces now risk losing one of their premier advantages—a technological edge. Past decisions to counter numerically superior potential enemies with technological innovations have given the Nation the most formidable military in the world. But declining budgets combined with the legacy of the Cold War that pervades force structure and the research and development (R&D) enterprise is degrading our ability to remain dominant in the

technology of warfare. Just as private corporations and foreign research firms are restructuring to capitalize on a fast-moving, growing array of technological breakthroughs and threats, military research and development must undergo an innovation revolution to maintain our technological dominance.

R&D Vulnerability

Over the last half century the Pentagon has funded the pre-award research of 58 percent of the Nation's Nobel prize winners in chemistry and 43 percent of laureates in physics. This reflects the striking relevance of defense research as an engine for national advances in technology.

The Honorable Joseph I. Lieberman represents the State of Connecticut in the U.S. Senate and is a member of the Armed Services Committee.

Recently, however, DOD has been focused more and more on the urgent needs of today: readiness, modernization, military pay, and national missile defense. It has been unable to nurture sources of technological strength. Consequently, defense-sponsored research and development has fallen 30 percent over the last six years. The research portfolios of civilian agencies is simultaneously losing vigor. It is projected to drop another 15 percent in value over the next five years. Such declines are alarming, given that every plausible scenario of future warfare is premised on continuing technical superiority.

The innovation base, a traditional source of our military and economic strength, is eroding; yet we seem to not grasp the implications. I have yet to meet a strategist who recommends that we fight with only technological parity. But that is where we are headed. With a 30 percent decline in military research, another decrease slated for the next fiscal year, and projected cuts in Federally-funded civilian research and development, where will our technical superiority come from? Private sector research offers little help. Industry does conduct research and development, but it is largely (84 percent) and increasingly concentrated on the final stages of product development. When the military leverages research efforts from industry, it is leveraging only this stage. Industry obtains new ideas from the same pool of government-funded basic research. Almost three quarters of the papers cited in industrial patents, for example, draw on Federally-funded R&D programs. Both industry and the military rely on government-sponsored research for the intellectual groundwork of research and development.

Technology as Linchpin

Dramatic advances in technology form the basis for not only a revolution in military affairs but a paradigm shift in the American way of war. Great strides in various disciplines, underpinned by exponential growth in the capability of communication and information systems, make military capabilities that seemed incredible just a few years ago not only possible but probable. Given the increasing speed and range of precision munitions coupled with strategic, operational, and tactical decisions based on near-real-time information it may be feasible in the future to overwhelm large but technologically inferior forces from the first moments of an attack. With advances in nuclear power, hydrolysis, and hydrogen storage promising virtually unlimited sources of on-site power, the Armed Forces may be able to operate

indefinitely, free from long lines of supply and vulnerable support bases. Progress in robotics and miniaturization may make it possible to operate with fewer people and fight wars without concentrating forces, making military organizations less vulnerable.

The Legacy Dilemma

Unfortunately, the globalization of technology may make it equally easy for an enemy to do the same thing—in some ways easier because it may not have vested interests in maintaining large legacy forces. Today, the services spend 60 to 80 percent of their funding on force readiness and 20 to 40 percent on modernization for incremental improvements such as procurement, testing, and evaluation. Spending on science and technology is less than 2 percent of the overall DOD budget. Under currently proposed future budgets, it will drop to 1 percent.

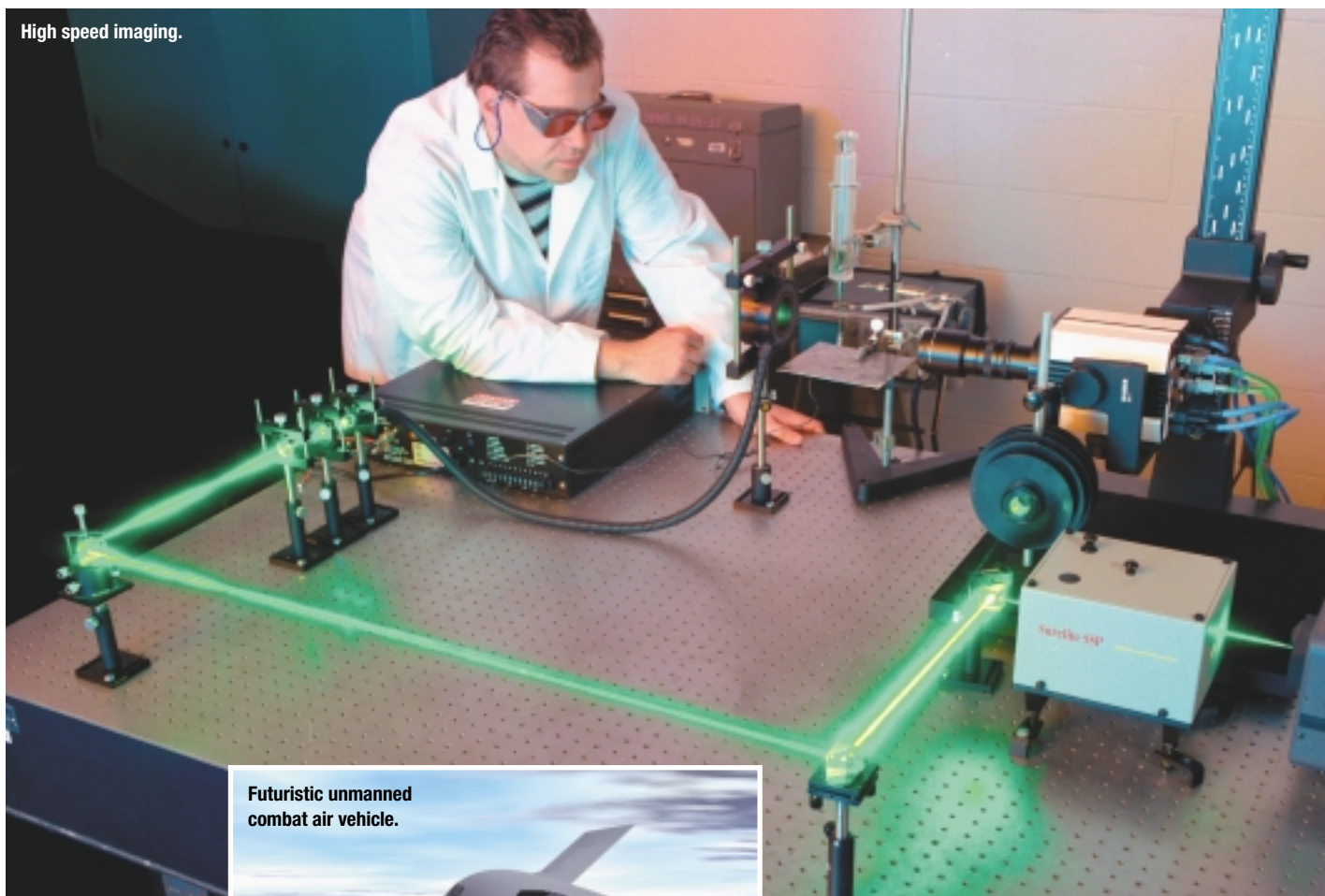
In time traditional land, sea, and air battles that justify current force structure and systems procurement will occupy a smaller part of the battlespace which must be covered. Meanwhile the lack of research and development will find us unprepared for conflicts that may reveal emerging threats in urban, space, electronic/information, nuclear, biological, and chemical warfare. As we struggle to prepare for combat on old and new battlefields, an enemy may focus its technological assets on only a few to asymmetrically exploit our vulnerabilities. Thus declining research funds, thinly spread across many threats and overwhelmingly obligated to present systems, will constitute a poor foundation for future readiness.

Senate Response

Working with colleagues in both parties I have been addressing issues of future readiness. Last year, Senators Jeff Bingaman, Rick Santorum, and I cosponsored a bipartisan sense of the Senate amendment calling for 2 percent annual increases in military research and development above the rate of inflation.

There is, however, more to be done. It is not enough to increase spending; we must shed the rationales and organizational structures of the Cold War for this enterprise and transform it into a fast-moving, well-integrated R&D machine that can seize the leading edge of techno-warfare. The time is now because in many ways the future is already here. The military systems of 2020 and 2030 will be based on the science of the year 2000 just as the high-tech weapons of today are the result of investments made by our predecessors in the 1960s and 1970s. So this year, joined

progress in robotics and miniaturization may make it possible to fight wars without concentrating forces



Futuristic unmanned combat air vehicle.



by Senator Pat Roberts, we incorporated a defense innovation initiative in the Defense Authorization Bill for Fiscal Year 2000 to raise the priority assigned to military research and development.

Innovation Revolution

Our defense reform initiative is focused on three basic changes required for an innovation revolution. First, we must develop a new vision for research and development—define the destination. Second, we have to construct a new organizational structure to execute that vision. Third,

we need innovative customers that will drive the R&D process to its full potential.

Defining the Destination. The 20 to 30 years needed for basic scientific discovery to evolve into a fielded system means that now is when we must understand the concepts of far future war and the capabilities we will want. Now is when we must define operational requirements to field the right weapons systems by 2020 or 2030.

Congress has directed both internal and external assessments to help define a clearer vision for the future. We view these assessments as important inputs into the congressionally mandated Quadrennial Defense Review (QDR). Every four years we will conduct a QDR to determine the threats we will face, the strategy we should adopt, and the force we should build.

Lacking clairvoyance, we should create an open conceptual architecture in the QDR process that frames potential future opportunities and threats and develops a picture of new



2nd Marine Division (Scott A. Harwood)

Demonstrating new equipment, Urban Warrior.

technologies and systems to guide our R&D investments. At a minimum, the review should reveal whether the current decision to disinvest in many technological pathways will leave unacceptable windows of opportunity for technologically competent adversaries.

New Infrastructure. Once our vision of far future warfare and requirements is established, there must be a structure in place to implement it.

we must lower service and institutional barriers to allow joint technologies to flow seamlessly into the R&D labs

The Defense Science Board has recommended that a third of the technologies pursued by DOD offer five to tenfold improvements in capabilities. Major organizational change will be required to achieve that goal. For example, the segregated and insulated components of the military R&D system cannot easily accommodate the pursuit of joint technologies, although such joint capabilities may have the broadest and arguably greatest potential for the Armed Forces.

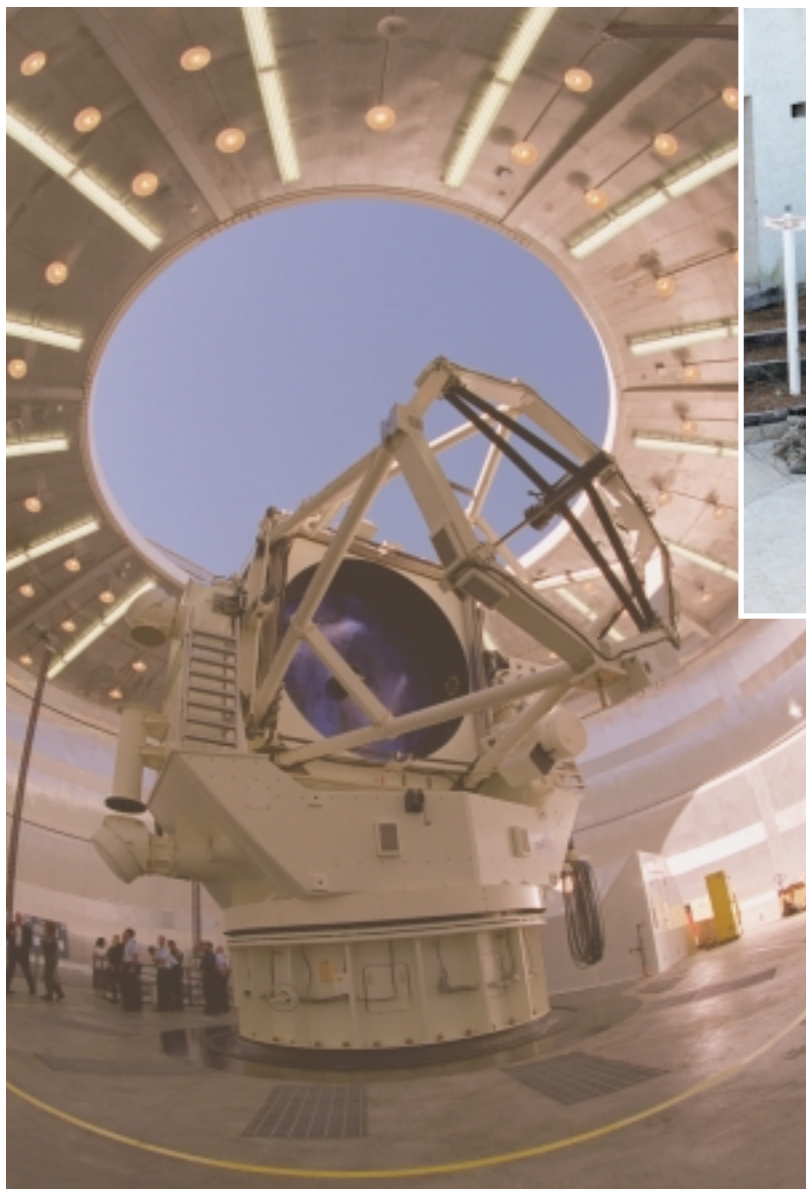
The stovepiped nature of the laboratory system is also ill-suited to the conduct of science in the information age. Great breakthroughs occur at the interface between scientific disciplines and organizations. The private sector takes advantage of temporary alliances between competitors and peers to develop technologies rapidly. The military must be able to use this system and leverage its potential. We must lower service and institutional barriers to allow joint technologies, innovations developed in other government laboratories, or ideas from the private sector to flow seamlessly into and across the R&D labs.

Laboratories must also become a culminating point for the minds of the brightest scientists to meet the demands of the most experienced warfighters. Out of this intense dialogue would come a better understanding of future warfare possibilities as well as technological breakthroughs needed to change warfighting. The current structure is not attracting and retaining the best scientific talent. The rigid DOD personnel system and the corresponding lack of performance-based compensation is causing the labs to hemorrhage talent to a more competitive and less bureaucratic private sector.

The R&D talent drain is compounded by longstanding DOD business practices that reflect a lack of connection between laboratories and their customer—the military. To facilitate a revolution in military research and development, we should repeal many restrictive lab regulations, encourage cross-fertilization with temporary assignment of personnel from other institutions, adopt modern business practices, nourish a vibrant dialogue between warfighters, scientists, and technologists, resolve overlaps and gaps within the existing laboratory system, and build a robust bridge between the R&D and acquisition pipelines.

Innovative Customers. We must also face the pressures that move the military away from innovation. The DOD system rewards laboratories with additional funding (contracts) when they dedicate themselves to maintenance and upgrades for existing systems. The laboratories receive no such incentive for striving towards visions of the far future. It is not surprising that the labs place their focus on the short term.

We require a defined customer for far future technologies. The ideal internal customer for revolutionary innovation would be the Joint Chiefs. But there are inadequate connections between the Joint Chiefs and service laboratories. Consequently, broadly sweeping strategies that capitalize on novel technologies are not rapidly incorporated into our organizations, doctrine, or systems.



Supporting space surveillance mission.

Combat developers can be second innovative customers for research and development. At present the services only influence product development in the latter stages of the R&D cycle. Industry experience, however, has shown that if the customer and designers share in all product development decisions from the initial design, the degree of innovation is much higher, the product acceptance rate is much greater, and the pace of technological change is much faster. We should profit from these lessons and from bringing users and combat developers into the R&D process earlier.

Industry can also be a better innovative customer for military research and development. There are naturally constituent pressures applied



Joint amphibious mine clearing bulldozer.

Special Purpose MAGTF X (Jason J. Boritz)

by the industrial half of the military-industrial complex which are usually focused on legacy systems. Because no risk is involved in continued production of established systems, firms are virtually guaranteed profits. Designing a truly innovative system risks substantial loss if the concept does not work or is not acquired by DOD. The lack of an innovation profit driver for industry translates into an intense lobbying effort on Capitol Hill aimed squarely at preserving yesterday's systems. Substantially higher profit levels should be set by the Pentagon for the development of innovative systems than for the ongoing production of legacy systems.

The arms race that characterized the late 20th century will be replaced by a race in military technology in the decades ahead. Rather than amassing even larger inventories of conventional weapons, as occurred during the Cold War, we should concentrate on building fewer but rapidly evolving and specialized weapons systems. Revolutionizing the military R&D system to prepare for techno-warfare will be hard, but we must do so to guarantee our military superiority in the politically unstable, technologically sophisticated years ahead. **JFQ**

Skill and Technology in



Modern Warfare

By STEPHEN BIDDLE, WADE P. HINKLE, *and*
MICHAEL P. FISCHERKELLER

What place does skill and technology play in determining the outcome of modern war? Is new technology—such as advanced command, control, communications, computers, intelligence, surveillance, and reconnaissance (C⁴ISR)—significant enough to warrant scaling back training to acquire it? If something must be

cut, is the Nation better served by older equipment and highly-trained troops, or better equipment but reduced skills and readiness for at least part of the force?

Such questions are increasingly critical as defense budgets decline and more people come to believe that unusual technological changes are imminent. Understanding how skill and technology interact is tough anytime, but it is unavoidable today to ensure sound decisions. Some might argue that underemphasizing modernization during a revolution in military affairs can enable a

Stephen Biddle teaches political science at the University of North Carolina; Wade P. Hinkle and Michael P. Fischerkeller are members of the research staff at the Institute for Defense Analyses.

potential enemy that aggressively takes advantage of technology to leapfrog over a conservative military and present it with disaster in the field or irrelevance with the advent of new threats. But the other side of that coin is the argument that underemphasizing skill makes it impossible to exploit technology—or worse, mistakes made by information-overloaded, undertrained forces can expose even a radically modernized military to sudden heavy losses on a lethal 21st century battlefield.

Unfortunately, the available decisionmaking tools are not equal to such questions. Current models focus almost exclusively on the quality, number, and types of weapons. Warfare is treated as a physics problem in which superior weapons carry the day. The skills, operational concepts, and organizational structures of the combatants cannot be evaluated because they are not modeled. Moreover, the improved generation of models presently under development will still be driven by technology. They focus on information technologies in the form of C⁴ISR as both enablers and multipliers of weapon technologies. But they will share the inabilities of their predecessors to portray the effects of skill. This is significant: analytical tools that ignore skill cannot be much help in identifying the right balance between skill and modernization in the U.S. defense program.

In fact, current models may not even be helpful in identifying the right systems to develop with the funds which are available to modernize. Evidence is mounting that the interaction between technology and user skills and methods profoundly influences combat outcomes. If this interaction is ignored, the Department of Defense risks profound errors in choosing systems. Most combat models assume perfect skills on the part of fighting forces and their commanders: gunners score hits with probabilities computed on test ranges and leaders never misinterpret orders. No matter how simple or complex the tactical situation, new weapons must be employed. No matter how the targets might actually behave under fire, most current models simply assume perfect skills on all sides and compute outcomes accordingly. Can one assume that systems which function well in a perfect world will work in the same fashion in the world of real people, both our own and that of an enemy? If skill and technology do interact, that assumption is wrong—and the results of using methods that ignore this interaction could lead us to choose the wrong weapons for the real world in which the Armed Forces will have to fight.

With the approach of another Quadrennial Defense Review, this is the time to determine how technology and skill affect the outcome of theater wars. This article is an effort to jumpstart that process and proceeds in three steps. First, it presents evidence that the interaction between skill and technology is central to warfare and that ignoring it risks serious miscalculation. Second, it presents a hypothesis to explain the nature of this interaction, which is consistent with emerging evidence and could be incorporated into formal combat models, although further testing is re-

this is the time to determine how technology and skill affect the outcome of theater wars

quired to establish it as a basis for defense planning. Finally, the article suggests implications for policies and programs that would flow from the hypothesis if it holds up and that planners should start to take into account pending further testing.

Why should one worry about leaving skill out of the military balance? After all, technology has been the main focus of the debate for a generation, and many analysts presume that technology ensured an unprecedented low rate of casualties in the Persian Gulf War. Indeed, this perception is fueled by the widespread belief that we are embarked on a revolution in military affairs.

Desert Storm

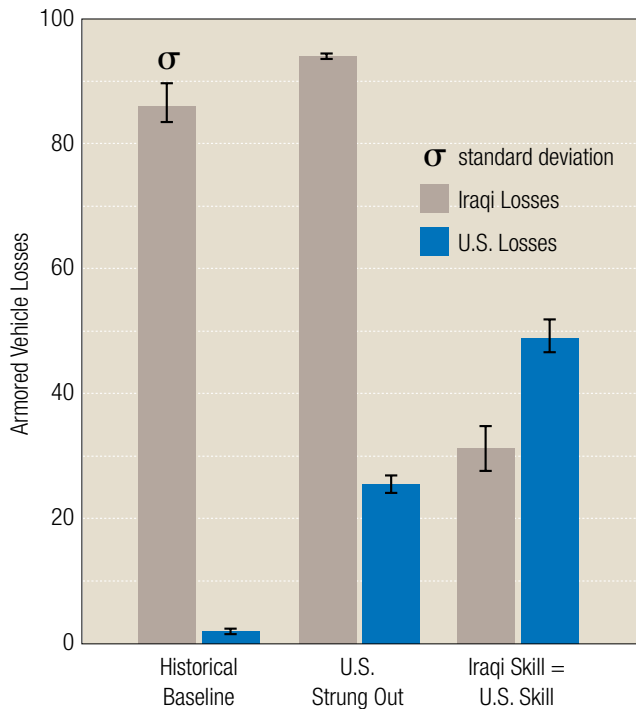
The conventional wisdom holds that the radically low losses sustained in the Persian Gulf War resulted from a new generation of surveillance, air defense suppression, and precision guided air-ground weapon technology that destroyed the Iraqi will to fight or their weapons. Yet now it is known that far too many enemy soldiers and weapons survived the air campaign and were in a position to resist the coalition ground attack for technology alone to account for the historically low attacker losses.

Some 4,100 Iraqi armored vehicles evaded destruction from the air, a figure equal to the entire Egyptian tank force in 1973. At least 1,200 of the vehicles were dug in astride the VII Corps axis of advance and could have fought back as ground forces struck beginning on February 26.¹ The forces opposing VII Corps alone deployed more active armored vehicles than the Israelis in the Six Day War, and more than twice as many as the Germans in Normandy. If the surviving Iraqis had simply inflicted as many casualties per capita as the Arab forces in 1967, the Coalition loss rate in 1991 would have been more than ten times higher.² In sum, the air campaign did not neutralize enough Iraqi armor to account for our radically low losses by itself.

Kuwaiti desert,
February 1991.

DOD (Robert L. Peave)

Recreating the Battle of 73 Easting



What about high technology ground weapons? Did thermal sights, stabilized 120 mm guns firing depleted-uranium ammunition, or new compound armor account for low losses? Here again the facts do not support the conventional wisdom. For example, the Marine Corps fought its way through hundreds of enemy vehicles with M-60A1 tanks originally fielded in the 1960s. Yet the Marines suffered no greater losses than the better-equipped Army. In fact, in some of the heaviest combat (the Iraqi counterattack at the Burqan oil field), the Marines did not have M-60s and fought with wheeled, thin-skinned, light armored vehicles. The Army had deployed thousands of lightly-armored M-2 and M-3 Bradleys, while the British committed hundreds of similarly light Warrior troop carriers, all of which engaged in extensive close combat yet suffered few losses.³ If superior guns, armor, and thermal sights were responsible for low losses, one would expect units fighting without them to suffer heavier casualties.

This conclusion will not surprise veterans of the National Training Center (NTC) where hundreds of battles have been waged between M-1A1 equipped Army units and a (simulated) T-72

equipped opposing force (OPFOR). If the superior technology of M-1A1s was responsible for the low losses in Desert Storm the same result should emerge at NTC—yet OPFOR almost always wins. OPFOR is admittedly an elite unit with complete mastery of the terrain on which it fights day in and day out. But if technology rather than skill or tactical acumen is the principal determinant of modern combat outcomes, the overmatch of M-1A1s should overwhelm the effects of an imbalance in skill levels.

Combined, these findings strongly suggest that technology alone cannot explain the losses in the Persian Gulf War. Instead, it is necessary to consider how technology and a skill differential interacted. To explore the issue further, the Institute for Defense Analyses has conducted a series of simulation experiments in which a representative engagement from VII Corps action against the Republican Guard—the battle of 73 Easting—was re-fought with systematic variations in the skills and equipment of both forces. The results suggest that without a major skill advantage (see accompanying figure), the outcome could have been radically different in spite of superior technology. When tight, efficient Coalition combat formations of the historical attack were replaced with a strung-out alternative typical of poorly trained units, for example, simulated friendly losses rose by a factor of ten even when equipment on both sides was kept constant. Worse, when the unskilled Iraqis of 1991 were replaced with troops who performed at the skill levels of American personnel, even the combination of superior technology and the 1991-level proficiency of the Armed Forces could not prevent friendly losses from increasing by a factor of more than 20.⁴

Taken together, what is now known about the Gulf War strongly suggests that technology, although important, does not explain the low loss rate of the U.S. military. To analyze that war without systematically accounting for the skills shown by both sides is to risk serious error.

La Haye du Puits

The question of skill is not limited to recent combat experience. Detailed case studies of less-proximate historical battles enabled us to isolate the effects of skill and technology for study by controlling for terrain, force ratio, weather, posture, and opponent.

In the first, the Battle of La Haye du Puits in July 1944, three U.S. divisions—the 90th and 79th Infantry Divisions and 82^d Airborne Division—conducted a simultaneous assault on elements of the German LXXXIV Corps in Normandy.

Soldiers moving along hedgerows, Normandy.



Courtesy Military History Institute

the 82^d Airborne maintained the fastest rate of advance and lowest casualties

The hedgerows, clear weather, opposing forces, and mission of deliberate assault on a prepared defense were common to each division. Enemy weapon holdings were effectively common to all

three while the American holdings were similar for the 79th and 90th Divisions, although the former deployed about 10 percent fewer troops and 24 percent less artillery than the 90th Division. The 82^d Airborne, by contrast, was significantly smaller and lighter than the other divisions, with about half the troop strength and less firepower (half the artillery of the 90th Division, three-fourths of its mortars and machine guns, and no tanks). Thus orthodox models based on the number and types of weapons would predict that the 90th Division should have performed best and the 82^d Airborne worst.

The skills of the three American divisions, however, suggest quite the opposite. The 82^d Airborne was an elite unit that trained intensively

in the continental United States (CONUS) with consistently excellent exercise evaluations, followed by six months of unit-level training overseas and three months of combat experience before the battle. The 90th and 79th Divisions, by contrast, were standard infantry units with lower levels of training and experience. Neither had overseas unit training and neither had seen more than a few days of combat. The 90th Division had been idle for six months and the 79th Division for two (in addition, the former division was reorganized three times during CONUS training). Two commanding generals of the 90th Division had been relieved and the unit had consistently received poor exercise evaluations. On the basis of training and skills, one would predict that the 82^d Airborne should have performed the best and the 90th the worst.

The outcome contradicts the orthodox technology-based prediction and corroborates one based on training and skills. Controlling for the objectives of the three divisions and the amount of time it took each to reach them, the 82^d Airborne maintained the fastest rate of advance and lowest casualties per square kilometer of ground

Table 1. Battle of La Haye du Puits

	Ground seized (km ² /hour)	Losses for ground taken (TBC ^a /km ² /hour)
82 ^d Airborne Division	.28	564
79 th Infantry Division	.22	841
90 th Infantry Division	.17	1,035

* Total battle casualties per thousand troops engaged.

Source: Martin Blumenson, *United States Army in World War II, The European Theater of Operations: Breakout and Pursuit* (Washington: Office of the Chief of Military History, 1961), pp. 60–77.

taken. The 90th Division had the slowest rate of advance and the highest casualty rate (table 1).⁵ To analyze this battle using standard models would thus introduce a significant bias into the results: relative advance rates would be off by 65 percent or more. Casualty rates would be off by at least 84 percent.

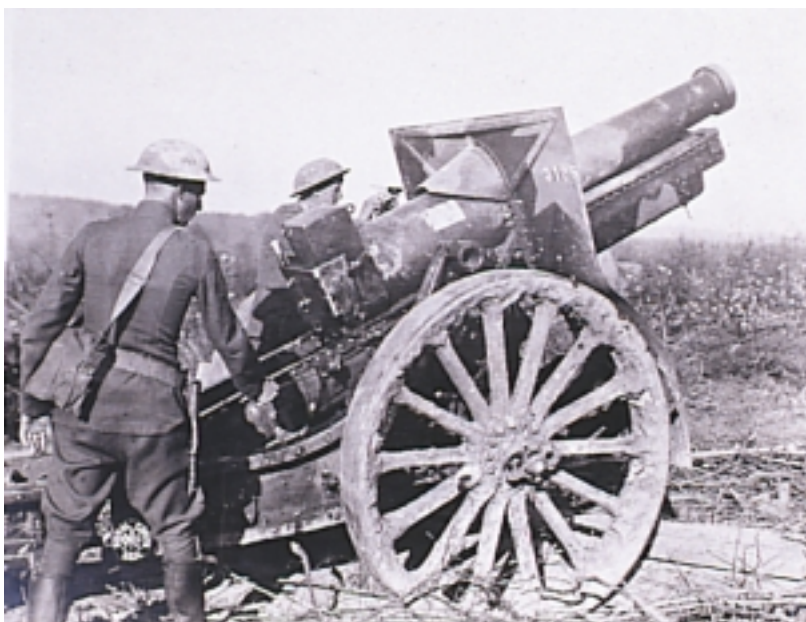
84th Infantry and 384th *Landwehr* Regiments in the Battle of Cambrai (November 1917), and elements of the 2^d Army in the Second Battle of Amiens (August 1918) on the opening day of the respective battles.

By focusing on the three engagements, skill, terrain, weather, and defender technology are held constant. By mid-1917, each regiment was a veteran regular infantry unit with comparable experience, training, and leadership (though the 384th *Landwehr* had entered the war as a reserve unit, such distinctions had vanished by 1917 in the face of extended combat). Each was an element of a division rated mediocre by Allied intelligence and fought under a common military doctrine. Each was similarly equipped: supporting artillery tubes per yard of front—or total firepower per yard of front—varied by less than 9 percent between Ypres and Cambrai, for example. Each was opposed by veteran units: the British Guards Division in Third Ypres, the British 62^d Division at Cambrai, and the Australian 5th Corps in Second Amiens had comparable experience, personnel turbulence, training, and rest. In each engagement, rain and fog precluded serious aerial support, while the battlefields amounted to trench-rutted, shell cratered moonscapes effectively devoid of vegetation or roads suitable for vehicles.

Allied technology, however, varied substantially. In particular, the large-scale use of tanks was introduced at Cambrai. Although the assault by the Guards Division at Ypres was conducted by walking infantry supported only by artillery firing indirectly, the 62^d Division at Cambrai was supported by more than 70 Mark IV tanks and substantially more artillery fire. The Australian 5th Corps at Second Amiens nine months later was similarly equipped, with 135 tanks spearheading the initial assault.

Orthodox models based on the number and types of weapons would predict very different outcomes for these engagements: the Guards Division's less materially sophisticated offensive at Ypres should fare far worse while the comparable advantages of 62^d Division and 5th Corps should enable them to fare far better and perform more like one another than like the earlier tank-free attack at Ypres.

The historical outcome does indeed show very different results across these three actions, but not in the way orthodox models would predict. German losses at Cambrai were far higher than at Ypres: the 84th Infantry and 384th *Landwehr* suffered almost 85 percent casualties on the first day at Cambrai, compared to 46 percent losses by the 73^d Fusiliers and 91st Infantry on the first day at Ypres. Moreover, Allied attackers fell 1500 yards short of first-day objectives at Ypres; in the other two battles they were met or slightly



U.S. Army Military History Institute

Last gun fired, November 1918.

The Western Front

The La Haye du Puits case considers the effects of variation in skill and friendly technology when other things remain constant. What if friendly skill and technology are held constant and the effects of changes are isolated in enemy technology? To do this German units were compared during World War I in actions on the Western Front: the 73^d Fusilier and 91st Infantry Regiments in the Third Battle of Ypres (July 1917), the

Table 2. Skill and Technology Demonstrated during World War I

	Third Ypres, July 1917 (no tanks)	Cambrai, November 1917 (first tank use)	Second Amiens, August 1918 (anti-tank tactics)
Capabilities			
Allied firepower*	3,550	3,350	5,100
Allied tanks (per yard of frontage)	0	.02	.02
Allied/German firepower ratio	2.8:1	3.2:1	9:1
Outcome			
German casualties (thousands)	460	848	657
Loss ratio (Allied/German)	1:1.4	1:5	1:3.8
Did Allies reach objective?	1,500 yards short	early afternoon	after midnight

* Potential lethal area in millions of square yards per day.

Sources: Various German and British official accounts and unit histories.

exceeded. This is much as one would expect. But whereas orthodox models would predict roughly comparable outcomes for Cambrai and Amiens, in fact the German loss rate fell from roughly 85 percent at Cambrai to about 66 percent at Amiens. Conversely, Allied losses increased dramatically, from a first-day loss rate of 15 percent of tanks at Cambrai to more than 45 percent of those committed at Amiens (table 2).

Much of the explanation for this outcome lies in German tactical adaptation and a significant retraining of their troops in new antitank methods following the debacle at Cambrai. Beginning in November 1917, the German units received some 39 weeks of specialized training in new antitank countermeasures. Artillery units were instructed to engage tanks in direct fire over open sights, while infantry tank panic that had affected defenders at Cambrai was addressed by training troops in methods for grenade attacks on tank engines or fuel tanks while vehicles climbed the rear walls of trenches and by training machine gunners to direct fire at tank vision apertures rather than trying to penetrate their armor. While the infantry training was mainly intended to restore troop morale, the new artillery methods proved deadly. With essentially the same equipment, tank kills increased by a factor of three in only a few months.

A model that encompassed both skill and technology would explain each of these cases, but the result of orthodox methods would be radically off in anticipating the transition from Cambrai to Second Amiens. If training and tactics in combat models cannot be accounted for, there is a risk of major errors in analysis.

Modeling Interaction

How can the interaction between skill and technology be better integrated in modelling and decisionmaking? We propose a four-step process. First, given what is known about interaction in combat, how is that interaction understood? Second, the resulting hypothesis can be formalized in a specific cause-and-effect relationship: if weapon technology becomes more lethal but skills fall, combat outcomes should be x ; if skills increase but technology remains the same outcomes should be y . The relationship is best stated in mathematical terms because that adds precision to the description, makes it easier to prove if our

hunch is wrong, and makes it easier to use the results in ongoing DOD modeling efforts if we eventually get it right. Third, this hypothesis can be tested as embodied in an equation against real combat experience to determine whether it has anything to do with the real world. If the test succeeds, that's it: we have a specific statement which explains how technology and skill interact for decisionmaking and which stands up against historical evidence. But if the test fails, we must go to a fourth step: the hypothesis is modified to reflect what has been learned and start again. By constantly moving between mathematical expressions of warfare and historical evidence of how it is actually conducted, two problems can gradually be overcome: one will not end up with a model that is mathematically elegant but cannot represent the real world; and one does not end up with a rich historical description that is neither precise nor prescriptive enough to guide decisionmaking.

Which hypothesis emerges? Technology can be viewed as a wedge: advancing technology gradually divides the military capabilities of skilled and unskilled armies, but it has much less effect on outcomes between equally skilled forces. This is because technological effects differ radically depending on countermeasures adopted by targets, and especially on how an enemy uses counters such as (in the case of ground combat) cover, concealment, dispersion, suppressive fire, combined arms, and independent maneuver by small units. Exposed, bunched-up, unsupported targets in the open have long been very vulnerable to modern weapons whatever the armor protection. Survival on the 20th century battlefield has long required the ability to reduce exposure to hostile firepower. Properly implemented, tactical countermeasures are quite effective. Well dug

hull-to-turret defilade vehicle fighting positions can negate many advantages of advanced sights and long range gunnery by keeping below grade until an enemy draws near. Suppressive fire can reduce hostile firing rates by a factor of 10 (or more) even when no target is directly killed. Attackers capable of using cover and concealment can often advance to within a few hundred meters of a typical defensive position without extended exposure to defensive direct fires even in the open North German Plain.

But while such countermeasures are potentially effective, they are getting harder to apply. To make the most of cover and concealment, for example, requires the thousands of commanders in a mass army to fashion unique plans for movement and disposition based on local conditions.

both dispersion and independent small-unit maneuver increase the number of independent decisionmakers

Troops cannot simply be laid out in standard textbook formations and marched toward objectives or deployed in formulaic cookie-cutter defensive layouts. Proper use of suppressive fire requires tight coordination between widely separated, moving units and multiple commanders. To protect assault units, suppression must be maintained until the last possible minute but then lifted in time to allow the assault to overrun the objective without casualties from friendly fire. Sightings of enemy weapons must be communicated to supporting units and suppressive fire redirected as intelligence develops. Because the pace of an assault varies unpredictably with terrain or unanticipated enemy action, maintaining continuous suppression requires a tangled combination of planning, adaptation, and efficient communications between harried commanders at many echelons. Both dispersion and independent small-unit maneuver increase the number of independent decisionmakers. They also demand greater initiative and tactical judgment from junior leaders, make it harder for leaders to see and communicate with their troops, and challenge morale and combat motivation by putting more distance between forces, reducing the power of group reinforcement to motivate individuals.

As the range and lethality of weaponry increased, so did the depth over which techniques must be exercised. When the range of weapons was limited to 2–5 kilometers and aviation was in its infancy, only front line units had to be covered, concealed, dispersed, and integrated. Units to the immediate rear could be massed in assembly areas and moved safely in the open. The arrival of longer-range weapons and airpower extended the zone of maximum complexity to front line units

and their immediate supporting elements. Current systems can place entire theaters at risk.

Although this is a major development, it is one of degree, not kind. Cover, concealment, dispersion, suppressive fire, combined arms, and independent small unit maneuver will remain critical. What will change will be the difficulty of making them work over the required span of space and time. Traditional operational countermeasures work by exploiting the weaknesses of technology that are evolving slowly if at all. In particular, the ability to engage dispersed targets in cover is improving much less rapidly than the ability to destroy massed armor in the open. Yet it is precisely the ability to exploit cover, concealment, and dispersion that has characterized all effective tactical systems in this century. The net result is thus to progressively increase the premium on the ability to exploit the kinds of operations that skilled militaries have employed in warfare—even as technology raises skill levels to use such methods over ever-larger areas and ever-longer periods.

Militaries that can cope with such growing complexity, however, are likely to find that their vulnerability changes little even as the nominal lethality and reach of modern weapons continues to grow. Militaries that cannot cope with such complexity, on the other hand, are likely to see their vulnerability grow dramatically. Thus, the Gulf War did not represent some new phenomenon of technology that created a novel form of warfare, but an extension of a very longstanding trend: the increasing gap in the capability between skilled and unskilled organizations in the face of changing technology. The Iraqi inability to manage the extreme complexity of the modern battlefield led to critical mistakes that enabled technology to operate with proving ground effectiveness and to sweep Republican Guard units from the field with radically low losses to Coalition forces. The ability to cope with such complexity enabled us to exploit this potential without leaving ourselves vulnerable in the process. While there have always been mismatches between skilled attackers and unskilled defenders, what 1991-era technology accomplished enabled the more skilled to punish the mistakes of the unskilled with unprecedented severity. Changing technology thus magnifies the results of skill differentials over time. Absent a favorable skill overmatch, however, technology cannot be relied on to produce such results in the future.

The Institute for Defense Analyses is currently converting the logic of this hypothesis into mathematical language and testing the resulting

Allied encampment,
Desert Storm.



DOD (Perry Heimer)



OD (Gary Littleton)

Firing round down-
range, Fort Hood.

equations against new data on battles fought under conditions that aggressively challenge the hypothesis. (The cases presented above are drawn from that work.) An early result is sufficiently clear: start thinking about the implications on policy if the hypothesis holds up.

Modernization and Readiness

The skill-technology hypothesis implies that one must be wary of protecting modernization at the expense of readiness. This is not to say that modernization should be halted: weapons, like any other capital stock, wear out and must be replaced. The question is the pace of modernization, and analysis suggests that slowing weapons

and C⁴ISR modernization to protect training, exercise, schools, and quality-of-life accounts (that is, parts of the budget that help develop and retain skilled personnel) would be the better choice because accelerated modernization increases U.S. capabilities mostly where they are already strong (that is, against unskilled opponents) but offers little where they are not (against those with better skills). Current technology is already so effective against mistake-prone enemies that it is hard to see how faster acquisition of a new generation of weapons would be much more than gilding the lily. Against an enemy like OPFOR at NTC, on the other hand, even a new generation has limits. And, if the weaponry is acquired by allowing skills to atrophy, it is possible to end up worse off on both counts. Poor skills will create vulnerabilities in the form of mistakes that even an enemy with lesser technology can exploit, and it will also be impossible to conduct sophisticated tactics and operational routines needed to get the most out of new systems.



U.S. Army Military History Institute

Maron, France.

By contrast, a highly skilled military will exploit its capital investment to the fullest while hedging against faster than expected modernization by enemies. Without the mistakes to exploit, an enemy with advanced technology will see a smaller payoff in confronting the United States than the Persian Gulf War might lead them to expect. Denying an enemy such mistakes is demanding. In ground combat, for example, high skills are required to exploit cover, concealment, dispersion, suppressive fire, combined arms, and independent maneuver by small units to the fullest—but forces that can do this have bought themselves the best insurance available against an unexpectedly sophisticated opponent.

In the final analysis, technology and skill are poor substitutes for one another. It is hard to buy more of the former at the expense of the latter without ending up worse off.

The Active-Reserve Mix

The foregoing has major implications for the mix of active and Reserve components. Some Reserve forces can operate at very high skill levels. Reserve pilots, for example, can compete with the best aviators in the world. But other elements engage in less sustained skill-building and skill-maintaining activity than their active component equivalents. With ever more lethal technology in hostile hands, the risks of fielding partly trained units are growing rapidly. And the complexity of

the tactics needed to survive in the modern battlespace suggests that training times required to reach full proficiency are growing. Taken together, this points to important limits in the ability to save resources by shifting combat missions from the active to the Reserve component.

This does not mean that the Reserve components cannot fill important roles. The skills required for modern combat are demanding, but they are not magical: even large Reserve units can be trained to perform the requisite tasks with proficiency. Military roles that resemble civilian jobs and depend largely on individual rather than group proficiency are especially suitable for Reservists. The Reserve force structure is much cheaper, so it makes sense to leverage it whenever possible. The central issue is how to ensure that Reserve component skills can be matched to their missions within anticipated mission timelines. Without proper skills, large Reserve units can be expected to suffer increasingly disproportionate losses, and the time needed to achieve full proficiency can be expected to grow as weapons become more sophisticated.

This suggests various changes to active/Reserve force management policies. The Reserve components will remain an important hedge against fighting prolonged wars or support extended deployments. But their ability to provide responsive combat power for short-notice, short-duration contingencies is likely to shrink in the next century absent new policies. Such policies might include lengthening annual active duty

training for some units, forming hybrid active-Reserve units composed of active duty staffs and Reserve combat elements (the Army is now experimenting with such an approach with the 24th and 7th Infantry Divisions), and a rotating program of bringing units in the Reserve components to higher states of readiness. Whether these approaches will enable the Nation to field adequately skilled, large Reserve units rapidly is still unclear, partly because there is very little empirically based research on the subject.

Force Restructuring

Many have argued for a major restructuring of the Armed Forces to transform them from direct-fire ground capabilities toward a reliance on deep fires, precision strike, and the exploitation of dominant battlefield awareness to avoid the necessity for close combat.

many have argued for a major restructuring of the Armed Forces to avoid close combat

The hypothesis outlined in this article, on the other hand, suggests that such restructuring could be very risky. Sometimes it may be highly effective: against an unskilled, mistake-prone enemy, such a mostly air- and deepstrike-oriented force would be the ideal solution. Against a skilled enemy better capable of limiting its exposure by tactical and technical countermeasures, however, such an imbalanced force would be gravely disadvantaged. By giving up direct-fire ground capability in exchange for more deepstrike systems, it would be much weaker than our current forces against an enemy able to escape destruction at extreme range and close with our forces. Such a restructuring would thus strengthen the U.S. military mostly where it is already so strong as to be nearly beyond challenge (that is, against error-prone enemies) by creating weaknesses elsewhere. Unless it is certain that the Nation will never again face a skilled enemy, this approach could be dangerous.

Most force planning and joint campaign assessment methodologies focus on the numbers and technical characteristics of opposing weaponry. Many believe that such methods are ill suited to a revolution in military affairs based on information technologies and a more highly integrated joint systems of systems. Thus DOD embarked on a significant program to update models and correct these shortcomings. But even if these proposed changes do address C²ISR and joint precision strike in detail, the models will still risk serious error if they ignore the relationship between technology and skill. In fact, if the new models are focused on depicting new technology while overlooking the ways skilled and unskilled enemies differ in their vulnerability to such systems,

they could leave the Armed Forces worse off analytically. To capture the dynamics of actual warfare, new methods must account for the crucial interaction between new technology and variations in the ways different enemies will actually use their capabilities.

While the task is not impossible, it will require a sustained, systematic analytic effort. The stakes are high. Although a proper understanding of cause and effect in warfare has always been important, the rapid pace of change in technology and geopolitics makes it even more so today. From budgeting, to total force policy, to force design, to weapon acquisition, the long-term effects from a tremendous range of decisions rely upon a full understanding of how current tradeoffs will affect likely outcomes of future wars. The next Quadrennial Defense Review will begin soon. It is time to create the improved understanding necessary to cope with difficult choices. Making sound choices requires the best analytical methods, and an essential attribute of any new generation of models must be an appreciation of the way skill and technology interact to produce combat outcomes in the real world. **JFQ**

NOTES

¹ Stephen Biddle, "Victory Misunderstood: What the Gulf War Tells Us about the Future of Conflict," *International Security*, vol. 21, no. 2 (Fall 1996), pp. 139–79; Eliot A. Cohen and Thomas A. Keaney, *Gulf War Air Power Survey*, Volume II, Part 2: *Effects and Effectiveness* (Washington: Government Printing Office, 1993), pp. 170, 214, 218–19.

² Martin Blumenson, *Breakout and Pursuit* (Washington: Office of the Chief of Military History, 1961), pp. 30, 700; Anthony H. Cordesman and Abraham R. Wagner, *The Lessons of Modern War*, volume 1 (Boulder, Colo.: Westview Press, 1990), pp. 15, 18.

³ Michael R. Gordon and Bernard E. Trainor, *The Generals' War: The Inside Story of the Conflict in the Gulf* (Boston: Little, Brown, 1995), pp. 363–68.

⁴ The experiment is detailed in Biddle, "Victory Misunderstood," pp. 165–73.

⁵ Blumenson, *Breakout and Pursuit*, pp. 60–77.



Which Way to the Future?

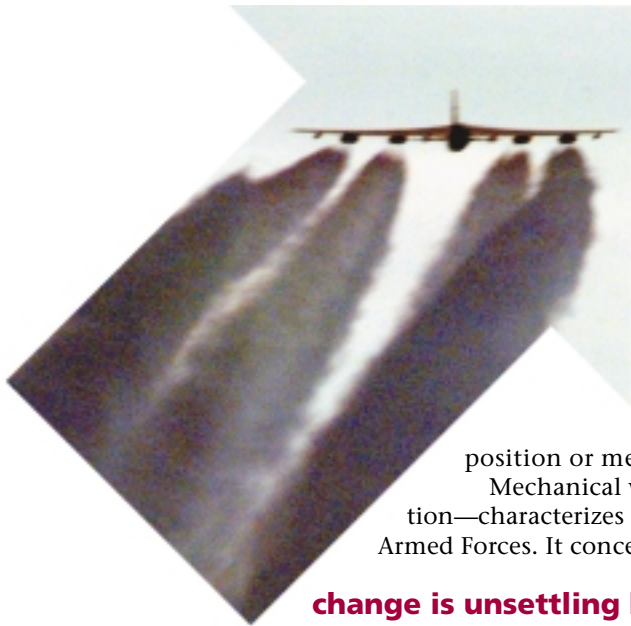
By IAN ROXBOROUGH *and* DANA EYRE

The Armed Forces are at a crossroads. There has been vigorous debate since the Cold War over the nature of future war. This article identifies four major positions in that debate and argues that each represents not only a possible future, but a likely one. The sign at the crossroads points in four directions and the future lies each way. No wonder the controversy seems inconclusive.

Debates on future wars and other military operations are usually set against the inherited (or legacy) image of war. Proponents of various persuasions argue that a particular scenario portends the future. They usually contend with conservatives who they cast as unwilling to change rapidly enough to prepare for their view of the future. The argument is about which future to prepare for.

The argument that there is only one likely future leads to premature closure and narrowing of options as force planners and doctrinal scribes sense the pressure to translate hazy guesses into concrete designs. Accordingly, this article argues that one should recognize that multiple futures are possible and likely to occur simultaneously. Moreover, the future will not be one-dimensional but rather multidimensional. How should we prepare for these multiple futures?

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The four positions on the future currently being debated in defense circles can be identified as systemic war, cyberwar, peacewar, and dirty war. These labels are exaggerated, but they reflect the nature of the debate. To them must be added the legacy

position or mechanical war.

Mechanical war—the legacy position—characterizes the recent past of the Armed Forces. It conceives of war as a clash

change is unsettling because it could alter the relative importance of the services and various warfighting communities



of massed armor and tactical air, with deep strikes to weaken enemy will, along the lines of Operation Desert Storm.

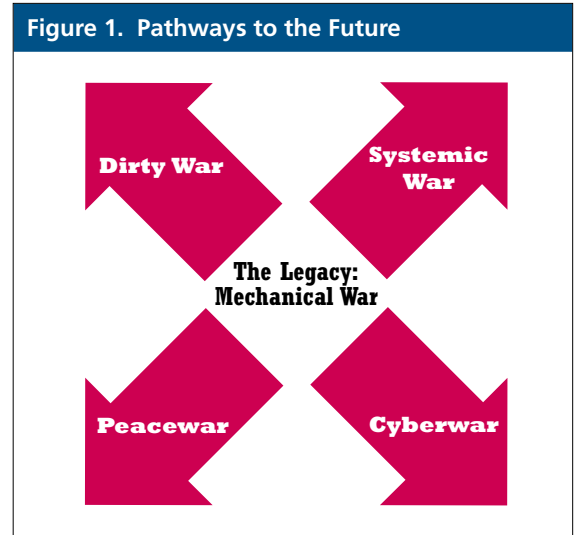
It is an image with roots in World War II, one that has done a great deal to determine the self-image and identity of much of the U.S. military today. It is a conservative notion in the literal sense, though that does not necessarily make it wrong.

Post-Cold War force planning exercises reinforce

this image. Adopting canonical scenarios of conflict for the Persian Gulf and the Korean peninsula are comfortable because they resonate well with traditions of both the Cold War and Desert Storm. Many are content with the legacy image because it is deeply rooted in history. In addition, there are powerful organizational pressures to stick with a concept that replicates a familiar force structure. Change is unsettling, not least because it could alter the relative importance of the services and various warfighting communities.

Four Images

While no graphic representation can do full justice to varied and complex visions of warfare, the following figure displays the four principal images and suggests why the debate is so contentious and difficult to resolve.



Systemic War. This image anticipates a future in which war will be fought with missiles, precision-guided munitions, and space-based assets. There are differences among the proponents over which weapons and platforms will predominate, with some advocating small and distributed systems and the more conservative stressing a continuing need for large systems. Some emphasize the role of information networks to connect sensors, shooters, and decisionmakers. All agree that a quantum leap in microchip technology will mean ever-smarter bombs and bullets. The notions of a system of systems, network-centric warfare, parallel warfare, and a digitized battlefield epitomize versions of the systemic warfare image. This view of war is incorporated in *Joint Vision 2010*.

Cyberwar. An equally technologically-oriented image is cyberwar, a soft power image in which conflict is waged by combatants at computer terminals. These (often civilian) infowarriors hack into enemy computer systems to disrupt financial flows, communications, and public utilities. In its purest form, this image of future war does not see the enemy being attacked with bullets and bombs. Rather, manipulation of information suffices to inflict sufficient damage to bring about the desired endstate. In a less extreme version, cyberwar is perceived as part of larger operations that combine other warfighting techniques. Computer attack and defense support the wider struggle for information superiority.

Both images stress technology and are compatible with the notion of a revolution in military affairs. There are cogent reasons, however, for considering cyberwar as sufficiently distinct from systemic war to warrant treating it separately. The difference between systemic war and cyberwar is largely the type of weaponry employed. Systemic war is about getting bombs on target and uses advanced technology to gather intelligence, command and control forces, and strike with precision. The objective is to kill, destroy, disorganize, or disable through physical means. Cyberwar, on the other hand, attacks through interference with electronic communication systems. Someone sitting at a computer terminal hacks into enemy banking systems or power grids, thereby creating chaos. Both systemic war and cyberwar are high tech. But the former uses bombs and bullets (or their future equivalents) and the latter does not. Moreover, cyberwar is not simply a subcomponent of systemic war, according to its proponents; it can be a distinct way of waging conflict.

Peacewar. The other images—not ignoring technology—stress the importance of soldiers. The more obvious is peacewar which captures the ambiguities and shifting boundary between war and military operations other than war. Terminological changes, and the examination by the Army in FM 100-5, *Operations*, of whether all military efforts can be conceptualized as operations, point to the problem of precisely distinguishing between peace and war. The prevailing image has soldiers, more or less equipped as today, engaging in a range of low-intensity constabulary duties. Technological advances are marginal. The extent to which space-based intelligence, surveillance, and reconnaissance (ISR), airpower, and microchips assist troops engaged in peacewar operations is debatable, but the basic image is boots-on-the-ground. It is a manpower-intensive concept.

Dirty War. The remaining image lies on the hard-power end of the spectrum and is closer to the systemic war image of high-technology warfare. It is the dirty war image. Numerous thinkers from Samuel Huntington to Ralph Peters have argued that future conflicts will pit the United States against a motley collection of nonstate actors. Such conflicts are likely to be between civilizations, or between civilizations and barbarians. This image is based on a generally pessimistic observation about the forces of primordialism in the world today. These themes combine to present a pessimistic view of human nature as prone to irrational hatred and violence, extrapolating present ethnic and religious conflict into a future in which failed states abound and non-state actors become central. According to this image, fire must be met with fire. High-tech forces of the systemic warfare

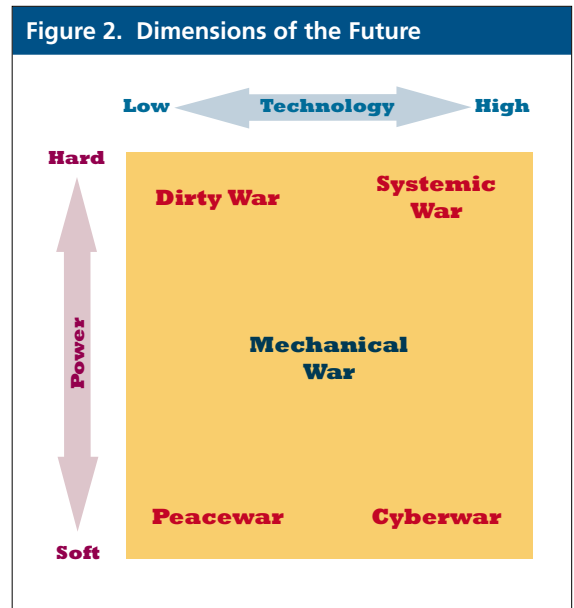
school are likely to be inappropriate and may be faced by a variety of asymmetric responses. Thus the United States would be advised to enhance its elite forces. Small highly-trained, self-reliant units would wreak havoc on an enemy. A variant is international terrorism by both state and nonstate actors, possibly with the use of weapons of mass destruction.

Dimensions of the Future

The four images of future war can be plotted along two dimensions: high/low technology and hard/soft power. Behind the crossroads sign lies a two-dimensional space which is useful for mapping positions on future war (see figure 2).

There are, of course, many intermediate and mix-and-match positions as well as others that simply cannot be found on a conceptual map which characterizes highly sophisticated and carefully qualified arguments. Nevertheless, these images are useful because that is how many people think about future war and because they enable us to describe the contours of the current debate.

In addition to strong pressures to maintain the existing way of war, proponents of change are pulling the Armed Forces in opposite directions. It is common, particularly by hindsight, to see change as unilinear. Looking back at technological and organizational change one assumes that things had to go in a particular way. It is by no means certain that this is the case. Certainly many involved in the process usually discern numerous distinct pathways to the future. This is definitely the situation today. Nor can it be assumed that only one course is true. The future will evolve in all directions simultaneously. Thus



Kosovar refugees
arriving at McGuire
Air Force Base.



305th Communications Squadron (John Sidonak)

each advocate of change is partially correct. The challenge will be designing future forces that can integrate elements of these four futures as well as develop the best transformation strategy for legacy forces.

Force Structure

The goal should not be to create a military after next, but rather four militaries after next, corresponding to four visible futures. These organiza-

tions will be quite different from the current structure of the Armed Forces. Attempts at optimization in a situation of multiple futures will push an organization in different directions. This is likely to be harmful.

Either the organization will be ineffective or one image of the future will dominate and exclude the others. The question for the United States must be how to design forces that are optimized for flexibility rather than for specific scenarios. It is time for a fresh look at the entire military establishment.

One possibility must be ruled out at the outset. The United States cannot optimize forces and doctrine as it would under a single scenario. Optimization is the solution only if the problem is known. When it is poorly defined the ability to respond flexibly is more important. If one accepts that more than one future is likely, then the design

issue is recognizing trade-offs and maintaining the ability to balance and shift between requirements. Why not simply make the current structure more flexible? After all that is what prescient leaders and analysts are advocating. But any such effort, although serious, will be limited. Flexibility is best achieved by changing organizational structure. Organizations tend to be good at one thing and one thing only. Facing four simultaneous futures, the Nation will probably need four organizations or organizational clusters. This means a radical transformation of the four services, far beyond current concepts of jointness. New organizations should increase the ability to hedge against emerging threats and respond to unfolding situations. The solution is breaking down traditional patterns of resource allocation, promotion, and thinking about war, no easy task. Organizational shake-up is the obvious way to start.

Given the opportunity to redesign the military establishment from scratch, it is not clear that one would create an Army, Navy, Marine Corps, and Air Force. One should not assume that the existing services or unified commands are the best way to organize to fight. It might be sensible to form a dedicated organization for each future scenario. Thus one would create a highly capable precision strike force for systemic warfare, a cybercorps for cyberwarfare, a constabulary force for peacewarfare, and an unconventional/special operations force for dirty warfare.

A powerful strike force will be required to deter potential enemies and put muscle behind forces involved in either peacewar or dirty war. This strike force should be truly joint. It should operate as a separate permanent command, ready for use in any theater of operations on the globe. This force will embody the systemic war notion and be capable of rapid global power projection, close to the intention of *JV 2010*. Most of its budget should be earmarked for experimentation and innovation. This force will be the most expensive component of the Armed Forces.

The cyberwar corps will be small, relatively inexpensive, and staffed by a mix of military personnel and civilians who will be indistinguishable from one another. The prized qualities of its personnel will be intellect and imagination. Together with computer engineers, the cyberwar corps will consist of anthropologists, political scientists, and psychologists. Many will operate from think tanks rather than traditional organizations and serve on an ad hoc basis for specific operations.

Large constabulary forces will be needed for peacewars. Unlike forces presently deployed to Bosnia, Kosovo, and elsewhere, they will be an amalgam of light infantry, civilian police, relief

attempts at optimization in a situation of multiple futures will push an organization in different directions

F-117 leading formation, Southern Watch.



1st Combat Camera Squadron (Greg L. Davis)



Fleet Imaging Command, Pacific (Chris Desmond)

Fleet Battle Experiment Echo.

workers, and especially civil affairs and political military specialists. They will likely draw on the dirty-war personnel from time to time and need to borrow some muscle from the strike force. The constabulary force will probably resemble the Coast Guard in organization in that it will only come under the control of the Department of Defense when deployed.

The United States will require elite light infantry forces to fight dirty wars. They must be larger than current Special Forces and probably will be employed on long-term missions as well as for crises. Ranger units may be attached to dirty war brigades with access to high-tech C⁴ISR and logistics capabilities and call on precision strike capabilities from other elements. Dirty war forces will combine Special Operations Forces, some functions currently covered by the Marine

Corps, and beefed up intelligence forces. They will have strong ties with civilian law enforcement agencies and intelligence organizations and be linked to civilian crisis response forces. It will have bonds with a vast array of both governmental and nongovernmental organizations.

The need for armored formations—a legacy notion that should be discarded—will be slight in the new force structure. To hedge against the need for them, current armor should be assigned to the Reserve components, with only a single armored division and a mechanized infantry division in the active component. These two divisions might be merged with the bulk of the Marine Corps, with the remaining balance of that service going to the dirty war brigades.

The Cultural Challenge

The obvious objection to the kind of force structure outlined above is that only the strike force will be real warfighters. Their only competitors in the macho world will be unconventional warriors of the dirty wars. This is a serious problem. The historical legacy and present culture of the military will make the strike force the most prestigious component of this new structure. This,



Defense Intelligence Agency (Joseph M. Juarez)

Monitoring trouble at National Joint Intelligence Center.

after all, is what war is about, at least for those who think the future will be an extrapolation of the recent past. Dealing with this cultural lag will be a major challenge for the Armed Forces.

On the other hand, the current structure cannot fulfill the images of future war. Indeed, the present debate over roles and missions involves uncomfortable mismatching between the services and images of the future. For example, there are pressures on the Army to move more into peace operations, nationbuilding, and humanitarian assistance—the peacewar image of the future. But if the Army becomes the peacewar force, it must forge a new identity and define the organizational interests which fit these kinds of

there seems to be a drift in force structure as the services seek missions that preserve their institutional integrity

operations. Historically, the identity of the Army has been tied to warfighting. Combat, particularly by large armored units, has defined the Army, not the sort of constabulary role associated with peace operations (which, coincidentally, characterizes much of its history). The concern over reconciling peace operations and warfighting crops up in myriad ways, from operational tempo, to force protection, to arguments that the best peacekeeping force is heavy armor. There is a budget imperative to embrace peacewar, and the Army has sought to do so with the least disruption to its legacy position, mechanical war. The focus has been to assimilate peace operations within force requirements for conventional warfare. For peace

operations, it is argued, are just like other operations. They can be given precise objectives, the notion of decisive victory can be employed, and heavy mechanized forces can be adapted to the task. Yet despite this rhetoric there remains a serious tension between the two images and that tension will continue.

Like the Army, the Marine Corps must cope with a range of possible futures. Its response has been the imaginative notion of the three-block-war, a very sensible attempt to grasp the variety of future operations with a single image. Nevertheless, the Marines still straddle diverse roles and missions and must deal with several futures, each leading in a different direction. While the Corps has an inclination for mechanical war, it is also headed toward peacewar and dirty war.

On the other hand, the Navy and Air Force are moving heavily in the direction of high tech. Both have embraced systemic war. At the same time, they are endeavoring to show how high-tech methods of stand-off precision strike are appropriate to the complexities of peacewar and dirty war. In terms of the “Dimensions of the Future” shown in figure 2 (page 30), the Navy and Air Force are being pulled to the top right, the Army is being pulled to the lower left. The Marine Corps is being pulled to positions on the left, dirty war and peacewar. If these trends continue, the gaps between the services will widen.

There seems to be a largely unconscious drift in doctrine and force structure as the services seek missions that will preserve their institutional integrity, while staying in tune with the dominant doctrinal future—systemic war. Competition of this sort might be healthy, but it also runs the risk of leading to a force structure driven by efforts to preserve service autonomy.

Planners should ensure that forces are tailored for each future, and not cobbled together in ad hoc packages. Forces developed for one future should not be the element of choice for other futures. No single force structure or weapon is universally applicable. Shifting resources between organizations will enable the Nation to respond to changing circumstances. Managing resources, however, will be a real challenge.

Command and Control

The implications of these images of future war for command and control are distinct and controversial. Command and control issues for systemic war have been extensively deliberated. With individual units able to obtain a full view of the battlespace, how should the decisionmaking hierarchy function? Should decisions devolve down or should top leaders make all the decisions? Networking computers enable everyone to

see the entire battlefield: but the ramifications of this for command and control are unclear. With complete information, a case can be made that top leaders should make all key decisions, leaving subordinates little discretion. On the other hand, if lower-level commanders see the big picture, they can act rapidly to achieve operational goals, providing they understand them. The choice between these two styles of command and control is unclear.

Command and control arrangements for peacewar are equally problematic. For example, some observers have noted that in peacewar operations a junior officer or noncommissioned officer on the ground may have to make a decision with diplomatic consequences. This is inappropriate. If soldiers on patrol or marines at a checkpoint have to take actions that have serious political ramifications, why not have a colonel who is a political military specialist along? Perhaps senior officers with such expertise should command small units in these situations. Of course this change would radically alter existing military hierarchies. But organizations must change to meet new roles.

At the same time, the complexity of decisionmaking in a joint civilian-military environment is increasing enormously. Moreover, many peacewar operations are multinational with diverse political agendas at play. Military commanders are likely to be subordinate to civilians. The way decisions are made and who makes them may not follow classic military (mechanical war) models. There will be a need to move from deliberate planning to ad hoc improvisation, and from command to negotiation and coordination.

Peacewar, dirty war, and cyberwar also offer unique challenges to command and control. For most of U.S. history the military has conducted operations using a rather arbitrary distinction between political/strategic and operational decisions. Under this procedure, commanders in the field make operational decisions without undue interference from civilian leaders. The distinction is arbitrary; it has worked more or less well in conventional military operations in part because of distance and time lag. In future military operations, particularly dirty war and cyberwar, it will be increasingly difficult to neatly separate purely operational decisions and politico-strategic decisions. Either field commanders will need additional political education or command and control systems will have to be radically repackaged.

In dirty war, elite forces will frequently operate in small groups. Will they be connected to their superiors through improved communications or exercise considerable autonomy? Here, as in peacewar, problems of civil-military relations

are likely to emerge. How will military units relate to law enforcement and intelligence agencies? What will be the role of military units in operations within U.S. borders?

If command and control issues present novel problems for future war, cyberwar problems are more complex. It may be unclear whether an attack is actually occurring and who is behind it. Civilians may not be bystanders—as in mechanical war—but active players in the cyberbattlefield. Cyberwar needs few traditional military skills. Nearly all required skills are available in the civilian labor force. Suppose such civilians are preferred over military operators? Has anyone figured out how to exercise command and control over civilian infowarriors sitting at computer terminals?

There is considerable uncertainty about the future of command and control systems, which are likely to evolve in ways that differ from traditional modalities associated with mechanical war. Just as warfare will move in four profoundly different directions, so will command and control.

Much of the debate over future war has been misguided. Many assume that their particular image will come to pass and that proponents of other positions are wrong. Getting the future right matters since decisions on force structure, doctrine, and weapons acquisition follow. One should bear in mind Michael Howard's warning that doctrine developers are almost certain to get it wrong and that we must have the organizational flexibility to get it right when the proverbial balloon goes up. The search for the right answer will only be feasible if the problems are clearly identified and the organizational tasks are specified. This is unlikely in the near future.

There are constant reminders that we must prepare for an uncertain world. The best way is to recognize that there is merit to every position in the debate over the future of military operations. We are at a crossroads. The sign is pointing in four quite different directions. The Armed Forces face multiple futures and must prepare for all of them. But they cannot efficiently do so under their current structure. It is time to rethink the entire organizational basis of the military establishment. Once the debate on roles and missions has been resolved by creating a new organization for each major mission, the thorny issue of joint requirements can really be addressed. **JFQ**

JFQ

1998–1999 Essay Contest on Military Innovation

We use the term revolution in military affairs (RMA) a lot today. It comes up in briefings at the Pentagon. Journalists and academics write about it. We discuss it within the Armed Forces and with military leaders from other nations. That is as it should be, for RMAs can be disturbing. They demand considerable debate and dialogue if we are to master them. So what is the current RMA? Where does it stand today? And where will it go?

[T]he revolution is alive, healthy, growing, and stirring the debates, insights, and passions which accompany rapid and significant innovation, especially in the United States. Indeed, the world will increasingly refer to the “American” RMA, for while military thought outside this country reflects some aspects of what is underway, it is here that the discussion is deepest and the technologies that drive the revolution are most robust. And it is here that the integration of those technologies with each other and with military organization and doctrine has already begun.

—Admiral William A. Owens, USN,
writing in *JFQ* (Winter 1995–96)

[EDITOR'S NOTE: The articles contained in this *JFQ* Forum represent the winning entries in the 1998–1999 Essay Contest on Military Innovation. First place went to Lieutenant Colonel James R. Reinhardt, USA, Major Jonathan E. James, USAF, and Lieutenant Commander Edward M. Flanagan, USN, for “Future Employment of UAVs—Issues of Jointness.” Second place resulted in a tie between James D. Perry for his essay, “Air Corps Experimentation in the Interwar Years—A Case Study,” and Major Kevin J. Dougherty, USA, for an entry on “The Evolution of Air Assault” (the latter was also recognized as the best essay by an officer in the rank of major/lieutenant commander or below).

For details on the 1999–2000 essay contest, see the display advertisement on page 117.]

Global Hawk over
Edwards Air Force
Base.

**ESSAY CONTEST
ON MILITARY
INNOVATION
1998-1999
FIRST PRIZE**

Future Employment of UAVs

Issues of Jointness

By JAMES R. REINHARDT, JONATHAN E. JAMES, and
EDWARD M. FLANAGAN

Unmanned aerial vehicles (UAVs) and their armed counterparts, uninhabited combat aerial vehicles (UCAVs), are poised to reshape the battlespace by either reducing or eliminating the need for manned aircraft in dangerous situations. How these systems are deployed—haphazardly or synergistically—will determine whether they are truly revolutionary or merely expensive toys. The

simultaneous goals of increasing munitions lethality and reducing friendly casualties can be realized by UAVs, but the approach to developing and employing them must balance requirements of both the joint community and the services.

A variety of considerations portend a more sparsely populated battlespace. While generally supportive of recent military operations, the public is increasingly adverse to the risk of casualties and prefers to substitute technology for lives. As *Joint Vision 2010* makes clear, "The American people will continue to expect us to win in any engagement, but they will also expect us to be more efficient in protecting lives and resources. . . ." This expectation is one result of the Persian Gulf War and assumes that the Nation will leverage technological advances and precision weaponry

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to decisively defeat enemies without protracted conventional combat operations. Although this view is flawed, planners must limit both casualties and collateral damage.

Why UAVs?

One way to engage an enemy with minimum casualties is through the use of UAVs. They are the most visible members of the family of unmanned and autonomous systems either employed or under development. These powered aerial vehicles carry no human operators, use aerodynamic forces for lift, fly autonomously or are piloted remotely, are either expendable or recoverable, and carry both lethal and nonlethal payloads. But ballistic or semiballistic vehicles, cruise missiles, and artillery projectiles are not considered as unmanned vehicles. Often distinguished by their ability to deviate from a preordained flight path, UAVs respond to external command.

Unmanned systems have traditionally been employed in dirty and dangerous missions, and their development has proceeded along unique avenues of specialization. To date, their design has emphasized affordability, practicality (launch and maintenance), and recoverability. UAV missions in the past have included reconnaissance and surveillance, target acquisition, intelligence collection, and battle damage assessment. In the early 1960s, the Nation developed unmanned reconnaissance vehicles to overfly the Soviet Union because of the concern over the vulnerability of U-2 aircraft. UAVs were employed extensively for reconnaissance in Vietnam as well as to drop leaflets, collect signals intelligence, and support radar interference missions. They were rediscovered in the 1980s and gained prominence in the Persian Gulf War. The Army and Navy acquired Pioneer (a tactical UAV) to provide inexpensive, unmanned, over-the-horizon targeting, reconnaissance, and damage assessment. Six Pioneer systems (one Army, two Navy, and three Marine Corps) were deployed to Southwest Asia for Operation Desert Storm. They flew 330 sorties and logged more than 1,000 flight hours during the conflict. Together with the Air Force Predator, Pioneer also furnished real-time imagery of Bosnia for Implementation Force.

UAVs have proven their ability to provide near-real time reconnaissance and surveillance to commanders. They are tools for battle management, providing intelligence, and ultimately offering warfighters greater situational or battlespace awareness. They have proven effective in electronic combat support and battle damage assessment. Advanced technology is expanding these



Wreckage of Predator UAV, Bosnia.

55th Signal Company (Edward W. Niro)

roles and, in the future, UAVs will act as airborne data links, enemy radar jammers, chemical and biological weapons detectors, target acquisition systems, and finally precision air attack systems.

The Next Generation

Development of a lethal platform capable of precision strikes is the logical progression for future UAVs. They will not be limited to support functions such as reconnaissance. Affordability, smaller size, and reduced training time are leading to a new class of systems—uninhabited combat aerial vehicles—which are smaller than their manned counterparts. And, without occupants, there is proportionally more room for munitions load in UCAVs. That benefit is most evident in carrier operations where they would occupy only one-third of the flight-deck space of comparable manned systems. Twenty very large, carrier-based support aircraft could be replaced by an equal number of very small support UCAVs. This would create enough extra space on the flight deck to increase mission-ready strike aircraft count by 33 percent (from 36 to 48 aircraft). Another option would be to place UCAVs on other ships, allowing for more strike aircraft space. Even more noteworthy is the concept that “20 support UAVs could

be replaced one-for-one with vertical take-off and landing strike UCAVs, bringing the number of mission-ready aircraft to 63, nearly doubling the strike aircraft availability of the baseline *Nimitz*-class carrier air wing configuration.”¹

The advocates of using UCAV in an precision air attack role routinely cite the potential of high-speed, highly maneuverable platforms to outperform manned aircraft. Airframe designers can gain flexibility and increase airframe performance

when the limits imposed by human capacities are eliminated. Maximum G-force loading becomes a function of airframe structural integrity, not pilot limitations. In addition, cost and weight savings are realized

through the elimination of canopies, ejection systems, oxygen systems, and other components required in manned combat aircraft.

Fatigue is not a factor; remote pilots can be rapidly replaced. Extended flight times become possible, particularly if savings in weight make aircraft more efficient. One potential employment of UCAVs capitalizes on the ability to loiter for long periods. This concept, known as air occupation, is described as the capability to hold an enemy at risk from either lethal or nonlethal effects from the air. UCAVs could afford a nearly permanent presence over an enemy, providing a continuous stream of intelligence while simultaneously delivering a lethal payload in seconds.

One UCAV system being explored by the Defense Advanced Research Projects Agency as the

Air Force Unmanned Combat Air Vehicle Advanced Technology Demonstration is intended to demonstrate the technical feasibility for a man-in-the-loop system. It will be designed to affordably suppress enemy air defense/strike missions in the next century within emerging global command and control architectures. It is envisioned that in the midterm UCAVs will serve as force enablers by suppressing enemy air defenses and performing punitive strike missions in support of manned aircraft. As concepts and technologies mature, UCAV roles and missions can be expanded.

Two primary development guidelines are mission effectiveness and affordability. UCAVs have the potential to significantly reduce acquisition as well as operation and support costs. They can be manufactured for an estimated one-third less than manned aircraft, and costs could be cut by 75 percent. Eliminating the pilot will allow manufacturers to take advantage of new technologies and designs to build smaller, more affordable systems. Lower operation and support costs can be achieved since it will no longer be necessary to maintain pilot proficiency. Simulators will allow UCAV controllers to train and maintain their skills.

The controller (man-in-the-loop) is key to UCAV development. “Human-system interface is critical in order to allow the mission control team the information and control methodology to efficiently operate multiple UCAVs in a dynamic battlespace.”² The mission control station will be a

**fatigue is not a factor;
remote pilots can be
rapidly replaced**

**Unmanned surface
vehicle.**



no credit



Pioneer I RPV taking off from *USS Iowa*.

central component of the UCAV system. It will exercise command, control, and communications and conduct mission planning and execution, including targeting and battle damage assessments. To effectively accomplish this, the systems will take maximum advantage of on board and external intelligence assets. While UCAVs must be capable of self-defense and responding autonomously to pop-up threats, decisions to target and employ lethal weapons will be made by a mission control team. Simply stated, the rules of engagement will be controlled by humans, in part to mitigate the unsettling idea of uncontrolled aircraft deploying weapons autonomously.

The objective of UCAVs is not to eliminate the human factor but to locate the pilot outside the aircraft. Exploiting this technology will permit the development of more cost-effective systems capable of performing missions for which manned aircraft are either capable or appropriate. In the near future, UCAVs will not replace, but rather operate with, manned systems. Their capabilities and reusable platforms will fill the gap between cruise missiles and manned aircraft.

Some proponents urge developing a system that does not rely on precision-guided munitions but on the precision delivery of dumb bombs to cut costs. Precision delivery would suggest low-altitude flight, with aircraft security provided by

both stealth characteristics and an ability to escape in high-G maneuvers that cannot be matched by manned aircraft. A single operator should be able to give orders to many UCAVs that would operate nearly autonomously, not through remote teleoperation. Links to off-board sensors, perhaps fielded by other UAVs, would provide data to adjust to last-minute battlespace changes.

UAVs have demonstrated their utility, albeit in support roles rather than frontline combat. They give the operational commander a reliable means of reconnaissance in an environment where space-based or high-altitude reconnaissance aircraft are ineffective because of weather conditions. Moreover, they can perform missions in circumstances where political sensitivities or combat risks preclude the introduction of U.S. military personnel.

A Joint Future?

While using unmanned systems in combat is not new, what will be new in the foreseeable future is how such systems are used. Simply possessing a given technology does not suffice to be truly revolutionary; aircraft carriers, for example, were in service well before the full implications of carrier warfare were realized. A truly innovative approach to employing a new system requires concurrent doctrinal, organizational, and technological changes that affect planning, equipping, and training military forces. Development of UAVs has proceeded along the lines of traditional

service roles and operating environments thereby building on core competencies.

Proposals for unmanned systems for air-to-air combat or air delivery of munitions have generally originated in the Air Force, while Navy systems are optimized for a maritime missions. Not every system must be joint. Each should be designed to perform specific missions well rather than a variety of tasks marginally. Cost savings are often lost when systems receive gold-plated add-ons during development, ostensibly to enhance capabilities. Yet the fact that the services have historically embarked on different courses concerning UAV research, development, and acquisition can hardly be considered an advantage. When service requirements converge—such as intelligence and reconnaissance capabilities—interservice compatibility is desirable. This reduces both research and development and acquisition costs, facilitates communication and information exchange, and simplifies command and control challenges. The question is whether one or two general-purpose systems can be developed that are capable of responding to an array of requirements.

missions can be undertaken that are highly risky for a manned approach

Jointness extends beyond procurement. Its goal is battlespace synergism. All components acting together have a greater effect than if they operate independently. And jointness is more than simply interoperability, though that is a vital start. Interoperability is generally related to hardware systems with common operating protocols. Jointness embraces doctrine, organizational structures, matériel, training, personnel management, and leadership development.

UAVs support several fundamentals of joint warfare iterated in Joint Pub 1, *Joint Warfare of the Armed Forces of the United States*. Unity of effort and the concentration of military power is achieved through multi-axis attacks by ground- and sea-based UCAVs operating in deconflicted airspace. Knowing your enemy—a major canon of warfare—is greatly enhanced by effective use of UAVs in surveillance and reconnaissance. Common-user interfaces for data dissemination will facilitate the flow of information to warfighters, regardless of their service. Joint mission planning will reduce duplication of effort, freeing UAV assets for other missions.

UAVs can give commanders greater freedom of action, another fundamental. The range of options available to commanders is enhanced by UAVs since missions can be undertaken that are highly risky for a manned approach. This ability to assume risk can also help commanders seize and maintain the initiative, keeping an enemy perpetually off balance.

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A first step in developing protocols and doctrine to enable UAVs to meet the challenges of joint operations is the Tactical Control System, currently under development and testing. It will provide the common operating environment and shared protocols for the Air Force Predator, Army Hunter, and joint Outrider UAVs. Flight controls and payload commands will be standardized and the system will have five levels of scalable interaction, from receipt of retransmitted data through actual control over launch, recovery, flight, and payload.

Joint doctrine for UAVs is limited to tactics, techniques, and procedures that are applicable to systems in operation (that is, employed on the tactical level for surveillance and reconnaissance) and is found in Joint Pub 3-55.1, *Joint Tactics, Techniques, and Procedures for Unmanned Aerial Vehicles*. It is outdated and does not reflect the capabilities of current systems, much less those under development. It views UAVs solely as force multipliers or support vehicles. It also does not address UCAVs or more advanced surveillance craft.

Much must be done to develop joint doctrine for UAV operations. Common operating systems and shared protocols reduce development and procurement costs by providing economies of scale. Doctrine can reduce mutual interference and offer solutions to problems of information flow. Jointness should not extend to abandonment of traditional areas of responsibility. In sum, the advantages being sought in joint integration, including unity of effort and the concentration of military power at decisive points, should also guide the employment of unmanned systems.

However, an argument frequently leveled against jointness is that it overshadows legitimate approaches to innovation by individual services. Soldiers, sailors, marines, and airmen regard the battlespace from varied perspectives. It is not the aim of jointness to eliminate those perspectives, but rather to draw on their unique qualities to provide a synergistic, highly integrated, and seamless fighting mechanism. Joint Pub 3-55.1 makes that point explicit: “care must be taken to distinguish between distinct but related responsibilities in the two channels of authority to forces assigned to combatant commands. The military departments and services recruit, organize, train, equip, and provide forces for assignment to combatant commands and administer and support these forces.” New UAV systems must be conceived, developed, and provided to the combatant commanders.

Innovation springs from competition among services for roles and missions, and ultimately for resources. Each service has proven successful at

Predator UAV.



innovation, and a healthy rivalry among them has been a catalyst. Thus the danger of overemphasizing joint culture is that it could limit thinking or result in groupthink. “The differentiation of service cultures is inevitable, bred by the physical environment in which soldiers, sailors, and airmen operate. It is also highly desirable.”³

A joint activity should carefully analyze every proposal with the object of ensuring cross-service fertilization of ideas that will enhance interoperability and jointness in the resulting fielded systems. A single joint organization tasked to conceive and perform research and development on UAV platforms will result in fewer ideas for discovery and less innovation because it will tend to focus on a few concepts it feels are important. If each service has its own organization, more ideas are likely to surface. Obviously relieving the services of their role as providers and replacing them with a centralized joint organization would be harmful to creativity and ensure that UAVs remain in their present role of limited support.

Unmanned combat technology has arrived. It is not necessarily expensive or complicated. Potential enemies can use rudimentary systems asymmetrically—perhaps in concert with weapons of mass destruction—to threaten our forces. To maintain an advantage UAVs and UCAVs should

be regarded as elements of a system. It is incumbent on the United States to take the lead in this area lest it falls prey to an enemy which can capitalize on technology more successfully. **JFQ**

NOTES

¹ Bruce W. Carmichael, “Strikestar 2025,” *The DTIC Review*, vol. 4, no. 2 (September 1998), p. 1.

² Defense Advanced Research Projects Agency, “Unmanned Combat Aerial Vehicle (UCAV) Advanced Technology Demonstration Solicitation,” March 9, 1998, p. 7.

³ F.G. Hoffman, “Innovation Can Be Messy,” *U.S. Naval Institute Proceedings*, vol. 124, no. 1 (January 1998), pp. 46–50.

Boeing Y1B-9A
bomber escorted by
Boeing XP-26.

ESSAY CONTEST
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INNOVATION

1998-1999



SECOND PRIZE

Air Corps Experimentation

in the Interwar Years—A Case Study

By JAMES D. PERRY

American military aviators wrestled with the implications of airpower in the interwar years. After its establishment in 1926, the Army Air Corps investigated new technology, organizations, and tactics. Experiments took place in many contexts—during annual maneuvers and at the initiative of commanders in the field—with multiple purposes, including gaining publicity for the Air Corps. While these experiments were effective, the Air Corps had no mechanism to analyze, disseminate, or institutionalize lessons

learned. Consequently, many had to be relearned after Pearl Harbor. This article examines experiments on two basic missions, interception and precision bombing.

Air Corps experiments were designed on both a top-down and a bottom-up basis. Annual service and joint maneuvers were organized from the top down. The Office of the Chief of the Air Corps (OCAC) planned maneuvers, frequently referring problems to the Air Corps Tactical School (ACTS) for further study. Such experiments had the least scope for open-ended exploration since OCAC had to negotiate with other parties such as the Navy. However these top-down experiments served a secondary purpose by stimulating the industrial base. Liberal orders for prototype

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aircraft for use in experiments helped implement the Air Corps Act in 1926 which promoted the creation of design and engineering staffs by aircraft companies.

Meanwhile, commanders in the field designed and executed bottom-up experiments. Since the Air Corps was small, its officers knew one another well and conducted wide-ranging debates at ACTS and through correspondence on airpower employment. Moreover, operational tempo was low and there were few of what today are known as military operations other than war. There was also ample opportunity to conduct experiments and explore new technology. Bottom-up experiments proved more exploratory than top-down annual maneuvers.

Interception Experimentation

Air superiority was considered to be a prerequisite for attack and bombardment missions. In 1920 Billy Mitchell asserted that pursuit—clearing the skies of enemy bombers—was “the most important branch of aviation” and calculated that an air force should consist of 60 percent pursuit, 20 percent attack, and 20 percent bombardment.¹ Maneuvers at this time confirmed that daylight attack and bombardment would be hampered without control of the air. Official doctrine concluded that bombers opposed by enemy fighters required friendly escorts.

In the late 1920s, however, the outlook for the Air Corps began to change. Maneuvers held in 1927–28 were one-sided demonstrations and staff exercises, not experiments. Recognizing the merits of an opposition force, the Air Corps conducted the first two-sided maneuver in 1929. This and subsequent annual maneuvers pitted pursuit against bombardment, and some officers involved drew broad conclusions about the superiority of the latter.

The 1929 maneuvers consisted of a meeting engagement between a small opposition force in Columbus, Ohio, and a larger friendly force in Dayton. In the opening phase the opposition and friendly forces struggled for air superiority, attempted to interdict ground troops (represented by colored canvas panels), and attacked the enemy rear. ACTS umpires flew with both opposition and friendly forces, adjudicating losses by means of simple numerical rules.

Major Carl Spatz (who later changed the spelling of his name to Spaatz) noted that frequently “bombardment and attack planes were able to reach objectives without being seen by pursuit.”² Pursuit was repeatedly surprised by bombardment, and the chief umpire and assistant ACTS commandant, Major Walter Frank, concluded that the air force of the future would be primarily offensive.



There is considerable doubt among the umpires as to the ability of any air organization to stop a well organized, well flown air force attack. . . . The difficulty that pursuit had, not only in attacking, but in finding some of the missions that were sent into hostile territory during these maneuvers, would make it appear that a well planned air force attack is going to be successful most of the time.³

The 1930 maneuver focused on the defense of San Francisco against a combined ground and naval assault by an alliance of European powers and Japan. In the scenario, opposition forces seized a foothold in Pennsylvania and damaged the Panama Canal, then bottled up the Pacific Fleet in San Francisco Bay and invaded California. The mission of the friendly force was to concentrate at Mather Field, attack opposition ground forces at Stockton, and defend San Francisco against opposition naval attack. Some 130 fabric-covered biplanes were assembled for the exercise.

The Assistant Secretary of War announced that one purpose of the maneuver was to “test methods of radio communication . . . between planes in the air.” The Air Corps wanted to know whether bombardment and attack planes could send SOS calls to planes many miles away. Previous maneuvers had revealed an inability of escort planes to locate attacking bombers and indicated that radio should solve this problem.⁴ The major accomplishment of this maneuver was maintaining continuous radio contact between a bombardment squadron and its escorts for the duration of a simulated bombing mission. The Chief of the Air



Courtesy U.S. Air Force History Office

Joint maneuvers off
Long Island, May 1930.

Corps, General James Fechet, personally directed the maneuvers of escorts from a LB-7 bomber.

Beginning in 1930, the tide turned strongly in favor of bombers which enjoyed priority in terms of limited funding. Bomber technology soon surged ahead of fighter technology. New B-9 and B-10 bombers—stream-

lined, all-metal monoplanes with retractable landing gear—could outfly fighters. Further experiments appeared to support bombardment over pursuit, and the theory that daylight bombing required no escorts assumed the status of dogma. Sadly, conclusions reached during a time of rapid technological change were not revised in

light of new evidence and were not fully abandoned until their failure in the skies over Europe in 1943.

The Air Corps held its maneuvers in 1933 near Los Angeles, which had many airports and thus could simulate wartime dispersal of aircraft. Brigadier General Oscar Westover commanded General Headquarters (GHQ) Air Force (Provisional), formed to control all the forces involved. The exercise emphasized radio control over dispersed units. Westover explained to the staff that the objective was to “find the right way to handle the GHQ air force” and that he wanted a fair test. Each day units stood by for operations orders, which Westover issued by radio from his plane or his command post.⁵

During the exercises, three bombardment groups attacked Riverside and Los Angeles from San Diego. Three dispersed pursuit groups defended but relied upon information relayed from an observation group on patrol between San Diego and Los Angeles. Unfortunately, the observation group could not report contacts fast enough.

the tide turned strongly in favor of bombers which enjoyed priority in terms of limited funding

Several observation crews saw the bombers and radioed in reports at once. Still the planes continued, reaching their destination just before the pursuers caught up. With long wave radio sets it became necessary for observation planes to radio reports to the ground command at March Field. These reports were then relayed to the pursuit commander on the proper wave length. The process took over four minutes, long enough that the pursuers were late making contact with the bombers.

Pursuit failed again on May 17. On May 24, however, two bombardment groups attacked Pomona and San Bernardino, where two dispersed pursuit groups defended. In order to simulate an intelligence net, bombers reported their course, speed, and position periodically to the fighters. This enabled the pursuit commander to intercept one bombardment force well before it reached its objective and the other as it prepared to bomb its target.

Westover's report, however, ignored the impact of intelligence and radio communication while emphasizing the speed advantage bombers enjoyed over fighters:

The modern trend of thought is that high speed and otherwise high performing bombardment aircraft . . . will suffice for the adequate air defense of this country. The ability of bombardment aviation to fly in close formation and thus to insure greater defense against air attack . . . warrants the belief that no known agency can frustrate the accomplishment of a bombardment mission.⁶

The Air Corps not only trusted the merits of bombers over pursuit, but questioned the need for bomber escorts. Spatz believed escort fighters could never be as fast as interceptors because escorts would require a heavy gas load. The ACTS majority view was that "engineering reasons" precluded escort fighters from keeping pace with bombers and maintaining the capability to combat hostile interceptors (nevertheless, it recommended developing escort fighters as a matter of policy in November 1933.) Moreover, Lieutenant Colonel Henry ("Hap") Arnold concluded that pursuit equipment and tactics must be revised. He wrote that increased speed meant that interceptors could generally make only one pass against bombers, then reform for a long stern chase. Meanwhile, the bombers would reach the objective which had major implications: "If my premises are correct, it is obvious that pursuit tactics must be revamped or the pursuit passes out of the picture."⁷

Arnold circulated his ideas throughout the Air Corps. On reaching the school, they aroused the indignation of a pursuit instructor, Captain Claire Lee Chennault, who wrote an eight-page



Henry ("Hap") Arnold.

rebuttal to Arnold who wrote back to ask, "Who is this damned fellow Chennault?"

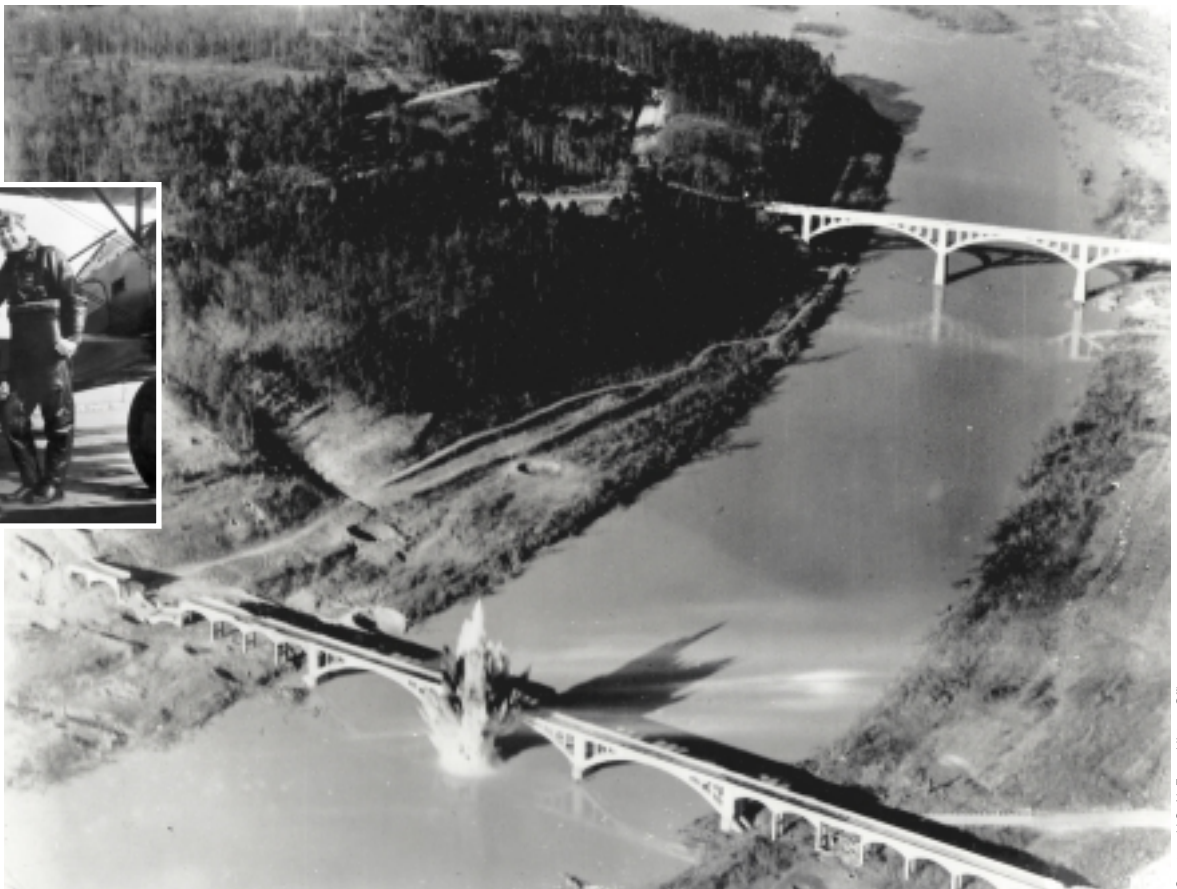
Chennault felt the Air Corps rigged maneuvers in favor of bombers in the 1930s: "All sorts of fantastic and arbitrary restrictions were placed on fighters in maneuvers that were supposed to simulate honestly conditions of actual combat."⁸ He alleged that the maneuvers pitted obsolete fighters against modern bombers. The fact that a certain fighter could not intercept a certain bomber was useless, according to Chennault. What the Air Corps needed was a list of necessary improvements in pursuit equipment and tactics. He claimed that the maneuvers placed too many limits on pursuit tactics—partly because no pursuit pilots were involved in planning maneuvers. Most importantly, intelligence-gathering—"a loose network of spotters who reported vaguely by telephone"—was inadequate. Interception using such a system was like looking for a needle in a haystack.

Captain Chennault "talked so loud and long about the necessity for an aircraft warning net, and providing radio intelligence to the defending fighters in the air, that another air force maneuver was held in 1933 at Fort Knox, Kentucky."⁹ It tested his proposed air defense warning system. A line running between Indianapolis and Cincinnati divided the friendly forces based at Dayton

Bombing bridge over
Pee Dee River,
North Carolina.



Claire Chennault
(center).



Courtesy U.S. Air Force History Office

and opposition forces located at Fort Knox. The former forces flew fast, modern bombers while the latter had slow, fabric-covered biplanes. Three regiments of antiaircraft artillery supplied guns, searchlights, and observers.

Chennault's warning system represented the heart of the exercise. It covered a 120 degree-wide sector centered on Fort Knox and radiating out towards Dayton with 69 observation posts at regular intervals. When planes were spotted, they telephoned fighter control at Fort Knox with the number, altitude, and course of the aircraft using a simple three-word code. This information was then plotted on a map. Opposition observation planes circled over the friendly base at Dayton, which had no defenses. These planes relayed their intelligence through a radio-equipped transport near Cincinnati.

Prior experience had shown that fighter control must receive messages within four minutes or pursuit would not be able to intercept. In this exercise, however, almost 1,000 messages were sent in an average time of 2.7 minutes. The opposition pursuit group commander kept his planes on strip alert and issued the scramble order via a public address system. Information

was updated by radio while the fighters were in the air. Clear, fast, precise reporting enabled the opposition to intercept friendly forces by day and night and at all altitudes. Most interceptions occurred between 25 and 50 miles from Fort Knox, and some bombers were intercepted more than once per mission.

In this exercise Chennault claimed that, "bomber boys set up a deafening clamor, blaming 'unfair conditions,' and began limiting the freedom of action of the defending pursuit force." But it was apparent that pursuit could intercept attacking bombers, given timely information, and that bombers required friendly escorts to prevent heavy losses and mission failure.

This maneuver constituted the basis for Chennault's textbook, *The Role of Defensive Pursuit*, which outlined a system that he later implemented in China. However he lamented that the lessons of this maneuver were "calmly ignored by the bomber boys who controlled the development of the Air Corps at that time and who were hell-bent for the Douhet air force of bombers only."¹⁰

the debate shifted from whether pursuit could intercept bombardment to whether it could press home the attack

This criticism is not entirely fair. The Air Corps continued to experiment with interception techniques, but the debate shifted from whether pursuit could intercept bombardment to whether it could press home the attack. Chennault had shown that pursuit could intercept, but the advocates of bombardment claimed that it could be effective against heavily defended bombers.

In another experiment at March Field in 1934–35 the bombers reported their positions when passing certain points to simulate a ground observation net. P-26A biplanes flew against fast B-12 bombers and 26 interception problems were studied. This measured “the time required [for pursuit aircraft] to issue orders and clear the air-drome” and “reach various altitudes.” Moreover, Arnold examined “the many echelonments and altitudes used for attacking elements, their relative positions with respect to the bombardment, and the order of attack by the elements.” It proved more difficult to find appropriate measures of effectiveness for tactical problems, but he suggested the wider use of gun cameras to determine if pursuit aircraft could down bombers in a defended formation.

The experiments, however, did not change Arnold’s view on interception. He continued to consider it “extremely doubtful if single-engine pursuit planes . . . can prevent a formation of modern bombardment planes from reaching their objective or destroy the planes either en route to or returning from their objective.”¹¹

Major B.Q. Jones reached entirely different conclusions. In 1935 two composite groups, each with a pursuit and a bombardment squadron, flew against each other in simulated combat for 27 days. Each combat aircraft was equipped with a gun camera, and the results were used to find “field exercise aces.”¹² Jones found bombers were usually attacked before reaching the objectives. Gun cameras revealed 194 bombardment planes were hit by pursuit, whereas 121 pursuit planes were hit by pursuit and 76 by bombardment planes (the exact number of sorties is unknown). This experiment even found the correct solution to the problem of insufficient pursuit range—the use of fuel tanks. While experimentation identified a critical technology in 1935, the Air Corps failed to perfect drop tanks until 1943. It clearly demonstrated the effectiveness of interceptors and the need for fighter escorts, but a truly effective long-range fighter escort was not in service until 1944.

A network of observers participated in an exercise in May 1937. Timely reporting enabled pursuit to intercept successfully, and cameras verified the results. In this exercise the P-26 pursuit aircraft had only a marginal speed advantage over B-10 bombers. Interception was difficult, even given adequate information, and P-26s usually managed only one pass at bombers. Pursuit found that rear attacks were too exposed to defensive fire, and side attacks were too difficult to execute. The best pursuit tactic—as the *Luftwaffe* discovered six years later—was the head-on long-range attack. Again, experimentation offered an opportunity to predict and defeat (through incorporation of chin turrets on B-17s) an enemy tactic long before the onset of hostilities, but the Air Corps did not institutionalize the proper lessons.

Precision Bombing

In 1927 North Carolina donated a reinforced concrete bridge across the Pee Dee River to the Army for experimentation. LB-5 bombers flew twenty missions a day against the bridge for five days. The target span was some 20 by 400 feet, and aircraft bombed from altitudes of 6,000 to 8,000 feet. Despite clear weather and no wind, the results were disappointing. On the first two days sand-filled practice bombs scored only two hits. Further hits and near misses with 300- and 600-pound demolition bombs did little more than chip the concrete. Eventually the bombers scored six hits with eighteen 1,100-pound bombs and destroyed the span.

During the operation the commander, Captain Asa Duncan, developed the dropping-on-the-leader technique. He found that when planes flying in formation released their bombs on a signal from the lead plane, they had a better chance of hitting targets than when flying singly or in pairs. This technique would prove invaluable during World War II. But accuracy remained a problem. It had increased five-fold between 1918 and 1927, though the experiment proved precision bombing was not yet a reality. Consequently, Fechet urged the development of a precision bombsight.

The need for a high-altitude sight only became apparent after a decade of experimentation. Aviators generally believed that low-altitude bombing was more accurate and destructive. In 1929 ACTS instructor Lieutenant Kenneth Walker studied this issue. When he asked ordnance officers and commanders for their views, they indicated that low-altitude bombing was highly inaccurate because of ricochets and navigational errors. Walker forwarded his finding to Fechet, who ordered an experiment at Aberdeen Proving Ground, where bombers flying at 150 feet achieved extremely high accuracy only when bombs penetrated buildings and stopped before

detonating. The problem with low-altitude bombing included the fact that bombs rolled, skidded, tumbled, and detonated on their sides with reduced effects.

Low-altitude delivery also reduced destructive power. Walker studied the Pee Dee River Bridge bombing, where both delayed- and instantaneous-fuzed bombs were used. Delayed-fuzed bombs, which buried in the earth, were many times more destructive than those that detonated on the surface. Moreover, since kinetic energy increased with the square of velocity, the best way to increase destructive power was not by adding mass, but by increasing the height

the Air Corps generally failed to learn from experiments conducted overseas in the 1930s

from which bombs were dropped. Walker concluded that delayed-fuzed bombs dropped from high altitude would be most effective of all.

Walker also learned that antiaircraft fire made low-altitude bombing more dangerous. As planes gained altitude, the accuracy of bombing and antiaircraft fire decreased; but the accuracy of antiaircraft fire decreased more rapidly. The experiments provided justification for the doctrine of high-altitude, daylight precision bombing, which crystallized between 1930 and 1932.

When Walker reached these conclusions, however, the technology to execute high-altitude precision bombing (the Norden sight and the B-17) did not exist. But he and fellow bombardment advocates refused to tailor doctrine to existing capabilities. Instead, doctrine drove developments in technology. Walker knew where he wanted to go and trusted American ingenuity to get there.

Lieutenant Colonel Clarence Tinker investigated bombing techniques at Muroc Dry Lake in 1936. His group with 27 planes tested different formations, altitudes, and speeds. Three methods of dropping bombs were employed: individual, on the leader by salvo, and on the leader in train. A precision target (300 by 30 feet) was etched in the lakebed, and the group practiced by making attacks on moving targets (three trucks simulated a ship moving at 30 knots). After each run the bomb patterns were plotted and the results compared with photos taken from bombers. The group achieved excellent accuracy from 12,000 feet: "The target was within the pattern of the bombs on every mission." Moreover, the group found "the pattern from the stepped-down formation was almost exactly the same size as the formation itself" and bombardiers had to aim in front of the target to place the center of the pattern over the center of the target.¹³

In 1938, Lieutenant Colonel Harvey Burwell also experimented at Muroc. His group flew nine B-18s, with thirty-two 100-pound bombs each, to attack a target which was 900 x 2,400 feet. Flying in formation at 12,000 feet, the planes released bombs in train on the leader's signal, thus achieving a sufficiently wide distribution on the target. Burwell saw advantages and disadvantages to this technique. Every plane would not need an expert bombardier, the formation would provide protection from enemy fighters, and distributing many bombs would compensate for inaccuracy. On the other hand, the formation would be an excellent target for antiaircraft, and Burwell advised using this technique only at high altitudes.

Between 1930 and 1938 the Air Corps dropped over 200,000 bombs, mostly from 4,000 to 11,000 feet, and very few from over 16,000 feet. Drops generally took place under optimum conditions—clear weather, low speed, no enemy opposition, and against targets clearly marked on the desert floor. Yet the accuracy was less than stellar. The average circular error probable from 15,000 feet varied from 254 to 442 feet, and the record was 215 feet.¹⁴ Nevertheless, Air Corps belief in strategic bombing remained undiminished, and data derived from experiments was used to formulate *Air War Plans Division/1*, the basic air planning document of World War II.

Learning Lessons

The Air Corps generally failed to learn from experiments conducted overseas in the 1930s. While American military attachés viewed *Luftwaffe* maneuvers, access to their reports was limited to the Air Corps G-2 and certain members of the General Staff. In the Spanish Civil War, reports were received from both sides, but efforts to collect, analyze, and disseminate data were slipshod. Information from various sources in China indicated that unescorted Japanese bombers suffered catastrophic losses.

"Hap" Arnold and Frank Andrews believed that inertia in the War and Navy Departments prevented thorough analysis of air operations in Spain and China. However, they only wanted to comment on the misuse of airpower to convince the War Department of the need for a strong bomber force. In short, even though foreign experiences were highly germane, data collection was unsystematic and analysis was neither rigorous nor objective.

No lessons were learned from other services. Navy experiments revealed that high-altitude bombing lacked accuracy, and dive bombers emerged as the preferred platform. The Marine

Martin B-12 bomber
from March Field,
July 1934.



Courtesy U.S. Air Force History Office

Corps actually used dive bombers in combat in Haiti in 1919 and Nicaragua in 1927, but there is little or no indication that the Air Corps learned lessons from those expeditions.

The lack of a systematic approach to experimentation during the interwar period resulted in an incomplete realization of airpower potential and caused heavy casualties early in World War II. The failure was partly due to the times. The Air Corps lacked a discernible enemy which could be attacked from the continental United States. Germany and other nations innovated successfully when faced with concrete operational problems (such as attacking Czechoslovakia, Poland, and France). The Navy could construct realistic plans and experiments around the problem of conducting carrier or amphibious warfare against Japan. Unfortunately, consideration of the correct problems for the Air Corps—defeating Germany from British bases and Japan from island bases—would have been unthinkable in the 1920s and 1930s. Instead, the Air Corps posed improbable coalitions of European powers allied with Japan. Experiments designed on that basis did lead to innovation in mobility but could not yield optimum results in pursuit or bombardment. If national strategy is the basis for realistic experimentation and subsequent innovation, Air

Corps experimentation reflected the lack of an energizing national strategy.

Experiments with precision bombardment took place under optimum conditions and did not require the Air Corps to deal with flak, smoke, clouds, or enemy fighters. The doctrine of high-altitude, daylight precision bombardment was not tested to the breaking point—partly because that would have questioned the *raison d'être* of the Air Corps. Challenges to the prevailing orthodoxy (such as that made by Chennault) were suppressed, and no effective opposition team was created.

There was no rigorous mechanism to evaluate data from the past, other services, or abroad. The experiences of World War I were not thoroughly analyzed and were forgotten. Contemporary events such as the wars in Spain and China and the activities of the Navy and Marine Corps were not systematically studied, and any such information was subject to preconceived notions. Many bomber enthusiasts maintained that unescorted bombers could penetrate enemy defenses despite the Japanese experience in China, German experience in Spain, British experience from 1939

to 1941, and in some cases even American experience after December 7, 1941.

The Air Corps must be commended for developing both doctrine and organizations and for thinking about the future before technology could implement theory. It recognized that a revolution in military affairs was underway and determined to explore principles governing the use of airpower. If the Air Corps had limited itself to the realm of the technologically possible or to coastal defense and cooperation with ground forces, then theories, organizations, plans, and aircraft for successful strategic bombing during World War II would never have been developed.

Air Corps experimentation produced leaders and organizations between the wars. Officers such as Spatz, Eaker, Chennault, Walker, and Kenney were encouraged to innovate and consider the future, and their experiments yielded valuable experience. Experimentation with organizations led to the creation of GHQ Air Force, the prototype for the numbered air forces of World War II. Finally, the experiments suggest some lessons for today.

Exploration and discovery must precede validation. The primacy of bombardment became dogma too quickly. The Air Corps spent much of the decade validating this truth and was not receptive to additional exploratory data provided by innovators like Chennault.

Innovative ideas do not respect rank. Walker and Chennault had good ideas; the Air Corps should have listened to both men, not just Walker. Junior officers like Duncan and Jones obtained important results while exploring their new technology freely in the field.

Failure must be an option. During precision bombing experiments Walker was permitted to engage in trial and error. He was not punished for the latter nor forced to give up too soon because technology could not yet support a promising concept.

Institutions are as important to innovation as individuals. Interwar experiments provided answers to many important problems, but the answers were not collected, analyzed, disseminated, or internalized. This was as much a failure of Air Corps institutions as of individuals. **JFQ**

NOTES

¹ Wesley Frank Craven and James Lea Cate, *The Army Air Forces in World War II: Volume I, Plans and Early Operations, January 1939 to August 1942* (Chicago: The University of Chicago Press, 1950), p. 36.

² *The New York Times*, May 26, 1929, p. 17 (Spatz changed his name in 1938).

³ Robert F. Futrell, *Ideas, Concepts, Doctrine, A History of Basic Thinking in the United States Air Force, 1907–1960* (Maxwell Air Force Base, Ala.: Air University Press, 1971), p. 64.

⁴ *Air Corps Newsletter*, March 31, 1930, pp. 75–77.

⁵ Maurer Maurer, *Aviation in the U.S. Army, 1919–1939* (Washington: Office of Air Force History, 1987), p. 292.

⁶ Futrell, *Ideas, Concepts, and Doctrine*, p. 68.

⁷ DeWitt S. Copp, *A Few Great Captains* (New York: Doubleday, 1980), pp. 104–05.

⁸ Claire L. Chennault, *Way of a Fighter: The Memoirs of Claire Lee Chennault* (New York: G.P. Putnam's Sons, 1949), pp. 18–26.

⁹ *Ibid.*, p. 22. On Chennault's experiment, see also Copp, *Captains*, pp. 105–06.

¹⁰ Chennault, *Fighter*, p. 23.

¹¹ Maurer, *Aviation*, p. 363.

¹² Copp, *Captains*, p. 169.

¹³ *Air Corps Newsletter*, August 15, 1936, p. 6.

¹⁴ Stephen L. McFarland, *America's Pursuit of Precision Bombing, 1910–1945* (Washington: Smithsonian Institution Press, 1995), p. 97.

**ESSAY CONTEST
ON MILITARY
INNOVATION**
1998-1999
SECOND PRIZE **TIE**

Assault by 1st Air
Cavalry Division
(Airmobile), 1965.



U.S. Army (Gilbert L. Meyers)

The Evolution of Air Assault

By KEVIN J. DOUGHERTY

Commenting on the “Army after Next” project, one observer noted that “Today’s aviation allocations to light infantry divisions are inadequate for the fast-paced operations of the future.”¹ Battlefield agility must be strengthened if the force “is to truly achieve full spectrum dominance.” Likewise, as another writer stated, “In the wars of the future, there is simply no point in deploying highly trained light infantry without mobility and protection.”² The integration of infantry mobility and target acquisition capability with the speed, agility, and firepower of helicopters is a potent combination; but the current force structure does not realize that

potential. Nor does it capture the helicopter’s air cavalry possibilities. Airmobility has not fully realized the opportunities created by technological innovations following World War II.

Different Responses

Veterans of World War II airborne operations were particularly impressed by the promise of the helicopter, and by 1945 the Army had acquired 22 R-6 utility helicopters for rescue, courier service, medical evacuation, and observation. The Army and Marine Corps bought several two-seat YR-13s. The Marines experimented with helicopters to augment amphibious operations and, by the end of 1946, the Commandant authorized a test squadron. Yet as late as 1947 no helicopter could carry more than a couple of combat-loaded passengers. Perhaps for that reason as well as the difficulty in coordinating helicopter development

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H-13 during joint maneuvers at Fort Hood, 1952.



U.S. Army

Testing H-19G before deploying to Korea, 1953.



U.S. Army

15 H-19 Chickasaws that could carry six fully equipped troops. The squadron progressed from resupply operations to troop transport to embryonic air cavalry in antiguerrilla operations.

These successes led the Army to step up operations and to establish the 6th Transportation Company (Helicopter) which deployed to Korea in late 1952. The next March this unit flew its first resupply mission and in May conducted its first major troop haul. By the end of the war, the Army had fielded two helicopter companies organized as a light battalion while the Marines had ten helicopter squadrons.

After the armistice the Army and Marine Corps continued to refine helicopter operations. The Army emphasized the air cavalry role and began to use the smaller, turbine-driven UH-1 Huey to supplement strong ground force maneuver by mechanized and armored units. The Marines saw the primary mission as combat mobility for assaulting an objective which required a preponderance of large transport helicopters to land self-sufficient forces quickly. Accordingly, the Marine Corps organized around large single-rotor Sikorski helicopters with front clamshell doors, later followed by a turbine driven, twin-rotor model.

with the Air Force, the Army focused its aerial mobility developments on the airborne division, while the Marines continued to experiment with the helicopter.

When a provisional Marine brigade deployed to Korea in August 1950 it took along seven utility helicopters. And, during the Inchon landing, the commander of Fleet Marine Force Pacific told Washington that “No effort should be spared to get helicopters . . . in any form, to the theater at once, and on a priority higher than any other weapon.”

The helicopter was primarily used to evacuate casualties when the first transport squadron arrived in Korea during the summer of 1951 for service with the 1st Marine Division. It included

H-21 Shawnee
in Panama, 1961.



U.S. Army

the Army pursued a more mobile structure that proved ideal for its tactical requirements

Both services were taking unique paths with new technology. This would have a profound effect on operations in Vietnam. The Army pursued a more mobile, decentralized, and integrated structure that proved ideal for its tactical requirements. The Marine emphasis on relatively larger assault helicopters, with centralized control under an air wing commander, resulted in a much more cumbersome and unresponsive structure.

The Howze Board

General James Gavin, who commanded the 82^d Airborne Division during World War II, was an early supporter of air assault. He wrote a landmark article in 1954 analyzing the inability of Eighth Army to exploit the return to maneuver warfare engendered by the Inchon landing in Korea. He concluded that the type of forces needed to conduct long-range reconnaissance, rapid advance, and bypass of obstacles did not exist.

*Where [were] helicopters and light aircraft to lift soldiers armed with automatic weapons and hand-carried light antitank weapons, and also lightweight reconnaissance vehicles, mounting antitank weapons the equal of or better than the Russian T-34s. . . ? If ever in the history of our Armed Forces there was a need for the cavalry arm—airlifted in light planes, helicopters, and assault-type aircraft—this was it.*³

Gavin's contribution to the air assault concept should not be underestimated. As one report portrays it, "[his] article reflected the vision of a few cavalry and helicopter enthusiasts and proved to be the catalyst [for] forward-thinking officers."⁴ Among them was General Hamilton Howze, director of Army aviation who, shortly after Robert McNamara became Secretary of Defense, was asked to reexamine the Army posture and, in effect, ordered the implementation of airmobility.

The impetus for this significant development was a memo from McNamara to the Secretary of the Army in 1962: "I have not been satisfied with Army program submissions for tactical mobility. I do not believe that the Army has fully explored . . . technology for making a revolutionary break with traditional surface mobility."⁵ Because of this failure, McNamara directed that the "reexamination of [Army] aviation requirements should be a bold 'new look' at land warfare mobility. It should be conducted in an atmosphere divorced from traditional viewpoints and past policies." McNamara stated his expectation and stifled bureaucratic naysayers, concluding that he would be disappointed if the "reexamination merely produces logistics-oriented recommendations to procure more of the same, rather than a plan for implementing fresh and perhaps unorthodox concepts which will give us a significant increase in mobility."

McNamara's frustration can be attributed in part to a growing helicopter industry groping for direction. The military had not decided what it wanted and had thus failed to take advantage of the technological advances that were readily available.



U.S. Army (Carlos Ruiz)

H-34 demonstrating pickup system at Fort Eustis, 1961.

Among those McNamara thought capable of grand vision was Howze, and within a week of the Secretary's memo, he was appointed president of the Army Tactical Mobility Requirements Board (Howze Board). As one author noted, "Seldom has there ever been such a broad and open-ended charter in military history,"⁶ and Howze called the Secretary's memo the "best directive ever written."⁷ Howze would take full advantage of the strong mandate presented him.

After just 90 days the board recommended that five reorganization objective Army divisions (ROADs) be replaced by airmobile and air cavalry units. Howze saw the advantage of airmobile forces as mobility, utility in delay operations, ability to ambush, and direct

firepower capability. A month after the board reported, the Army deployed 15 Hueys to Vietnam with a concept team to evaluate their effectiveness in counterinsurgency operations.

Then in January 1963 the Army began organizing and testing the 11th Air Assault Division. The effort gained momentum, and in September an airmobile battalion was tested at Fort Stewart. The results were promising. By 1964 the Army was contemplating an airmobile division as part of its force structure.

The 11th Air Assault Division was activated in February 1964 at Fort Benning to expand the test program. Under General Harry Kinnard, who had served with the 101st Airborne Division during World War II, it conducted a second test (Air Assault II), demonstrating that the "advantages of

increased mobility and maneuverability inherent to the air assault division offers a potential combat effectiveness that can be decisive in tactical operations." Based on this success, McNamara authorized the organization of the 1st Cavalry Division (Airmobile) in July 1965.⁸

Interservice Rivalry

The Army and Air Force had been at odds over aviation long before the Howze Board. To set boundaries, Secretary of the Army Frank Pace and Secretary of the Air Force Thomas Finletter had signed a memorandum of understanding in October 1951, but the issue of roles and missions remained unresolved. The Army was dissatisfied with Air Force close air support and was forming its own air arm. Its growth was rapid. In 1950 the Army inventory included 668 light fixed-wing and 57 rotary-wing aircraft. By 1960 it had over 5,000 aircraft of 15 varieties. The Army, not the Air Force, was becoming the acknowledged leader in vertical flight and ground-effects assets.

The helicopter filled a dual purpose for the Army but was a sinister threat to the Air Force. Although rotary-wing aircraft offered the Army a credible means of increasing air support, it placed great pressure on the Air Force to enhance ground support capabilities or risk losing that mission and the attendant budget to the Army.

Both services made half-hearted attempts to resolve their differences, taking a stab at a joint testing program using the 11th Air Assault Division. However these efforts were characterized by competition rather than cooperation. One example of this rivalry was an exchange in summer 1964 between General Curtis LeMay, Air Force Chief of Staff, and General Harold Johnson, his Army opposite number. In response to the Army's use of armed Hueys in Vietnam, LeMay challenged Johnson to an aerial duel. Pulling a cigar from his mouth and gesticulating wildly, he screamed, "Johnson, you fly one of these damned Hueys and I'll fly an F-105, and we'll see who survives. I'll shoot you down and scatter your peashooter all over the ground." This episode can be seen as a microcosm of the overall situation. The new concept was "generally supported by the Army but opposed at every turn by the Air Force."⁹

In the midst of passion and in response to the Howze Board, the Air Force created its own board whose findings not surprisingly refuted the Army's. In contrast to the airmobility concept, the Air Force suggested a joint service combat team structure.

Central to the Air Force concept was an assumption that in a joint force, ROAD—supported

the Army was dissatisfied with Air Force close air support and was forming its own air arm



U.S. Army (Luis Dacarro)

1st Cavalry Division,
Khe Sanh.

by Air Force tactical air—offered more practical and economical means of enhancing the mobility and combat effectiveness of Army units than Army air assault divisions. The Air Force proposed that the selective tailoring of ROAD could permit varying degrees of air transportability and combat capability, from a relatively light mobile force to one capable of sustained combat. According to the Air Force, this could be accomplished without specialized airmobile units. Neither Army fixed-wing aircraft or medium helicopters would be required for tactical movement of troops or resupply because C-130s could accomplish most transport missions while other Air Force aircraft provided reconnaissance and firepower.

The Air Force concept was tested in October and November 1964 in exercise Goldfire I, but it was quickly evident that nothing new was being offered with regard to close air support of ground forces. The concept merely streamlined existing procedures and demonstrated that, given heavy dedicated tactical air support, an Army division had increased firepower. After evaluating both the

Army and Air Force concepts, Johnson tactfully summed up his service's dissatisfaction: "I had the rare privilege of seeing the 11th Air Assault one week and the other concept at the early part of the following week, and I would make a comparison of perhaps a gazelle and an elephant. The two are not comparable."¹⁰

The uninspiring results of Goldfire I and the success of Army tests led in January 1965 to a recommendation by the Joint Chiefs, with the Air Force dissenting, to cancel Goldfire II. McNamara approved the cancellation, and the Joint Chiefs responded, again with the Air Force in dissent, by recommending approval of the Army request for an airmobile division. In June 1965, McNamara authorized the organization of the 1st Cavalry Division (Airmobile). It was activated in July 1965 and was made up of resources from the 11th Air Assault and the 2^d Infantry Divisions. The division's advance party arrived in Vietnam in late August of that year.

As "a sacrifice on the altar of accord with the Air Force," Johnson was forced to withdraw Army plans to use Mohawks as attack aircraft, confining it to reconnaissance. Later Johnson was also compelled to concede the third issue and give up

Search and destroy mission, 1967.



U.S. Army (Howard C. Breedlove)

C-119 Caribou transports. The armed Huey, however, remained an essential component of the airmobility concept.

The 1st Cavalry Division proved valuable in Vietnam and, in June 1968, the Army began to convert the 101st Airborne Division to an airmobile configuration. The next month, the 1st Cavalry was redesignated the 1st Air Cavalry Division and the 101st Airborne became the 101st Air Cavalry Division. This designation was brief: in August the units were renamed the 1st Cavalry Division (Airmobile) and the 101st Airborne Division (Airmobile). With the U.S. withdrawal from Vietnam the 1st Cavalry was reorganized as a triple capability (tricap) division in May 1971, combining armor, airmobile, and air cavalry brigades. The tricap experiment became mired in bureaucratic ineptitude and, by August 1980, the 1st Cavalry was transformed into a heavy armored division.

The post-Vietnam War curtailment of airmobile capabilities was reflected in the 1976 edition of FM 100-5, *Operations*, and the concept of active

defense. Such doctrine had focused “airpower thinking on close air support and anti-armor roles to the detriment of more flexible and independent applications.”¹¹ In a system so fixed on the close-in battle, the utility of air cavalry was limited.

The 1982 edition of FM 100-5 and its doctrine of AirLand battle were much more promising for a reinvigorated airmobile and air cavalry function. Its emphasis on deep attack and interdiction created “an exciting time for Army aviation, equal or greater in importance than that which occurred two decades ago with the Howze Board.”¹² Within this doctrine, air assets could be used to guard the flanks of armored and mechanized forces, create deeper penetrations, interdict enemy reserves, and provide force protection and aerial fire support in the event of counterattack. FM 100-5 also expanded the ground commander’s areas of responsibility and interest, which put greater emphasis on aerial reconnaissance, surveillance, and target

Cobra attack helicopter in Vietnam, 1971.



U.S. Army

acquisition. The edition which appeared in 1993 continued this trend by emphasizing the fast-paced, nonlinear battlefield.

Army aviation seems to have made a doctrinal resurgence from its diminished role just after Vietnam under the rubric of active defense. A commensurate force restructuring should reflect this increased role. Unhappily, however, the force structure designed to support the airmobility and air cavalry concept has never regained the prominence it enjoyed during the Vietnam conflict.

One division, the 101st, has been steadily refining air assault. In October 1974 it dropped its parenthetical title of *airmobile* in favor of *air assault* and accepted the implied doctrinal change. That doctrine sought to fuse manpower, weapons, and aerial transport with cavalry doctrine while air assault integrated attack, transport, and observation aircraft with the

air assault integrated attack, transport, and observation aircraft with the fighting elements of the division

fighting elements of the division. By maintaining organic helicopter assets, the division ensures continuous availability of aviation responsive to unique tactical requirements. But it is not an air cavalry division.

Although joint operations have advanced dramatically since Vietnam, basic issues remain. There will always be tension between the Army and Air Force over close air support. Douglas Macgregor recognizes this fact: “[Army] reconnaissance and attack helicopters have been developed to acquire permanently a close air support capability that receives low priority in the U.S. Air Force.”¹³ He sees the trend continuing: “Modern air defense systems

will drive jet-driven aircraft to higher and higher altitudes with the result that stealthy, rotor-driven aircraft along with unmanned strike aircraft will gradually supplant traditional airframes in the close air support role.” If the Army truly wants an acceptable degree of close air support, it should provide part of the capability.

Not Finished Yet

A single air assault division does not meet the needs of nonlinear battlefields. One of the unadopted recommendations of the Howze Board was the reorganized airmobile infantry division, a configuration that would help address concerns about our current light infantry. That unit was envisioned as an infantry division with organic aircraft to provide essential airlift and logistical services. In addition, it would be able to furnish sustained, aerial-delivered combat power, exceptional reconnaissance and target acquisition, and intrinsic aerial fire support. It could simultaneously airlift a third of its combat power 100 kilometers, a revolutionary distance in Howze’s day but easily managed today.

Aviation efforts within the Army modernization plan address the difficulties that made such a concept previously unworkable. Modernization will give helicopters the digital connectivity needed for the nonlinear battlefield. Increased ranges will allow regular aviation units to self-deploy over long ranges like special operations aviation. New programs such as the RAH-66 Comanche and AH-64D Apache Longbow will provide reconnaissance and security and attack overmatch. Range and payload concerns will be corrected by structurally efficient helicopters such as the UH-60L Blackhawk and remanufactured CH-47D Chinook that will more than double the vision of the Howze Board for a 100-kilometer mission radius. Certainly the technology is available today to realize the board’s more ambitious recommendations.

But technology is only part of the equation. The full realization of a revolution in military affairs has three preconditions: technological development, doctrinal innovation, and organization adaptation.¹⁴ Therefore what is also needed is the decision to move forward boldly and apply the technology to an upgraded light infantry, organized along the lines of the reorganized airmobile infantry division. Such a reorganization and associated revision of doctrine, tactics, techniques, and procedures would alleviate the concern that our light infantry divisions cannot keep pace with future operations.

If such a course is charted, why stop there? Another recommendation of the Howze Board invites a reexamination of the air cavalry concept. The board considered cavalry as a different arm than armor. Cavalry traditionally excelled at pursuit, screening, raiding, exploiting, and flexible response. Such operations preserve friendly surprise and deny it to an enemy. As Stanton noted:

*While the tank inherited the mantle of the dragons, the Howze Board innovators viewed air cavalry as the resurrection of the bold, slashing light cavalry; the aerial rocket artillery as the modern equivalent of the horse artillery; and the airmobile infantry as the successor of mounted rifle troops.*¹⁵

The Army consciously moved away from this concept, even the name, when it designated the 1st and the 101st Air Cavalry Divisions as airmobile in 1968. While the 101st Airborne Division (Air Assault) clearly uses helicopter flexibility and maneuverability to great effect, it falls short of adopting cavalry doctrine in routine operations. The Howze Board urged three kinds of brigade-sized air cavalry formations organized to “fight from a mounted position and perform the traditional role of cavalry in exploitation, pursuit, counterattack, delay, and flank protection.” But again, ongoing helicopter modernization programs make a genuine air cavalry role a promising prospect for incorporation into all divisions. In addition, if the light infantry division assumes the role filled by the 101st, the latter unit then could be transformed into a true air cavalry division.

Thus the optimal exploitation of emerging helicopter technology requires not only new and improved equipment, but doctrinal and organizational revisions to support it. The Army has begun the task with mechanized forces. Experimental force tests conducted by the 4th Infantry Division at Fort Hood have been successful enough for 1st Infantry in Germany to transition into a limited conversion division. However, critics argue that the experiment simply involves putting fancy digital equipment on weapons and keeping the same basic organizational structure:

*A revolution in military affairs has to be more than merely adding new weapons and converting to digital devices. Previous such revolutions have produced significant changes in organization and tactics to suit new weapons and technology and to maximize combat potential. Indeed, previous revolutions in military affairs have been epitomized by major changes in organizational structure.*¹⁶

Advances in aviation technology allow the Army to take such a bold step with light forces, which it has not done with its mechanized forces. Doctrine and tactics built around an organization of air assault deployable light infantry and air

cavalry brigades would be more in line with a true revolution in military affairs.

As the Army determines how to incorporate advances in helicopter technology into its force structure, the Howze Board is a laudable model for putting technology into practice. Its mandate, leadership, innovative approach, streamlined process, and focused recommendations are worthy of emulation. The subsequent test program involving the 11th Air Assault Division was likewise exemplary. Airmobility advanced in 1962, although some imaginative recommendations were not adopted. If it chooses to do so, the Army has another opportunity to exploit helicopter technology in a bold and dramatic way. **JFQ**

NOTES

¹ Billy Wells, “The Future of Infantry: Maneuver in the 21st Century,” in *AY97 Compendium: Army After Next Project* (Carlisle: U.S. Army War College, Strategic Studies Institute, 1998), p. 17.

² Douglas A. Macgregor, *Breaking the Phalanx: A New Design for Landpower in the 21st Century* (Westport, Conn.: Praeger, 1997), p. 77.

³ James M. Gavin, “Cavalry, and I Don’t Mean Horses!” *Armor*, vol. 67, no. 3 (May/June 1958), p. 18.

⁴ Shelby L. Stanton, *Anatomy of a Division: 1st Cav in Vietnam* (Novato, Calif.: Presidio, 1987), p. 11.

⁵ *Ibid.*, pp. 15–17.

⁶ John J. Tolson, *Airmobility, 1961–1971*, Vietnam Studies (Washington: Department of the Army, 1973), p. 20.

⁷ Stanton, *Anatomy*, p. 17.

⁸ Andrew F. Krepinevich, Jr., *The Army and Vietnam* (Baltimore: The Johns Hopkins University Press, 1986), pp. 118–24.

⁹ Bruce Palmer, Jr., *The 25 Year War: America’s Military Role in Vietnam* (Lexington: The University Press of Kentucky, 1984), p. 27.

¹⁰ *Ibid.*

¹¹ Robert Hamilton, “Green and Blue in the Wild Blue: An Examination of the Evolution of Army and Air Force Airpower Thinking and Doctrine Since the Vietnam War,” thesis, School of Advanced Airpower Studies, Air University, Maxwell Air Force Base, 1993.

¹² William R. Richardson, “Airmobility in the 1980s,” *U.S. Army Aviation Digest*, vol. 27, no. 8 (August 1981), p. 4.

¹³ Macgregor, *Phalanx*, p. 51.

¹⁴ James R. FitzSimonds and Jan M. van Tol, “Revolutions in Military Affairs,” *Joint Force Quarterly*, no. 4 (Spring 1994), pp. 24–31.

¹⁵ Shelby L. Stanton, “Lessons Learned or Lost: Air Cavalry and Airmobility,” *Military Review*, vol. 69, no. 2 (January 1989), pp. 75–76.

¹⁶ John R. Brinkerhoff, “The Brigade-Based New Army,” *Parameters*, vol. 27, no. 3 (Autumn 1997), pp. 60–72.



Future leaders in the schoolhouse.

The Revolution in Military Education

By RICHARD A. CHILCOAT

What impact will rapid change of today have on professional military education (PME)? The answer is that it will be dramatic. Moreover, the revolution in military affairs (RMA) suggests a corresponding revolution in military education which transforms the who, what, when, where, and how of PME. Military education, especially joint professional military education (JPME), must be seamless, continuous, and career-long. It must be needs-based, available on demand, and offered just-in-time. It must be more information technology-based (even network-centric) as well as more experiential and virtual. And it must be fused with operations, integrate resident and nonresident instruction, and appeal to both military and civilian components as well as international institutions. These are the features of a revolution in military education, and it is underway.

A Tradition of Leading

PME must keep abreast with the times—it must lead, not lag behind change. This has traditionally been the case. The war colleges were engines of change for industrial age warfare at the turn of the last century. After its founding in 1903 the U.S. Army War College developed the military leaders who mobilized and commanded massive land forces of unprecedented effectiveness and efficiency in two world wars. During the 1920s and 1930s American fleets crossed the Asia-Pacific region to engage the Japanese 127 times in wargames held at the Naval War College. As Winston Churchill once commented, World War II was won at U.S. war colleges in the interwar years.

The National War College illustrates the contributions by PME institutions to national strategy and policy and to joint and multinational operations. The results were readily seen in Desert Storm. Generals John Yeosock and Chuck Horner, the land and air component commanders in the Persian Gulf War, were fellow students in the class of 1976 at the National War College, as was General Colin Powell, the Chairman. The graduates of

Lieutenant General Richard A. Chilcoat, USA, is President of the National Defense University and previously served as Commandant of the U.S. Army War College.



U.S. Air Force (Jose Lopez, Jr)

Classmates reunited—Powell (seated) with Horner and Yeosock (standing) in the Persian Gulf, 1990.

the Industrial College of the Armed Forces, Armed Forces Staff College, and other PME institutions have made similar enduring contributions.

Our PME system is the model for the rest of the world. In fact, many United Nations and NATO officials have indicated that senior U.S. commanders in the Balkans have provided the most creative approaches to problems that frustrate civilian managers.

Moreover, professional military education is even the envy of corporate and industrial leaders. But we cannot allow PME to simply maintain the status quo. It must

make the transition to the information age in the same way as our operational forces and in the process provide leadership for change.

Factors of Change

Leading change has always been hard and is getting even harder. This is evident when one compares the past with the present. In the 17th century it took nearly two years for Europeans to send a message and receive an answer on affairs in India or the Far East. The industrial revolution took place over centuries. In addition, a geographically secure United States was once able to contemplate whether it should engage in a conflict on another continent. In the agrarian and industrial ages, there was time to investigate and reflect on the course of change.

But change today is accelerating and making the future more unpredictable. Information is transmitted around the world in a matter of seconds. Last year globalization enabled the economic crisis in Asia to spread to Russia and Brazil.

JPME must evolve through a learning process that combines continuity, change, renewal, and growth

In May 1998, regional dangers emerged when India and Pakistan tested nuclear devices. Asymmetric threats are likely to challenge the U.S. homeland, once regarded as reasonably secure.

The information age is characterized by the compression of time. This is already reflected in planning and decisionmaking. At one unified command, technology has cut the time needed to develop contingency plans from seven days in 1994 to two hours today. Leaders no longer have time to digest the nuances of rapid, widespread change. They must deal with the increasing speed, ambiguity, and complexity of change that is occurring now and that can be anticipated in the

future. As the head of planning for Royal Dutch Shell, Arie De Geus, observed, “The ability to learn faster than your competitors may be the only sustainable competitive advantage.” The principle applies as well to the battlespace of tomorrow.

Rapidly accelerating change has implications for PME. Institutionally, we must continue to learn-how-to-learn and become a learning organization that creates a special climate. We must strike a balance between learning and controlling, and the learning must occur proactively and generatively. Additionally, a learning organization must foster shared vision, situational awareness, and empowerment of people. This kind of organization generates its own future and leads the pace of change.

JPME must evolve through a learning process that combines continuity, change, renewal, and growth. It must maintain our traditional qualities of excellence, capitalize on change, enable our continual renewal, and achieve growth even when resources are constrained.

Necessary Competencies

It is not enough for JPME simply to enable our graduates to adapt to the future. They must also be capable of creating ideas and initiating actions that enable them to generate their own futures. The Chairman of the Joint Chiefs of Staff Review Panel Report in 1995 outlined the competencies that war college graduates will need through 2010. It recommended that they possess an ability to think critically and creatively and take decisive action even when conditions are ambiguous and uncertain. These attributes will be especially important for senior leaders. Strategic art is the new discipline of the 21st century. For four decades, strategic art was linked to a Cold War paradigm. In the 1990s new strategic challenges

have arisen. Somalia, Rwanda, Haiti, Bosnia, and Kosovo have demanded fresh thinking and different strategic concepts.

The CJCS Review Panel Report recommended that war college graduates must possess sufficient technical ability and insight to anticipate and use ever increasing technological advances. Andrew Marshall, Director of Net Assessment, stated that we are inundated with technologies, all vying for attention and dollars. In addition, advances are occurring faster. The cycle time for new electronics is six months. The military advantage will go to the nation that can rapidly harness technologies. This is no easy task. Historically, it has been difficult to translate technology into battlefield successes.

Moreover, the CJCS Review Panel Report stated that graduates of war colleges must attain a strong sense of joint, interagency, nongovernmental, and multinational cooperation. This is more true today than ever. Military officers in Bosnia and Kosovo find themselves interfacing with a range of groups, including warring factions. They are part warrior, diplomat, humanitarian relief worker, and law enforcement officer.

A strong sense of jointness will be even more important tomorrow. The synchronization of joint combat power is occurring at lower levels—brigades, ships, and squadrons. War college graduates must be able deal with the world as it is—a tall order given the rapid change of today. Moreover, future military operations will increasingly include the integration of interagency and multinational participants.

The Evolution of JPME

In 1989 the Panel on Military Education of the House of Representatives which was chaired by Congressman Ike Skelton criticized the services for pursuing incompatible educational agendas. The Deputy Director, Joint Staff, for Military Education (J-7) oversees JPME. He is responsible for promulgating "Officer Professional Military Education Policy" that is issued by the Chairman to establish joint curricula and academic standards. In addition, the service colleges and the National Defense University (NDU) must undergo accreditation every five years.

However, the accelerating rate of change implies a transformation of JPME. While we can take pride in our current system—it has served us well—we must renew it, shake off the vestiges of the industrial age, and guide the system purposefully into the information and knowledge age.

This transformation has led to a new vision, "Joint Professional Military Education 2010." It is part of *Joint Vision 2010* and the focus of a study

group that is midway through a two-year evaluation of JPME. The initial recommendations are bold, imaginative, and visionary. The PME community is encouraged to give the recommendations serious and thoughtful consideration. They exploit technology to benefit teaching, learning, research, and outreach—and offer new and exciting ways to leverage the excellence of faculty, staff, and students (see summary below).

Joint Professional Military Education (JPME) 2010

Phase 2 Course of Action Development Report [FINAL DRAFT]

Summary of Conclusions (Chapter V):

- make JPME a career-long continuum
- establish both a Joint Center of Excellence (JCOE) at the Armed Forces Staff College to teach joint operational art and a joint intermediate staff school
- create a virtual learning environment via a network connecting both joint and service PME institutions
- export JCOE teaching on joint operational art to service PME institutions et al. as needed
- establish resident and nonresident education as well as a training program which is available to students anywhere on demand
- make specialized JCOE courses accessible to junior officers destined for joint assignments
- provide JPME phase I at service colleges for most mid-level officers destined for joint assignments
- provide JPME phase II through some of the means described above to some mid-level officers destined for joint assignments
- make JPME phase I and II available to both active and Reserve component officers through joint learning centers within unified commands
- improve expertise on JTFs by providing nonresident programs organized by U.S. Atlantic Command and the National Defense University.

Future JPME, for example, will demand a network-centric approach. As the President of the Naval War College, Admiral Arthur Cebrowski, pointed out, networks can readily empower organizations. This is seen already in the industrial sector. Electronic links between retail outlets and



Marshall Hall, National Defense University.

DDO

a network-centric approach could link every college in a joint virtual learning environment

distributors enable store chains to react to a rapidly changing market. At Ford Motors, virtual development teams use worldwide video-conferencing to collaborate on prototypes of a global car. The same can be accomplished in JPME. “Sharing knowledge occurs when people are genuinely interested in helping one another develop new capacities for action,” according to Peter Senge.

A Web-based network-centric approach could link every college in a joint virtual learning environment. Initially, this would be an electronic confederation of colleges that, while remaining unique centers of excellence and retaining their autonomy, would become increasingly interdependent.

Such an experiment could create greater interoperability, compatibility, and synergy within the JPME system. For example, it would enable greater collaboration on joint doctrine and future warfighting concepts. It would allow speakers, lectures, courses, curricula, games, and simulations to be shared with all colleges, as desired. Air warfare courses taught at the Air University, the center of excellence for airpower, for example, could be shared with other colleges. Alternatively, land and seapower courses at the U.S. Army War College and Naval War College, centers of excellence for landpower and seapower, could be part

of the curricula at other colleges. Electives could be offered throughout the JPME system, not simply at one college or university. Common efforts could also mean greater efficiencies and perhaps even cost savings.

New Horizons

Just as technological advances contribute to a revolution in military affairs, they also contribute to a revolution in military education. The network-centric approach and other technologies can be applied to distance learning. This could extend JPME beyond the brick-and-mortar schoolhouse to the field and fleet. Distance learning can provide continuous and career-long JPME. Industrial age education is conducted on a periodic basis and is perishable over time. But many professions are increasingly relying on information technologies to keep up with rapid changes in the world. Legal firms, for example, use the Internet and other information services to follow key court decisions. Distance learning could provide war college graduates with a means of updating their education and also offer them an on-demand, needs-based education.

Ultimately, distance learning would allow joint professional education to reach a broader population of officers. Dozens of higher educational institutions now offer quality courses and curricula through technology-based distance learning. Additionally, U.S. Special Operations Command uses interactive CD-ROMs to reach some 40,000 personnel around the world. But distance learning is not necessarily a substitute for seminars, which have proven to be an extraordinary learning environment. Rather, it would complement seminars. Qualified officers in joint environments like combatant command headquarters would be certified as adjunct faculty of a war college. Joint professional military education—including phase I and II of the Program for Joint Education (PJE)—could then be exported to these locations via distance learning.

Educational technology insertions into academic programs by competent faculty will create an information-age pedagogy that can deepen the learning experience. Ultimately, as digital video technology develops, virtual seminars will emerge and provide powerful learning environments as well. This will lead to an unprecedented convergence of resident and nonresident PME instruction, and military educators will be able to offer an increasing number of innovative educational delivery and access options to commanders and officers in the field and fleet.

Providing more Reserve officers with greater access to JPME will enhance their integration with the active components. Almost one out of four soldiers supporting Operation Joint Guard in

Normandy Hall, Armed Forces Staff College.



Bosnia, Croatia, Hungary, and Germany belong to the Army National Guard and Army Reserve. In addition, some 600 Reserve component officers currently serve at U.S. Atlantic Command. In the event of a contingency their numbers would increase in combatant command headquarters. Yet there is no systematic method for these Reservists to obtain JPME beyond a limited number of opportunities made available at intermediate and senior level colleges. The same is true for civilian defense officials and others who participate in national security affairs.

Distance learning offers the possibility of greater integration with international institutions. This may be key to the future of allied and coalition interoperability. The ongoing RMA could lead to a gap in allied capabilities, particularly within NATO, making military operations more difficult. A JPME system connected to allied institutions could narrow this gap.

Technology can also help JPME become more fused with military operations. The role of ACOM in joint training and experimentation demands a close partnership with NDU. Although the Joint Training, Analysis, and Simulation Center can facilitate training, NDU can assist ACOM in the area of education. Moreover, PME institutions conduct some of the most sophisticated games and simulations in the world. The joint simulation system can connect institutions with operating forces. Simulations have provided valuable training and mission-rehearsal support for operations in Southwest Asia, Somalia, Haiti, Bosnia, and Kosovo.

There is a revolution in military education. It will transform the who, what, when, where, and how of PME. But this revolution will only be perceptible in retrospect. Those who witnessed the mobilization of the Armed Forces in 1941 were only able to perceive their ultimate warfighting potential by the gift of hindsight. The same will be true of our operational forces and PME system looking back 20 years hence. Change should never be precipitous, but rather purposeful, directed, and thoughtful. This is the time to initiate change in professional military education. The JPME 2010 study provides a solid basis for getting change underway.

Thomas Jefferson remarked that “as new discoveries are made, new truths discovered . . . institutions must advance to keep pace with the times.” This holds true for PME today. It must undergo a significant transformation to satisfy the demands of a rapidly changing world. However, such change will involve hard work. It will require a willingness to inquire and create, embrace change and vision, champion new ideas, and above all lead. Only then will we be able to create a successful joint professional education system for 2010 and the 21st century.

JFQ

LEADERSHIP and Parochialism



General Horner and his air staff, Desert Shield.

DD

An Enduring Reality?

By BROOKS L. BASH

A military culture influenced by rigid planning and structured regulation dictates a rational approach to crisis response. But organizational influences can enter the decisionmaking process. One critic, for example, argues that standard operating procedures as well as survival instincts and a desire for prestige can influence and bias decisions.¹ A large bureaucratic structure encourages such agenda setting and distorts reports made available to decisionmakers. Moreover, staffs filter and order huge amounts of data received during a crisis, which naturally colors the upward flow of information as it assumes the form of op-

tions and recommendations. This article examines the organizational impediments to optimal military responses in a crisis.

According to the late Carl Builder, the services have unique sets of organizational attitudes and beliefs.² As the most powerful institutions in the national security community, the services have distinctive organizational personalities that dictate much of their behavior. Therefore the attitudes of individual servicemembers are a subset of organizational attitudes in any given service. There is a strong tendency through socialization, education, and self-regulation to migrate individual beliefs toward centralized institutional attitudes.

The way services manipulate information affects decisionmaking in crises. Research into cognition suggests that complex decisionmaking forces human minds to break down information.

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Cognitive forces also tend to be more absolute in crises and more uncertain when decisionmakers lack time to assimilate facts.³ In an era of exploding sources of knowledge, decisionmakers depend on information provided by organizations with many entrenched prejudices.

Defense Reorganization

The Goldwater-Nichols DOD Reorganization Act of 1986 sought to decrease service bias in providing recommendations to the National Command Authorities (NCA). It mandated a series of reforms in joint education, joint duty assignments, and joint doctrine. To reduce parochialism, the law enhanced the power of the Chairman by making him principal military advisor to

the Chairman can effectively mute any major disagreement by controlling the agenda and making unilateral decisions

the President while joint publications sought to make decisionmaking less susceptible to service parochialism. Specifically, Joint Pub 5-03.1, *Joint Operation Planning and Execution System*, contains guidance on planning and executing joint operations. It directs a supported commander—typically a regional commander in chief (CINC)—to develop a course of action. The Chairman, in turn, then reviews that course of action and concurs (either in whole or part) or calls for development of an alternate approach. This structured decisionmaking process culminates in one or more alternative courses being provided to the Chairman, who then makes a recommendation for NCA consideration.

General Colin Powell, considering the role of the Chairman as principal military advisor to the President, remarked: “I consult widely with the chiefs and I always know what the chiefs are thinking. In the final analysis, I provide advice in my own right. So we don’t vote on anything.”⁴ One unintended consequence of Goldwater-Nichols is that the new power invested in the Chairman may have increased his vulnerability to organizational influences. Some contend that this change increasingly limits the advice given to NCA by presenting a single viewpoint, whereas previously service chiefs, as JCS members, offered a range of options. Moreover, John Lehman, former Secretary of the Navy, contends that Goldwater-Nichols “created autocracy in the Joint Staff and arbitrary power in the person of the Chairman.”⁵ He holds that although the law allows the service chiefs to present dissenting views to NCA, this option is unlikely to be exercised. The Chairman can effectively mute any major disagreement by controlling the agenda and making unilateral decisions. General Carl Mundy, USMC, a former commandant of the Marine Corps, asserted that Goldwater-Nichols

reduced coordination between the Chairman and service chiefs. He wrote to the Chairman on his retirement that the influence of the individual services over joint matters had been reduced.

Despite the rational military decisionmaking structure and the Goldwater-Nichols Act, there is evidence that military decisionmakers remain vulnerable to organizational influences.

Bias in Praxis

Operation Just Cause in Panama (1989) and the Persian Gulf War (1990–91) both illustrate that organizational and individual bias still adversely affect force employment. During Just Cause Colin Powell became the first Chairman to exercise power as the principal military advisor to the President under Goldwater-Nichols. Early in the crisis Powell called the chiefs to his quarters to agree on a course of action. He stated his preferred course, then asked for different viewpoints.

General Al Gray, another former commandant of the Marine Corps, said the selected course of action was primarily Army and did not include Marine assets suited for a forced entry. His argument was stifled by Powell’s contention that there would not be time to position Marine amphibious units into place: “I can’t change the timelines or the plan now.”⁶ But neither the President nor Secretary of Defense had set a timeline. The critical timeline was apparently the one found in Powell’s preferred course of action. In effect, the Marine disagreement was overcome by the implication that Powell’s direct access to NCA had provided critical information not available to the chiefs.

In addition, Admiral David Trost, the Chief of Naval Operations, worried that an airborne operation was risky and unnecessary. He believed troops could be landed without opposition. He also felt that the primary reason for the airdrop was to allow thousands of Army soldiers to earn combat jump wings. His objection did not prevail, however, because Powell and the Army Chief of Staff, General Carl Vuono, argued that an airdrop was most prudent. Moreover, General Max Thurman, USA, the commander in chief of U.S. Southern Command and the main architect of the operation, was a veteran parachutist.

Despite these reservations, no other alternative was seriously considered. Powell ensured that there would be no dissension: “I want to make sure that we’re all agreeing.”⁷ Later in the day that he met with the chiefs, the Chairman met with President George Bush and Secretary of Defense Dick Cheney to present the plan for Just Cause. Powell informed the President that all the chiefs fully agreed with him.

Marines blocking road, Just Cause.



This operation illustrates a potential inherent bias in the position of the Chairman in making recommendations to NCA. This scenario follows the organizational model. Although in the end the operation was successful, Powell favored an Army-oriented plan by stifling disagreement and failing to consider alternatives that reduced risks. Ironically, Cheney chastised the Chairman only a few weeks earlier for filtering information when he wanted information from multiple sources.

The next significant operation that occurred after the passage of the Goldwater-Nichols Act was Desert Shield/Desert Storm. While the Persian Gulf War achieved stated strategic objectives, service-based organizational forces influenced strategy and operations. Powell was still at the helm and was a key decisionmaker. In the days following the Iraqi invasion of Kuwait, he was asked to provide options for the defense of Saudi Arabia. On August 2, 1990, the Chairman together with the commander in chief of U.S. Central Command (CINCCENT), General Norman Schwarzkopf, USA, outlined Operations Plan 90-1002 to the President.⁸ It primarily called for using land forces and assigned only a minor supporting role to airpower. Lieutenant General Thomas Kelly, USA, who was Director of Operations (J-3) on the Joint Staff, indicated that he did not think airpower would have a significant strategic impact. He lamented

that nothing could be done against enemy forces without heavy armor. That intransigence became more evident when Kelly railed against the embryonic Operation Instant Thunder strategic air campaign: "Airpower has never worked in the past by itself. This isn't going to work."⁹ A subsequent analysis concluded that the prewar plan narrowly defined the role and application of airpower.¹⁰ Specifically, it relegated its use to support of ground operations. Army generals had only considered land-centric alternatives.

During the course of the war one of the most controversial issues was a recent addition to joint doctrine, that of the joint force air component commander (JFACC). Schwarzkopf appointed Lieutenant General Charles Horner, USAF, to this position. Overall, the Army, Navy, and Marine Corps viewed his selection as likely to lead to misuse of their organic aircraft.

The Navy took part in the JFACC process reluctantly and opposed the concept for several months. One trip report criticized senior naval officers during the conflict: "Several . . . expressed reservations about the Navy's involvement in an air campaign centrally directed [by an Air Force JFACC]."¹¹ In addition, an Air Force liaison officer

Loading bombs for daylight strike on Iraqi targets.



DOD (F. Lee Cookran)

to the Navy stated that the Navy “expressed an attitude of resentment towards the Air Force and distrust of the [Central Air Forces] staff.” Accordingly, Navy officers incessantly scrutinized guidance by the air component staff in search of hidden agendas concerning the air campaign.

The Marine Corps also held divergent views on allocation of air assets that evolved from the JCS Omnibus Agreement of 1986 and Joint Pub 3-01.1, *Aerospace Defense of North America*. Although this agreement assigned the Marine commander operational control of organic air as-

Marine Corps doctrine further diluted the effectiveness of the airpower provided to JFACC

sets, it authorized a joint force commander to assign missions to Marine Corps air. Because Horner had been appointed to “exercise operational control of air assets,” the issue of control was unclear.

The lack of clear authority over Marine air assets and doctrinal disagreements led to service parochialism. For example, General Buster Glosson, USAF, director of planning for Central Air Forces, contended that Lieutenant General Royal Moore, USMC, the commander of 1st Marine Air Wing, was unable to think at the strategic level and was obsessed with supporting Marine expeditionary force doctrine to the detriment of strategic goals. Glosson commented, “[the Marines]

kept two-thirds of their air assets to support ground action that was not about to happen and wasn’t even in the realm of the possible. They only used one-third . . . to fly sorties that should have been fraggged.”¹²

Marine Corps doctrine further diluted the effectiveness of the airpower provided to JFACC. Because of the doctrinal requirement to directly support Marine land forces, the Corps insisted that their aircraft prepare the battlefield directly in front of their forces south of Kuwait City. A related effect of this resistance to the JFACC air operation was freelancing in the air tasking order (ATO). Lieutenant Colonel Dave Deptula, USAF, a planning officer on the JFACC staff, noted:

*The Marines were bypassing the [air] planning cells where we constructed the master attack plan . . . they would go to the ATO cell late at night and give the “changes” to the process and give them to the guys processing the ATO. So they would accept this information from the Marines as if it were a change and input it to the system. In fact it wasn’t really a change. It was their initial input. They had to get it into the ATO because they needed the deconfliction, they needed the call signs, the air space management, and so on. They would bypass the planning cell and go hit whatever they wanted.*¹³



DOD

Soldiers watching prisoners during Just Cause.

Another method used by the Marines to manipulate air targeting during the execution phase involved asking permission to strike secondary targets. Because these targets did not receive much planning scrutiny, Marine Corps pilots would have preferred targets listed as secondary. In reality these targets became primary when permission was granted (generally by Navy air controllers) for Marine aircraft to attack them as secondary targets during execution.

Similarly, the Army questioned the air effort to shape the battlefield for the land offensive. On February 18, 1991, Army Central Command released a highly critical situation report.

*Air support-related issues continue to plague final preparation for offensive operations and raise doubts concerning our ability to effectively shape the battlefield prior to initiation of the ground campaign. Too few sorties were made available to the VII and XVIII Corps and, while air support missions are being flown against first-echelon enemy divisions, Army nominated targets are not being serviced.*¹⁴

Schwarzkopf also contributed to the Army organizational bias in his role as the head of land forces. Moore described the land battle emphasis displayed by Schwarzkopf, who was dual-hatted as JFC and land component commander, when he remarked: “as a ground officer, [he] wanted to prepare the battlefield; this was very important in the evolution [of the air campaign]. He was not willing to let any of us go off and shoot down airplanes or conduct deep strikes at the cost of preparing that battlefield in front of the Army, Marines, and coalition forces.”¹⁵ Schwarzkopf, according to Horner, daily reappropriated air assets to attack enemy positions directly in front of coalition forces.

Glosson also exhibited an Air Force bias, in the opinion of a Navy liaison officer working on the Central Air Forces staff.

*Early on, the Air Force committed fully to the forward deployment and utilization of every possible facet of their force structure. This positioning was only thinly veiled . . . as positioning and preparation for the upcoming “battles with Congress.” The JFACC planning cell had a member of the Secretary of the Air Force’s personal staff—he was the second senior member in the planning cell.*¹⁶

Moreover, Horner thought that the Army leadership did not understand the best use of airpower on the strategic level and was inclined to “fight in isolation” on the operational level. Consequently, when a commander demanded increased sorties to support his land forces, Horner responded with a simple “no.” He recalled Schwarzkopf’s response. “[He] laughed when I fell on my sword. He didn’t give [me] any support at all. But he summarized it by saying, ‘Guys, it’s all mine, and I will put it [airpower] where it needs to be put.’”¹⁷

Reallocating airpower along with Marine Corps insistence on supporting ground forces resulted in an overall emphasis on air sorties to shape the battlefield containing first and second echelon enemy forces. CIA analysis revealed that coalition air forces destroyed twice as much Iraqi equipment in the second echelon near the front lines as opposed to striking the Republican Guard, which was a primary strategic goal. Overall, 70 percent of air sorties were flown to support the eventual ground campaign, but only 15 percent were used in strategic attacks on Baghdad or the Republican Guard. Fortunately, disagreement over airpower in Desert Storm was strategically insignificant because there were virtually unlimited coalition air assets available against an ineffective enemy.

Surveying Attitudes

Both organizational and individual biases during Operations Just Cause and Desert Storm affected both strategic and operational decision-making. Nevertheless, at the time of these conflicts, senior officers and their staffs only had served a small part of their careers in the joint environment envisioned in Goldwater-Nichols. Today, when the Armed Forces are more than a decade beyond that law’s implementation, a clearer notion of its effectiveness should influence future leaders.

It is generally agreed that jointness has evolved from a structural and doctrinal perspective since 1986. Nevertheless, the question remains whether legislating jointness has changed attitudes among younger officers who will be the

Tomahawk missile,
Desert Storm.



U.S. Navy (Brad Dillon)

leaders of tomorrow. Have joint doctrine, education, and duty assignments modified parochialism within the services?

To evaluate attitudes on jointness, a survey was administered to war college students. The colonels/captains and lieutenant colonels/commanders who attend senior-level professional military education (PME) institutions were selected as a sample because they represent the most promising officers in each service. Some 36 percent of war college graduates achieve general

or flag rank, and all future chairmen, chiefs, and unified commanders in chief will come from their numbers.

To reduce the risk of error, a complete census survey was taken among these students with the response rate achieving a precision level of 95 percent (± 5 percent confidence). Respondents were categorized as joint or service officers only to determine whether joint experience impacted on their individual views.

Marines preparing to enter Kuwait, Desert Storm.



Medical evacuation in Panama.



more structural changes may be required in the military decision-making process to suppress service parochialism

The survey indicated a strong attitude variance among officers of various services toward the use of force. Moreover, it indicated that parochialism does exist among future leaders enrolled in the war college classes of 1998. Perhaps more surprising, it suggested that joint education and experience may not reduce service bias.

The implications of this insight are twofold. First, even though Goldwater-Nichols has structurally increased jointness, this law has not eliminated service parochialism in the officer corps. Second, more structural changes may be required in the military decisionmaking process to suppress service parochialism.

Recommendations

First, the Chairman should routinely provide dissenting or minority opinions along with his course of action. Currently, as principal military advisor to the President, he generally recommends a single best course. In reality, there are

many feasible military options with attendant political advantages and disadvantages for NCA consideration. As seen in Operations Just Cause and Desert Storm, proffering one option increases the likelihood of prejudiced recommendations. Alternative options would facilitate decisions based on a range of possible outcomes rather than a single expected outcome.

Next, a stricter policy of rotation should be adopted by the President in the appointment of both chairmen and unified commanders. Over time dominance by one service in providing officers to fill these positions can introduce a bias in planning and procedures. For example, Army officers have been historically named to warfighting commands. In addition, Army officers have filled the post of Chairman for a decade. During this period, the Joint Staff has been completely reorganized and a hierarchy of joint doctrine publications have been issued in accordance with the Goldwater-Nichols Act.

A third recommendation derives directly from the Persian Gulf War. While Schwarzkopf was the joint force commander in charge of all land, sea, and air forces, he also retained the role of land forces component commander. Ostensibly, he was dual hatted out of political necessity since he commanded coalition forces. However, this dual role made it difficult to make impartial force employment decisions. JFCs should not also be component commanders.

Fourth, the Secretary of Defense should sponsor a joint forum for academic debate on the roles and missions of the Armed Forces. Unfortunately, extant processes such as the Quadrennial Defense Review are too often played out in the form of budgetary and procurement decisions rather than meaningful doctrinal dialog. As new technology and threats emerge, the contributions of each service will inevitably change and joint doctrine must be adapted. Although *Joint Force Quarterly* is one outlet for this debate, an annual conference should be convened for senior officers, civilian officials, and academic specialists to discuss issues involving roles and missions.

Finally, the survey illustrates that requirements for joint experience may be insufficient to overcome parochial attitudes developed during an officer's formative years. To foster joint culture, joint education should be introduced earlier. Both precommissioning education and basic schools provide opportunities to develop a joint perspective. The academies should increase the number of faculty members drawn from other services and from among joint specialty officers to teach cadets and midshipmen different perspectives. Finally, joint education must be reinforced throughout an officer's career in addition to the mandatory PME and joint duty assignments.

For the revolution in military affairs to succeed, the Armed Forces must shed service force employment paradigms. Service parochialism is alive and well despite the Goldwater-Nichols Act.

The results of the attitude survey reported in this article provide a glimpse into the divergent views of future leaders. Although service-specific expertise and academic debate are necessary to evolve the joint force of tomorrow, the U.S. military must ensure that turf battles conducted to protect organizational prerogatives not blind decisionmakers to the goal of providing the best possible defense. **JFQ**

NOTES

¹ Graham T. Allison, *Essence of Decision: Explaining the Cuban Missile Crisis* (Boston: Little, Brown, 1971), p. 67.

² Carl H. Builder, *The Masks of War: American Military Styles in Strategy and Analysis* (Baltimore: The Johns Hopkins University Press, 1989), p. 3.

³ William R. Farrell and Mel Chaloupka, "Four Perspectives on Decision Making and Execution in National Security Organizations," *National Policy and Strategy* (Carlisle Barracks, Pa.: U.S. Army War College, 1997), p. 264.

⁴ David Roth, *Sacred Honor: A Biography of Colin Powell* (Grand Rapids, Mich.: Zondervan Publishing House, 1993), p. 195.

⁵ Douglas C. Lovelace, Jr., *Unification of the United States Armed Forces: Implementing the 1986 Department of Defense Reorganization Act* (Carlisle Barracks, Pa.: U.S. Army War College, Strategic Studies Institute, 1996), p. 36.

⁶ Bob Woodward, *The Commanders* (New York: Simon and Schuster, 1991), p. 164.

⁷ *Ibid.*, p. 167.

⁸ *Ibid.*, p. 228; Richard H. Kohn, "Out of Control: The Crisis in Civil-Military Relations," *The National Interest*, no. 35 (Spring 1994), p. 163.

⁹ Richard T. Reynolds, *Heart of the Storm: The Genesis of the Air Campaign against Iraq* (Maxwell Air Force Base, Ala.: Air University Press, 1995), p. 11.

¹⁰ James A. Winnefeld et al., *A League of Airmen: U.S. Air Power in the Gulf War* (Santa Monica, Calif.: The RAND Corporation, 1994), p. 55; Woodward, *The Commanders*, p. 228.

¹¹ Thomas A. Keaney and Eliot A. Cohen, *Gulf War Air Power Survey*, Volume I, Part 2: *Command and Control* (Washington: Government Printing Office, 1993), p. 53.

¹² Mason P. Carpenter, *Joint Operations in the Gulf War: An Allison Analysis* (Maxwell Air Force Base, Ala.: Air University Press, 1995), pp. 27–28.

¹³ *Ibid.*, p. 25. Interview on December 21, 1993.

¹⁴ Carpenter, *Joint Operations*, p. 44.

¹⁵ Charles D. Melson et al., *U.S. Marines in the Persian Gulf, 1990–1991: Anthology and Annotated Bibliography* (Washington: Headquarters, U.S. Marine Corps, History and Museums Division, 1992), p. 112.

¹⁶ Keaney and Cohen, *Gulf War*, p. 54.

¹⁷ *Ibid.*

Crisis (*Mis-*) Management



Marines supporting Desert Fox.

U.S. Marine Corps (R.M. Katz)

By CARNES LORD

The unhappy record of efforts by the United States to contain, discipline, undermine, or otherwise cope with Saddam Hussein results from more than policy disarray or domestic political distractions. It also points to a worrisome decline in operational capabilities for crisis management. The air campaign conducted against Iraq in December 1998, Operation Desert Fox, suggests that lessons learned—and often relearned—at considerable cost both during and after the Cold War are in danger of being lost.

Crisis management is not simply a matter of technical competence. It cannot be divorced from policy planning or strategic thinking. At the same

time, it is heavily dependent on a range of operational and organizational skills. Time pressures imposed during a crisis not only increase the tempo of decisionmaking but also change its character. Virtually by definition, crisis management requires adjustments in the relationships among affected government agencies as well as the direct and sustained involvement of senior officials and their principals, not least the President. Without proper preparation, such adjustments may not occur, and high-level intervention may be wasted or counterproductive. Adequate preparation for crises cannot be assumed. It requires a measure of foresight and institutional statecraft that is problematic for democracies at all times, and especially for the United States in the current relaxed international environment.

Concept in Crisis

If crisis management is in trouble today it is because of two controlling reasons. The first is

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Loading bombs,
Desert Fox.



U.S. Air Force (Kirsta M. Foeller)

conceptual and reflects the variable nature of crises and changes in the international environment following the Cold War.

Defining crises is not exclusively a theoretical problem. It is a central operational aspect of crisis management. Simply identifying a situation as a crisis is a policy determination that can have significant operational implications. A gray area exists wherein the confirmation of a crisis may be either plausible or expedient under some circumstances but not others. This is especially true as one moves away from the Cold War notion of crises as periods of international tension involving a heightened probability of the use of force between states. Today no doctrine of crisis management exists outside the military that offers even basic guidance for public officials.

Political-military crises must be more broadly conceived. Most crisis management theory is focused on avoiding superpower conflict in periods of acute tension. The more relevant challenge, at

least for the United States, is firm coordination of political and military measures through every phase of a limited regional conflict.

In addition, more systematic attention should be given to nonmilitary crises and nonmilitary dimensions of crises. The Asian financial emergency has been as regime-threatening as most wars and a major challenge to the international economic order. Moreover, it reinforced the importance of coordination between U.S. diplomacy and economic policy. It also points to the growing need to bring international institutions within the compass of national crisis management.

Another neglected aspect of crisis is public diplomacy. Operation Desert Fox, for example, was a fiasco in this regard. The contrast with media relations during the Persian Gulf War could hardly have been sharper. Moreover, domestic emergencies also require attention and pose serious crisis management challenges for many countries (such as Chechnya in the case of Russia). Even for the United States, the possibility of a domestic terrorist attack involving the use of weapons of mass destruction gives concern over



domestic security and emergency response. As the Pentagon considers forming a new unified command for homeland defense, the time has come to address the tangle of political, legal, and bureaucratic issues that influences this neglected area.

Institutional Challenge

The other controlling reason crisis management is in trouble today is institutional in nature. Over the past decade and a half we have taken several steps backward. The institutional capacity of the United States for crisis management evolved during the Cold War. Under the administration of Dwight Eisenhower crises tended to be handled informally and quietly by the White House through channels largely independent of the nascent National Security Council (NSC) system.

Crisis management emerged as a recognized mode of national security decisionmaking in the Cuban missile crisis of 1962, with the Executive Committee (ExCom) of the National Security Council formed by President John Kennedy to vet options and advise on how to handle the secret deployment of Soviet nuclear weapons in Cuba. ExCom was an informal organization and had no life apart from the President and the crisis at hand.



Institutional responses were largely improvisational during the balance of the Kennedy and the Johnson years. There was a conscious effort to fight the Vietnam War as a sideshow instead of a national emergency.

institutional responses were largely improvisational during the Kennedy and the Johnson years

Lyndon Johnson's "Tuesday lunches" with his National Security Adviser and Secretaries of State and Defense were the principal mechanism of high-level coordination, but their impact was much reduced by inadequate preparation and a lack of record-keeping.

Early dissatisfaction with crisis response expertise in the Nixon administration (especially after North Korea shot down an American EC-21 aircraft in 1969) led to the first permanent high-level crisis management committee within the

U.S. Government, the Washington Special Actions Group, under the chairmanship of National Security Adviser to the President Henry Kissinger. It was reasonably effective but had minimal support. Its real significance was that it acknowledged the role of the Presidential staff in harnessing the national security bureaucracy and handling crises on the policy and operational levels. This precedent was adopted by Jimmy Carter, who assigned his National Security Adviser, Zbigniew Brzezinski, to chair a cabinet-level committee.

Crisis management came into its own under Ronald Reagan. His administration developed a complex apparatus that centralized crisis management in the White House more than ever before or since. A so-called Special Situations Group of cabinet principals chaired by the Vice President was created in 1981. It reported to the National Security Planning Group that was chaired by the President and was comprised of principals from the National Security Council and other officials such as the U.S. Representative to the United Nations. The group was intended to act informally as a forum for top-level consideration of sensitive policy issues. It was supported in turn by an inter-agency Crisis Pre-planning Group chaired by the Deputy National Security Adviser.

At the same time an operational entity was organized to support such activities, the Crisis Management Center. Closely linked to the NSC staff and collocated with it in the Old Executive Office Building, the center was a pioneering effort to develop a framework and procedure to handle



crises as well as a sophisticated array of supporting capabilities that for the first time exploited the potential of information technologies for senior-level decisionmaking. With a permanent staff that eventually numbered twenty analysts and computer specialists, many detailed from the defense and intelligence communities, the center oversaw a major

upgrade of electronic communications in the White House and national security agencies, developed protocols to identify and monitor crises and to provide warning to senior officials, and began work on both document formats and data bases to improve institutional memory and information retrieval. It also played an important role in linking the White House with the Continuity of Government Program launched early in the

Reagan years to protect against a decapitating nuclear attack. In several crises during its brief heyday (particularly the invasion of Grenada and shootdown of Korean Airlines Flight 007), the center was generally considered to have performed well. Particularly useful were its situation reports that authoritatively integrated intelligence, diplomatic reporting, media coverage, and operational information.

The story of the Crisis Management Center serves as an object lesson in bureaucratic politics. It floundered as an experiment in 1984 with the death of its founder, Richard Beal, and departure of his patron, National Security Adviser William Clark. Resistance to the center arose among officials who considered it a threat to access and influence in the White House. In the wake of the Iran-Contra scandal in 1986, the NSC staff came

under extreme pressure to avoid activities that could be considered operational. The center went into terminal decline and by the end of the Bush years had

virtually ceased to function. At the outset of the Clinton administration, even the manual on crisis indicators and warning was reportedly discarded, and the White House went out of the crisis management business.

PDD 56 is far from emblematic of the operating style of the current administration

Complex Emergencies

The last two presidencies have used essentially the same system to handle crises: informal and ad hoc consultation at the highest levels supported by a deputies committee for general policy development chaired by the Deputy National Security Adviser to the President with agency officials at the under secretary level. The committee is a bottleneck, overloading a few senior officials with operational information and responsibilities. At the same time, dedicated staff support is weak or nonexistent. The principals often spin their wheels or improvise and the process as a whole lacks structure and discipline. Implementation is neglected; records are not kept nor lessons learned. No one is really in charge so there is no accountability for poor performance.



Such problems have not gone unnoticed by the Clinton administration. Indeed, as a result of the mishandled Somalia intervention of 1992–94, it undertook an initiative to improve national capabilities to manage what are termed *complex emergencies*—crises involving multiple U.S. and international agencies and missions. Presidential Decision Directive (PDD) 56 created a new mechanism that markedly increases the White House operational role.

In response to particular crises the National Security Council has established an interagency ExCom (evocatively but inaccurately recalling the Kennedy-era committee) at the assistant secretary level and chaired by a senior NSC staffer with dedicated crisis management responsibilities. Two things distinguish this new arrangement from standard interagency committees. First, ExCom has an explicit set of responsibilities and fixed accountability. It is directed to develop a military-style operational plan, identify resource requirements, exercise the plan, and prepare an after-action report. ExCom members (all Presidential appointees) are also directly accountable to the President rather than their departmental heads. Crisis-related committees or task forces are usually controlled by a regional assistant secretary of state.

It is also worth noting that the official on the NSC staff in charge of the ExCom mechanism has become involved in domestic counterterrorism and security, chairing an interagency group as special assistant to the President's chief of staff. Generally counterterrorism has become one of the few success stories of interagency cooperation in recent years.

The creation of ExCom certainly is moving things in the right direction. But the extent of real systemic change should not be exaggerated. PDD 56 does not address all crisis management concerns and it is far from emblematic of the operating style of the current administration. In fact, as one former diplomat recently remarked, the Department of State is less effective today at crisis management than ever before. In August 1997, General John Shalikashvili, nearing the end of his second term as Chairman, criticized the divided leadership and lack of interagency cooperation that characterized U.S. involvement in conflicts and called for a single high-level official to coordinate political and military efforts. Critics have been especially harsh in assessing the performance of the Departments of State and Defense in Bosnia.

An effort has reportedly begun under DOD auspices to upgrade crisis-relevant computer and communications technology within the White House, though whether a genuine national vision guides this initiative is unclear. In addition, there has been a growing discussion on the creation of



DOD (Helene C. Sikket)

The President and the Chairman, 1995.

a fully integrated, worldwide interagency communications system. But such a project is likely to encounter stiff bureaucratic resistance unless it gets strong support at the top. Other capabilities are either available or on the horizon. So-called decision support technologies for senior managers of the sort currently being developed at the Naval War College are particularly promising for White House applications.

Technology, however, is not the final solution to crisis mismanagement. The most relevant lesson of the Crisis Management Center is the importance of subordinating technological assets to concepts and requirements. Without a valid concept for crisis management, technology can only accomplish so much. Indeed, it can actively hinder sound decisionmaking. The increasing use of e-mail is a case in point. At one level, e-mail has to be considered a boon for crisis management by permitting unprecedentedly rapid and direct communication among key officials on all levels. But as one Pentagon official involved in crisis management observed, by making communication easy and casual, e-mail tends to undermine staff work, encourage snap decisions, and lead to premature consensus on policy. Such effects can be all the more insidious by being invisible.

Looking Ahead

The initial step in reestablishing a strategically coherent approach to crisis management is the reconstitution of a dedicated entity within the White House for this function and related decision support functions, closely integrated with the NSC staff. The prime responsibilities of a revitalized Crisis Management Center should be technical support, information fusion, data base management, indicators and warning analysis, and development of doctrine and procedures on crises. It should have close links with appropriate operational elements of the Departments of State and Defense and the intelligence community.

The second step involves a restructuring of leadership and staff. Given the broad range of its responsibilities, especially in the post-Cold War era, the NSC staff needs more senior members and a different method of assigning functions. Instead of just one there should be four deputies. A deputy for operations would manage crises as well as make other day-to-day decisions and chair a dedicated interagency crisis management committee. Another deputy for information would be the focal point for national-level intelligence as well as information and communications matters in general and oversee a revitalized Crisis Management Center. A third deputy would be charged with policy and planning, and a fourth (dual-hatted as deputy of the National Economic Council) would be responsible for economic and resource issues. This arrangement, which reflects the structure of a military staff, would ensure a rational distribution of major functions and tasks. It recognizes the growing position of information and economics as components of national security while reducing the business of managing day-to-day and crisis decisionmaking.

A third step also borrows from the military. It involves the creation of ad hoc interagency crisis task forces headed by senior agency officials (in some cases retirees with special expertise, such as former diplomats) armed with a Presidential mandate and accountability and some measure of operational control over personnel and assets. Directors would have deputies drawn either from the NSC staff or another agency, to provide a check and balance and to permit field deployment of a director or his second in command. This last step would be the most radical, although in ways it is foreshadowed in PDD 56. (A similar notion is advanced in a recent study of the NSC system by the Center for Strategic and International Studies.) This is a sensitive issue because of the unique relationship it establishes between civilian officials and the military command structure. However, it is a change that may be long overdue. In a strategic environment in which force frequently is not the primary crisis management tool, and where

Preparing for attack,
Desert Fox.



U.S. Navy (Jacob L. Hollingsworth)

the Armed Forces operate in subordinate roles and under unfamiliar conditions, active integration of civilian and military staffs must constitute more than coordination. Such an organizational mix or chain of command is not without precedent. One well-known example was the Civil Operations and Revolutionary Development Support (CORDS) organization in Vietnam, a hybrid arrangement under a civilian official who oversaw pacification and reported to the senior military commander in-country, who in turn was responsible to the chief of mission, the American ambassador. There are other cases from both Panama and the Persian Gulf. Particularly noteworthy is the Kuwait Task Force, an ad hoc organization made up mostly of civil affairs officers who in effect worked under the ambassador.

The final step is improving the ability to respond to domestic emergencies, a neglected area with complexities not found on the international horizon. Confused and controversial responses to events such as Hurricane Andrew, the FBI siege in Waco, and TWA Flight 800, not to mention the growing specter of chemical or biological terrorism, point to a continuing institutional problem

that must be addressed on the national level. Although the NSC staff is almost certainly not an appropriate home for a domestic crisis management capability, it might make sense to give a revitalized crisis management center a supporting role there, perhaps under the direction of a new office reporting to the President's chief of staff. Provisions might also be made for a White House/National Security Council committee to handle incidents which have a significant military or security component.

Crisis management must be institutionalized both to delegate decisionmaking authority and to reduce excessive burdens. That would relieve the President and senior officials of responsibility to personally monitor and respond to crises. Rather, it would allow them to attend more seriously to their responsibilities as leaders of the Nation. **JFQ**

Counterterrorist training, Osan air base.



51st Communications Squadron (Lance Cheung)

Consequence Management

In Need of a Timeout

By SCOTT R. TAYLOR, AMY M. ROWE, and BRIAN M. LEWIS

Fifty years of successful counterproliferation efforts are coming to an end. Many countries are decided on acquiring weapons of mass destruction (WMD), something that this Nation cannot prevent. The likelihood that such devices will get into the hands of a rogue state, terrorist group, or dissidents violently opposed to U.S. interests cannot

be discounted. This threat is unlike any other confronted by America in its history.

Concern over WMD led Congress to mandate the enhancement of domestic preparedness and response measures to cope with terrorist attacks involving the use of nuclear, radiological, biological, and chemical weapons in the Defense Authorization Act for Fiscal Year 1997. The responsibilities of individual Federal agencies were further delineated in Executive Order 12656.

Today there are various programs that address WMD grouped under the rubric of consequence management (CM). Over forty Federal

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DOD (Helene C. Stikkel)

Secretary Cohen briefing threat.

agencies share responsibility for preparedness and response in this realm, ranging from major players such as the Federal Emergency Management Agency (FEMA) and the Department of Defense to others with reduced roles such as the Department of Health and Human Services, Environmental Protection Agency, and Department of Energy. Both

an interagency definition is all the more necessary given the current status of Federal planning

legislation and multiple, often conflicting executive-level directives provide a windfall for any agency in search of new missions, funding, and expanded responsibilities. Replete with good intentions and ambitious for primary roles, agencies propagate programs, policies, strategies, and specially trained response teams. Examining the issues and determining the tasks in consequence management, let alone assessing the timeliness and efficiency of response procedures, can be an intimidating challenge.

A Problem of Definition

Current policies suggest three ways to enhance our ability to manage the immediate aftermath of WMD use: establish common definitions; deconflict and delineate interagency roles, responsibilities, and plans; and develop a streamlined, clearly defined response channel. Although existing interagency mechanisms have likely discussed these issues in other forums, consequence management principals (the heads of major Federal agencies) have made little progress in remedying problems.

There is no official definition of consequence management. The Department of State, which is responsible for coordinating consequence management abroad, identifies nine official definitions while the Department of Defense, which conducts preparedness and response training, uses two. The Federal Emergency Management Agency, which is responsible for domestic disaster relief, has its definition, as does the Environmental Protection Agency and the Department of Energy.

Although these definitions share the common theme that consequence management constitutes actions taken in the aftermath of a disaster, they differ on the scope and type of disasters that require it. The Armed Forces use a narrow definition, limiting consequence management to actions that counter “effects of an attack from nuclear, chemical, biological weapons of mass destruction.” By comparison the Department of State defines it more broadly, in line with its international role, responding to a “life threatening or destructive event.” Other definitions include actions to counter effects of terrorist attacks using either conventional explosives or nuclear, biological, and chemical (NBC) weapons. Still others include NBC-related industrial accidents (see accompanying figure).

WMD further confuse what constitutes consequence management. Joint Pub 1-02, *Department of Defense Dictionary of Military and Associated Terms*, construes WMD as devices that are capable of a high order of destruction or can be used to destroy large populations. In the Nunn-Lugar-Domenici Act, WMD include nuclear, chemical, biological, and radiological devices.¹ Moreover, other agencies embrace conventional high explosives in their definitions.

An interagency definition is all the more necessary given the current status of Federal planning, which is poorly coordinated and lacks central authority. Misunderstanding is inevitable. For instance, planning by the Joint Staff is focused only on WMD situations resulting from terrorism while planning by the Department of State suggests responses to large disasters of every kind anywhere in the world. What is more, the Environmental Protection Agency is concerned with hazards such as chemical spills while the Department of Energy responds when nuclear reactors are involved. Establishing a common point of reference is crucial because definitions imply roles and responsibilities and serve as a basis for allocating resources. A common definition is needed to initiate reform of consequence management, for without it little can be done to synergize response plans. Current differences also create confusion among allies, who may have to coordinate their responses with ours.

Consequence Management: Basic Elements versus Selected Definitions						
	CJCS Instruction 3241.01, "Support to Foreign Consequence Management"	DOD Directive 3025.15, "Assistance to Civil Authorities"	FEMA/ Emergency Response Plan and Terrorism Annex	Department of State	Environmental Protection Agency	Special Operations Division (J-3), Joint Staff
NBC Weapons						X
Agents Accidental Release						
WMD Attack Conventional	X					
NBC	X					X
Terrorist Attack NBC			X		X	
Conventional			X		X	
Disasters and Catastrophes¹		X				
Life Threatening or Destructive Event²				X		

¹ The definition of disaster found in the Disaster Relief Act of 1974 (as amended in 1988 by the Stafford Act) "encompasses all conceivable manmade or natural occurrences whose catastrophic consequence could lead to a [state] governor's request for Federal assistance," which could include all the elements listed above.

² These two terms may incorporate all the elements above, but that is an assumption (for instance, an accidental release of chemicals may not be life threatening or destructive, depending on the amount and potency of the chemical released but may cause widespread nonfatal casualties).

Organizing the Team

Another issue is assigning responsibilities across the interagency community. Current policies, procedures, and interagency memos are an amalgam of well-intended but poorly coordinated programs that achieve unity of effort by accident rather than design. The Senior Interagency Coordinating Group for consequence management is comprised of the heads of primary agencies and chaired by the FEMA director. It provides oversight, advice, and coordination on major policy issues before a crisis occurs. It meets monthly but has no permanent staff or tasking authority and is subject to competing agendas, powerful personalities, and the need for consensus. Contentious issues tend to be postponed.

The problem of responding to incidents begins with the command and control concept of the lead Federal agency. As outlined in PDD 39, the concept assigns responsibility to the Federal Bureau of Investigation for the period before an incident occurs, but then transfers it to the Federal Emergency Management Agency once it takes

place. As one analyst remarked, this delineation is arbitrary and confusing: "In any domestic disaster, [consequence management] is the crisis."² This arrangement creates jurisdictional problems between the Federal Bureau of Investigation, which seeks to control the immediate situation and protect criminal evidence, and the Federal Emergency Management Agency, which endeavors to stabilize the situation, save lives, and initiate protective and containment protocols.

This relationship also complicates participation by the Armed Forces as military personnel find themselves in an environment where rules of engagement, responsibilities, and chain of command are fluid at best. A better procedure is needed to exercise command and control over an entire operation, especially where a clear transition from crisis to consequence management must be made.

A Combined Response

Responsibilities for consequence management also must be reviewed given the likelihood that local and state emergency management agencies cannot handle major incidents. Following criticism of its response to the San Francisco



Simulated chemical exercise at the Pentagon.

American Forces Information Service (Renée Stier)

earthquake in 1989, the Federal Government intervened early in more recent disasters such as the Oklahoma City bombing, Los Angeles rioting, and Hurricane Andrew. Rapid assistance has become a reality and communities now expect it. Response procedures must be aligned to this need. Even though recent experience suggests that interagency response capabilities are improving, it has come about more by trial than prior arrangement. In a WMD incident, we cannot afford a similar learning curve. Finally, recent experience suggests that our citizens want a swift and comprehensive response to disasters of all kinds.

Recent disaster operations also point to a need for more prior coordination. Although PDD 39 designates the Federal Emergency Management Agency as lead organization for domestic consequence management, that agency usually requests military assistance. In addition to active and Reserve units, various elite technical teams, semi-deployable scientific research cells, and specialized medical groups are available for this purpose. Like the myriad agencies that claim responsibility for implementing the emergency response plan, military assets are both extensive and growing. Moreover there are other specialized Federal units, such as the Metropolitan Medical Strike Team (Department of Health and Human Services), Environmental Response Team



Chemical warfare training, Roving Sands '96.

DOD (Randy S. Mallard)

(Environmental Protection Agency), Radiological Assistance Teams (Department of Energy), and Hazardous Materials Response Unit (Federal Bureau of Investigation). They operate independently of any centralized coordinating authority prior to arrival on site. In addition,

efforts to integrate them or conduct interagency training have been lacking.

Assembling a combined Federal response force capable of addressing a range of contingencies on short notice is basically a question of prior planning, organization, and crisis decisionmaking to get the right units rapidly to the right place. This issue is especially important given the likelihood of early military participation in efforts led by the Federal Emergency Management Agency or the Department of State; the Armed Forces have the most highly-trained response units and the means to deploy them. Because the key to consequence management is rapid response, the Federal



2: Marine Division (D.F. Storms)

Marine performing washdown, Urban Warrior.

the answer cannot be a short-term fix that assigns a mission to the Reserve components

Emergency Management Agency and the Departments of State and Defense must more fully integrate their operations.

The existing channels used to coordinate requests for military assistance must be streamlined. For example, DOD Directive 3025.15 designates the Department of the Army as the executive agent for CM planning and implementation with responsibility to task service components and commit assets. This contradicts other references such as

CJCS Instruction 3214.01 and the Joint Strategic Capabilities Plan, which assign similar responsibilities to unified commands. Such disparate guidance complicates the response process and in some cases appears to be contrary to joint doctrine.

A system enabling the Federal Emergency Management Agency and the Departments of State and Defense to coordinate prior to a situation would assist in the rapid execution of plans and tasking of additional response units. The need for such a structure is apparent given the proliferation of active and Reserve units dedicated to consequence management. The restructuring of chemical, biological, and radiological units in the Reserve force into rapid assessment and initial detection teams, as well as battlefield support



DOD (Von Seggeren)

Loading FEMA generators at Roosevelt Roads.

units, is a case in point. The answer to consequence management cannot be a short-term fix that assigns a mission to the Reserve components at the expense of primary wartime roles. Moreover, it creates additional challenges: How should National

Guard units from one state be deployed in another? How can Reserve units that require a Presidential call-up be rapidly integrated in a response, and how can demanding technical proficiencies be maintained with 38 Reserve training days per year? Handing the CM mission to Reservists raises as many questions as it answers and must be reviewed and managed carefully.

Other Gaps

Another issue is the role of the Armed Forces in the FEMA emergency response plan, which is mainly implied. Within this plan, military participation with Federal agencies is conditional: it is not planned *a priori* but requested, usually after



Rescuers at site of Oklahoma City bombing.

the fact and only when the on-scene commander has determined help is needed.³ Such a concept—although appropriate for a natural disaster—is outmoded when dealing with WMD. The emergency response plan has additional implementation problems. For example, 14 Federal agencies possess some responsibility for hazardous materials, which needlessly complicates rapid cleanup by clouding response coordination and on-scene responsibilities.

The only option for improving the response time to an unexpected disaster is prior planning, coordination, and training all parties. The terrorism annex to the emergency response plan describes the relationship among response plans for various agencies, but military plans are not shown, which implies DOD response planning is not integrated into the main plan. The lack of coordinated planning between the agencies responsible for domestic preparedness represents a major shortcoming in Federal consequence management.

Current FEMA–DOD interaction leaves much to be desired and should be improved by renewed emphasis on the interagency process. Some argue that the responsibility for consequence management should be delegated to a new unified command—in effect militarizing the issue—or else be assigned to U.S. Atlantic Command. But neither approach is likely to satisfy a situation that demands immediate stabilization, public order, treatment of casualties, restoration of essential services, and determination of criminal responsibility. Only the full range of Federal capabilities can accomplish that mission; and interagency planning and coordination before execution are vital.

The final gap in planning and executing a consequence management strategy involves training for the first responders—local actors who initially arrive on the scene. They include police officers, firefighters, emergency service personnel, and medical specialists. Under current policy, responders are responsible for early treatment and containment of incidents. Equally critical is their responsibility for assessing the situation and expeditiously requesting other support from state and Federal agencies. Since Federal studies suggest that added resources will not be available for 6 to 12 hours, managing the initial aftermath falls squarely on the first responders. Their actions determine success or failure.

Under the Nunn-Lugar-Domenici Act the Armed Forces became responsible for training first responders. In 1997, the U.S. Army Chemical Biological Defense Command initiated a pilot program to train first responders in major metropolitan areas. Initial instruction was oriented toward training the trainers. Local and state agencies expanded their efforts as a result, many by integrating response plans with FEMA regional offices. In short, DOD accomplished two goals: providing expertise to first responders and stimulating development of local emergency action plans.

Citing budgetary cuts, DOD will terminate training in 1999, and no other agency has offered to sponsor a replacement program. This can seriously erode gains in response capabilities. Training for first responders should continue until metropolitan areas are capable of initial incident management.

Airmen entering missile silo to test protection suits.



DOD (Edi Holzapfel)

Recommendations

One assumption in the emergency response plan is that no single agency has the expertise or authority to manage WMD incidents. When multiple agencies are involved, however, decision-making becomes cumbersome. Accordingly a single official should be assigned responsibility for CM policy, planning, training, and implementation. A Presidential adviser responsible for consequence management—a czar with a role patterned on the drug czar—would coordinate consequence management at the Federal level. This cabinet-level appointee could task agencies and exercise nominal authority over FEMA in matters concerning consequence management. Most importantly, he would articulate national goals for domestic and foreign contingencies.

the Federal response center would be dedicated to management as well as command and control

This czar would chair the Senior Interagency Coordinating Group and formalize a structure for an independent office. Consequence management, like the so-called drug war, cannot be conducted on an ad hoc basis. The office for consequence management would have a small staff with five elements: a Federal response center, an intelligence fusion cell, a plans and policy office, an interagency training coordinator, and an office of legislative and legal affairs.

The Federal response center would be dedicated to management as well as the command and control of ongoing crises. It would serve as a clearinghouse for responses to crises and be staffed by representatives of major Federal organizations. Though managed by the CM czar, personnel assigned to the center would conduct liaison for their agencies and exercise tasking authority over elements of their agencies designated as responders. They would also be experts on agency capabilities and the proper employment of their units. The center would be the single entry point into the Federal response structure for local, state, and regional officials engaged in consequence management. During a major incident, the center could immediately activate a plan tasking previously identified units and response teams. In support of foreign consequence management assistance, the center could act as the single entry point for requests by the Department of State for disaster relief. It would coordinate with the appropriate agencies to provide the requested support.

In most cases the support of the Federal response center would not be ad hoc, but pre-planned and exercised before a crisis. Planning would be the responsibility of the remaining four offices. The intelligence fusion cell, with access to multiple information resources and databases, would focus on global developments and trends that influence consequence management plans and response. Intelligence on terrorist organizations as well as threat assessments would be shared and examined. The plans and policy office would be composed of action officers from the principal Federal responding agencies, including DOD, to ensure that all viewpoints were represented. It would develop national goals and objectives, establish agency responsibilities, and consolidate interagency plans for foreign and domestic support for consequence management. The plans office would function like a J-5 plans section, only on an interagency level, and would develop deliberate and crisis-action plans. This office could develop interagency doctrine for consequence management and recommend changes to existing documents to ensure their consistency with national policy. Unresolved disputes would



U.S. Air Force (Glenn Wilkowitz)

**Evaluating casualties
after simulated
chemical attack**

be forwarded to the Senior Interagency Coordinating Group.

Once plans are coordinated and approved, they would pass to the interagency coordinator to develop guidelines for individual training and the creation of interagency exercises to test the plans and evaluate the readiness of responders. One of the office's major responsibilities would be incorporating interagency representatives into JTF exercises and JTF personnel into FEMA exercises. This office would also recommend changes to response plans based on exercise results and areas for legal review. Finally the office of legislative and legal affairs would advise on domestic and international legal restrictions as well as identify laws that might be modified to improve the response to consequence management. It would also coordinate budget proposals with Congress and help draft legislation on consequence management.

The organization described above establishes a single authority to provide strategic direction for all agencies involved in consequence management. A czar for consequence management must

have the tasking authority to rapidly execute plans and compel interagency cooperation. This would improve interagency coordination, planning, and cooperation both before and during an event. For small-scale disasters, a consequence management czar could serve in a supporting role, with the Federal response center ready to coordinate additional resources. The czar and his office would enable a more effective use of all assets by fully integrating DOD plans into the Federal response and provide a link for the use of FEMA assets to support incidents abroad. By creating one office to manage planning, coordination, and training, national assets could be used to greater advantage. Finally, a consequence management office would be ideally situated to identify gaps and eliminate duplication in current planning. It would correct the problems caused by competing agendas and begin to conduct the kind of deliberate plans a consequence management response will require.

JFQ

NOTES

¹ Tom Barrows, "Terminology," *A Common Perspective*, vol. 7, no. 1 (April 1999), p. 37.

² See Chris Seiple, "Consequence Management: Domestic Response to Weapons of Mass Destruction," *Parameters*, vol. 27, no. 3 (Autumn 1997), pp. 119–34. Lessons learned are from the Atlanta Olympics, the first time a domestic response force was formed as a preventive measure.

³ According to the Federal Emergency Management Agency, an on-scene commander is any local official who assumes primary responsibility for coordinating the initial response: sheriff, police chief, fire department captain, or FEMA representative from the regional office. The list is undefined, which is paradoxical given that this individual often determines the success or failure of an operation.

Herding Cats

Overcoming Obstacles in Civil-Military Operations

By JOHN HOWARD EISENHOUR *and* EDWARD MARKS

One distinctive aspect of humanitarian assistance, disaster relief, and complex emergencies is the broad range of institutions engaged in these operations. They include the United Nations and its operating agencies, international and nongovernmental organizations, national governments and their military forces, corporations, individuals, and the media. Coordinating this cast of characters is particularly difficult when national militaries with disparate operating cultures are figured into the equation. This challenge is relevant because of the considerable role that the Armed Forces assume in such operations, on the one hand, and the limitations imposed on American commitments on the other. To surmount this barrier, effective cooperation and coordination must be ensured.

Cultural differences among actors, and the perceptions that they have of each other as well as operations which they conduct, complicate coordination. The military conditions its personnel to coordinate and be coordinated, while humanitarian organizations train their employees to be self-reliant in their areas of expertise. This should not be surprising since every institution, including the military, has its own chain of command and the diverse actors have little in common except for agreement on the need to help. In other words, operations occur in an arena (or on a battlefield) with independent characters or *cats*. Success largely relies upon gaining support and cooperation which implies overall coordination—what some wags have termed *herding cats*.

Current Doctrine

One approach to coordinating operations—the civil-military operations cell (CMOC)—was devised by the Armed Forces. The first was established in Somalia and worked reasonably well as a formal point of contact between humanitarian organizations and the military. It was later codified in Joint Publication 3-08, *Interagency Cooperation During Joint Operations*.

The portion of that joint pub that explains CMOC lacks structure and internal consistency. It is covered under the rubric of “Organizational Tools for the JTF,” which implies that it exists to exercise control over nonmilitary organizations, and offers the following lead sentence in bold type: “Commanders should establish control structures that take account of and provide coherence to the activities of all elements in the area.” CMOC is “a means to coordinate civil and military operations and plays an execution [vice policy] role.” This doctrine authorizes commanders on every level to establish centers to facilitate coordination and to use them to provide guidance to commanders and to receive and validate requests for support from other agencies. It also directs how centers should be organized, to include participation by U.S. and international civil agencies. It proposes meeting schedules, asserts that centers should handle public affairs, and directs the organization of logistics systems, including the chairing of committees to run airfields and seaports.

Moreover, Joint Pub 3-08 states that CMOC “appeals to [nongovernmental organizations] because it avoids guesswork by providing positive direction for their efforts when and where most

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DOD (D.W. Mobley)

Grain distribution,
Somalia.

needed." A diagram with overlapping circles portrays the cell as the center of the entire operation. Importantly, it is suggested that even when there is a coordination mechanism established by a host country or the United Nations, CMOC serves as the focal point for coordination once

the Joint Task Force Commanders Handbook for Peace Operations is more accurate than the doctrine it purports to explain and implement

the military arrives. According to current doctrine, "although the U.S. forces may be latecomers compared to many relief and international organizations, they bring considerable resources . . . protection, logistic support, information, communication, and other services . . . frequently sought by these agencies. The assistance provided often leads to their cooperation."

Despite the delineation of a command/control CMOC, references are found throughout this section that stress cooperation and flexibility. For example, the military must not "dictate what will happen" but instead "coordinate a team approach to problem resolution," and a commander cannot "direct interagency cooperation among engaged agencies." Similarly, "organization of the CMOC is theater—and mission—dependent" as well as flexible in both size and composition.

Finally, in comparison to CMOC, the treatment of the humanitarian operations center—"the generic name for the most likely alternative coordinating mechanism"—is well written and sensitive to the independence of participants and need for cooperation. It is part of the CMOC chapter and outlines a leading role for the center in coordinating operations organized by a host government or the United Nations. Moreover, it notes that in the case of unilateral action, a representative of the Agency for International Development would most likely be the center director. In these situations, the CMOC role would be subordinate or supportive.

In June 1997, the Joint Warfighting Center published the *Joint Task Force Commanders Handbook for Peace Operations*. Its language is much more sensitive to the limitations of CMOC as a directive. Nevertheless, this more recent explanation of doctrine in Joint Pub 3-08 retains the graphic presentation with CMOC shown as the center of the action. However, a curious sentence has been appended which indicates that it "is not the intent of this figure to emphasize the CMOC as the center of coordination for all interagency activities but rather to illustrate organizations that JTF may coordinate with and hold discussions with concerning an ongoing operation." Therefore the handbook is more accurate than the doctrine it purports to explain and implement.

Underlying Perceptions

Not surprisingly, given their perspective and culture, many officers have interpreted extant doctrine as assigning a command and control role to CMOC with regard to everyone on the scene. The cell is regarded as a form of institutional wizardry by which the military can, when involved in a humanitarian assistance, disaster relief, or other complex emergency, organize and direct other participants—a U.S. military-established and led device for herding cats. The fact that doctrine is specific about CMOC functions exacerbates the problem. In effect, doctrine provides a checklist for evaluators that implies that the cell concept is a structure that is necessary in every situation.

Recent exercises conducted for U.S. Pacific Command explored the CMOC option, which used scenarios based on the need for multilateral assistance in complex emergencies, and confirmed the take charge instinct of the military. In each case many officers cited doctrine and established a cell staffed by military personnel to organize other players. The corollary assumption of some officers is that establishing such military-directed coordination mechanisms will facilitate an exit strategy.

Delivering supplies to Kosovo refugees.



1st Combat Camera Squadron (Chris Steffen)



2nd Marine Division, Combat Camera (Jennifer L. Weber)

Security checkpoint, Haiti.

These positions reflect deep seated attitudes over whether humanitarian assistance, disaster relief, and complex emergency operations are proper missions for the Armed Forces. Thus *getting it over* (for instance, by reaching conditions to permit withdrawal or outlasting politically imposed considerations) seems to be enhanced by *taking it over*. With control, the military can also realize mission objectives without risk (force protection).

The Problem

Current doctrine is based largely on two widely separated experiences, Somalia and Haiti. In the former case there was no local government

or centralized U.N. political structure: it was largely the American military and specialized agencies of the United Nations and nongovernmental organizations. In the latter the role of the Armed Forces was such that the military version of the cell could be made to work. In both cases, the dominant military presence and capability permitted development and use of a directive or command CMOC model.

Interestingly, few U.S. commentators look to other situations where the American role was limited or nonexistent—such as Cambodia or Georgia—for relevant experience. The Somalia and Haiti examples are notable, particularly for the lack of any existing meaningful local or international governmental authority. For instance, in Cambodia there was an impressive U.N. authority on the ground that functioned as a government. The Georgian circumstance was more confused, and the lack of a coordinating relationship among the military peacekeepers, the U.N. political unit, and the humanitarian organizations was obvious and harmful to both peacekeeping and

1st Combat Camera Squadron (Erain Gonzalez)

Civil-military coordination, Albania.

humanitarian efforts. These other situations fall into three categories:

- trusteeship model, in which an international authority (such as the United Nations) or designated country (such as the United States) assumes the role of the local government
- institution building model, in which external participants (such as the United Nations, nongovernmental organizations, or individual governments) create or recreate local government functions (as in Bosnia)
- support model, in which external agents help a more or less operative local government to function (as in Georgia).

Under such circumstances several possible combinations of actors are relevant for success. Models of organizational cooperation other than a directive CMOC may be needed if only because the agendas are likely to differ. Often nonmilitary players—certainly local government, generally nongovernmental organizations, and often the United Nations—are in place long before the arrival of forces. And in every case they expect to stay long after the end of the military mandate.

The longer-term perspective is particularly important with respect to the United Nations and the local government. The United Nations represents the legitimacy of the multilateral involvement (once called interference) in the affairs of an afflicted country. All such efforts (even unilateral operations by the United States under U.N. auspices) must feed into continued U.N. involvement and/or handover to the local government or they cannot end except in outright failure.

Other military considerations arise from these diverse agendas. The United Nations and its constituent agencies as well as other independent

international and nongovernmental organizations bring resources to the table. Sometimes their assets are critical in the crisis phase (when military contributions may be decisive), but even when they are not they constitute the follow-on operation. Thus their operational needs should be accommodated to some degree, at the risk of withdrawing from the field and leaving the military in undisputed control and with full responsibility. This is especially important for the Armed Forces as political considerations lead planners to focus almost exclusively on an exit strategy. Other participants with diverse agendas may not fall in line to meet U.S. objectives and schedules, leaving military personnel to deal with the problem on their own.

In other cases nongovernmental and international organizations may grow comfortable with the presence and assistance of an outside military force, come to heavily depend on it, and readily accept a directive CMOC system. But even this development has dangers. To the degree that local cooperation with other participants is vital to mission accomplishment by military commanders, the result could be counterproductive by encouraging others to insist that the military remain to either manage the program indefinitely or pending an alternative management system.

Despite incidents of cooption, most humanitarian organizations, especially their field staffs, regard the CMOC concept differently. Because they perceive themselves as the true disaster relief and humanitarian assistance operators, they generally consider the cell as an unavoidable institution at best once the military arrives in country. Many consider it more a process useful to arranging cooperation between the disparate participants in a given situation than a directive institution.

Therefore, for a senior political-military decisionmaker, the issue is much more complicated because many variables must be weighed. First, except in the case of failed states, it is likely that some type of coordination system will be established when the military arrives. Doctrine seems to assume that everything is broken on the diplomatic and assistance fronts or else the military would not have been called; but it is unlikely that the United States after the Somalia experience would get involved under such circumstances again. In the future the need to preserve or promote something positive may well be a major policy objective. Consequently we will have an increased motivation to piggyback on arrangements established by others rather than replace them.

Second, it is likely that future military operations will be conducted by coalition forces that



4th Combat Camera Squadron (Thomas G. Cook)

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are more sensitive to the desire of a host government and the United Nations to play a prominent role in coordination. The current ambivalent attitude of Americans toward international institutions is unique in the world.

The third variable is the transition to a coordination system that is intended for use by the follow-on force. Based on recent experience, the United States will probably insist that any large involvement will be limited in time—at least in the minds of planners. Because detailed follow-on force planning must begin immediately to replace the U.S.-led force on schedule, the intentions of the follow-on force commander should be considered. Because he is apt to be a non-American, U.N.-chartered commander, it is doubtful that he will continue a system where his force takes the lead role in coordination at the expense of other U.N. entities.

Fourth and importantly, the preferences of a host government must be weighed carefully. Its orientation toward foreign militaries and the management of development assistance can only be ignored in humanitarian assistance, disaster relief, or complex emergencies if the intervention force takes responsibility for everything that occurs in the country. This approach, popular among some

officers, that the humanitarian nature of the mission will insulate them from public responsibility for other affairs is flawed. Under such circumstances the relationship with a host government is crucial, a factor that is likely to have an impact on the final coordination structure.

Some doctrine runs counter to U.S. national interests and should be withdrawn. There is no benefit in having a cookie cutter approach to coordination. In short, we must let the problem of herding cats sort itself out in each situation. Obvious as it sounds, it is difficult to change doctrine. The Armed Forces push the operational environment to adapt to doctrine rather than the reverse.

When an operation like Haiti is unilateral (either with or without a multilateral charter from the U.N. Security Council), the task of herding cats may be relatively simple. In such instances the United States can exercise sufficient control over both participants and resources that a directive CMOC can be employed. These situations may occur rarely, but assuming unilateral responsibility for emergencies is exactly what current policymakers seek to avoid. Although the military may not be the preferred option in a regional crisis, the Armed Forces will continue to be committed to both peacekeeping and humanitarian relief missions. These so-called military operations other than war, best accomplished by coordination among nations, will involve nongovernment and international organizations whose integration into the operational environment must be carefully developed.

The focus on combined action is pertinent to operations involving humanitarian assistance, disaster relief, and complex emergencies. Without effective cooperation, the military will be faced with only two options: unilateral action or no action. There have been some instances—usually on a small scale—when the Armed Forces operated as one of the cats. But the arrival of a joint task force with a temporary mandate should not result in a complete takeover of the relief effort on the ground. Instead we must learn to operate as part of a multilateral or country-led team. **JFQ**

Not by Bombs Alone

Lessons from Malaya

By JAY GORDON SIMPSON



RAF Hornets being refueled at Singapore.

Courtesy Imperial War Museum

Like other conflicts, the Malayan Emergency offers lessons that have applicability to future wars. It is one of the few examples of a low intensity conflict that was won by the government in power and thus is a favorite subject of case studies on insurgency. In addition, it stands as one of the best illustrations of a coordinated political-military effort that actually defeated a guerrilla force. Such coordination remains essential to the resolution of any conflict on any level of intensity, but it is particularly critical for low intensity conflicts and the growing field of peace operations. Finally, it reveals how military power—or airpower—can support low intensity operations.

The Emergency

The Federated States of Malaya encompassed some of the most rugged terrain in the world. The Malay Peninsula stretches over 50,000 square miles in mainland Southeast Asia. Much of this area is shrouded in jungle that is impenetrable to aerial observation or sensors. It required a major effort to carve out landing zones for helicopters and supply drops. A mountainous chain also runs the entire length of the peninsula. At the time, the country consisted largely of rubber plantations, tin mines, towns, and villages (*kampongs*). Cities were few and road and rail communication was poorly developed. There were six major airfields, only one of which—the Royal Air Force (RAF) base at Tengah—could support medium bombers. Eleven other airfields were suitable for medium transport planes and another 72 for light

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Malaya, 1948–1960

The Malayan Emergency was declared by Britain in response to an insurgent movement launched by the Malayan Communist Party (MCP), whose guerrilla forces were labeled communist terrorists or CTs. The British exercised hegemony over the region as the result of treaties of protection that were negotiated with local Malay rulers beginning in 1874. A number of these principalities were banded together in 1896 to form the Federated Malay States. Malaya, like other parts of Southeast Asia, was occupied by the Japanese during World War II. This hiatus in colonial rule had serious implications for Malaya—as well as for French Indochina and the Dutch East Indies—with the rise of communist and nationalist movements. British control was restored in 1945 with an eye toward eventual decolonization. Even though the British initially legalized MCP activities, the communists rejected a proposal in 1947 to establish the Federation of Malaya. When all the Malay states—save for Singapore—became part of the federation in the next year, the communists charged that Britain wanted to exclude them from power by manipulating the independence process.

The MCP leader, Chin Peng, advocated an immediate armed revolt. The insurgency began with the murders of three British rubber planters in June 1948. The Emergency was declared two days later. A force of between 10,000 and 12,000 guerrillas targeted civilians indiscriminately to cripple the ability of the colonial authorities to maintain order.

After initial setbacks, the British adapted a wide range of civil-military initiatives, including the Briggs Plan—a massive resettlement of thousands of people from jungle areas where they were vulnerable to guerrilla intimidation to the relative security of new villages. Britain also prepared the local people for independence, which was granted in August 1957. By 1960, the Emergency was practically over and only scattered remnants of the once formidable guerrilla forces remained, mostly in secluded areas near the border with Thailand. The Malayan government finally declared the end of the Emergency in July 1960.

In September 1963, Malaysia came into being, consisting of the Federation of Malaya, the State of Singapore, and the colonies of North Borneo (now Sabah) and Sarawak. Britain relinquished sovereignty over Singapore, North Borneo, and Sarawak from independence day and extended the 1957 defense agreement with Malaya to apply to Malaysia. In August 1965, by mutual agreement, Singapore seceded from Malaysia and became a separate nation.



aircraft. Sudden storms were hazardous and flying below hilltop level was dangerous and accounted for several fatal accidents. These arduous conditions also led to maintenance problems and low serviceability rates.¹

The Malayan conflict was fought in four distinct phases.² The first ran from June 1948 to October 1949 and was marked by high levels of violence aimed at British security forces and the

local population by the so-called communist terrorists (CTs), the Malayan People's Anti-British Army. The communists achieved limited success during this phase by attacking mines and rubber estates, ambushing vehicles, and terrorizing people in rural areas to forcibly gain their support. However, the insurgency failed to overcome either the security forces or establish effective bases



from which to expand. In October 1949 the guerrillas withdrew to the jungle to reorganize.³

The second phase lasted until August 1951 and represented the peak of communist success as terrorist incidents rose from 1,274 in 1948 to 6,082 in 1951.⁴ While the CTs

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held the initiative throughout this period, the government greatly expanded the police, formed home guards to protect local villages, enhanced Special Branch capabilities (intelligence assets), conducted a psychological warfare campaign, and imposed emergency regulations. Vital changes followed in October 1951. The Malayan Communist Party altered its strategy in an October 1951 directive which argued that indiscriminate terror was counterproductive in gaining public support. The insurgents continued attacks on the police and army but not local people. They also withdrew deeper into the jungle and operated

in small platoons to reduce their vulnerability. As a result, police losses fell from 100 per month in 1951 to 20 per month by mid-1952.⁵

Moreover, British leadership was changed as Sir Edward Gent replaced Sir Henry Gurney as high commissioner and Lieutenant General Sir Harold Briggs became the director of operations. The "Briggs Plan" harmonized command and control of government forces to provide a framework that endured throughout the conflict. It included a massive resettlement of Chinese squatters into new villages, which afforded protection from CT intimidation, hampered insurgent logistics, and facilitated both psychological warfare and food denial operations. The death of Gurney in an ambush outside of Kuala Lumpur resulted in the appointment of General (and later Field Marshal) Sir Gerald Templer, who was a catalyst to make the Briggs Plan live up to its potential. With control over the country, he refined command and control arrangements, mobilized a political apparatus, laid the foundations for independence, and pushed counterinsurgency into high gear. He also centralized coordination of intelligence under one official, revitalized the police, and revamped the information services and psychological warfare campaign. By the end of his tour the main battle had been won and much of the remaining effort consisted of mopping-up.

The third phase ran until July 1954 and included both a shift in momentum and the breakup of the communist army under the Briggs Plan. Ground forces conducted more effective operations as a result of better intelligence, food denial, and psychological warfare, activities which proved to be valuable in large-scale cordon and sweep efforts.⁶

The final phase ran until July 1960 when the Emergency was declared to be officially over. The government continued the democratization process until Malaya became independent in August 1957 and the security forces underwent a successful transition under Malayanization.

Offensive Operations

The application of airpower in the Emergency was complex. Aviation played various roles in Malaya, including offensive air support, transport, reconnaissance, crop spraying, and support of psychological warfare.

Fighters and bombers were generally used for offensive air support bombing and strafing ground targets, almost always because of contact with friendly forces. The intent of these pinpoint and harassing attacks was simply to inflict casualties. The former operations were aimed at readily

Royal New Zealand Air Force Bristol transport.



Courtesy Imperial War Museum

identifiable targets and were supported by higher grades of intelligence. Targets included enemy camps, cultivated plots, and sites frequented by insurgents. Harassing attacks struck area targets, essentially nondescript swaths of jungle. They were often supported with minimal intelligence and had only a nuisance effect, rarely killing guerrillas outright.⁷ Their impact was “to ‘flush-out’ CTs from areas where they were known to be concentrated into prepared ground force ambushes, or to disturb guerrilla groups, both physically and psychologically, before ground forces moved in to clear a specific area.”⁸ Offensive air was most effective as an escort for ground convoys, helping deter enemy ambushes.

On average fewer than 70 aircraft offered the punch, despite a peak of seven squadrons in 1950, two-thirds of which were Spitfires, Tempests, Meteors, Vampires, Venoms, and Sabres. All others were Short Sunderland flying boats, Avro Lincoln medium bombers, and light bombers such as Beaufighters, Hornets, Brigands, and Canberras. Both Tempests and Hornets were suited to these operations, with good firepower and loiter times and relative resistance to bad weather. Later jet aircraft—fighters and bombers—were less useful. Speed was a liability. Electronics and engines were

more susceptible to climate-induced difficulties, and their range and loiter time at low altitude were insufficient. Finally, the stress on pilots required special measures such as cockpit air conditioning and limiting sorties to one per day.⁹

The best aircraft for offensive air support throughout the Emergency was the Avro Lincoln medium bomber, an updated version of the venerable Lancaster of World War II fame. They were flown by rotating RAF squadrons and Number 1 (Bomber) Squadron, Royal Australian Air Force (RAAF). In addition to cost-effectiveness, Lincolns could deliver much heavier bomb loads than lighter aircraft, and their slow speed and endurance of up to eleven hours when fully loaded made them excellent platforms for strafing attacks.

Offensive air support was not a major factor. It was only useful against an enemy whose position was known and that intended to hold its ground. The communists preferred mobility and stealth. In Malaya, CT positions often had to be checked by ground troops, normally resulting in ground combat or enemy withdrawal. Close air support also required aircraft with extremely short response times, which was not practicable because of the few suitable airfields and limited aircraft loiter times. Ground to air communication was also poor because of jungle canopies. In addition, army radios were too heavy and took too long to set up.



Courtesy Imperial War Museum

**Sycamore 14
helicopter.**

Offensive air support in Malaya was also limited by weather and navigation. Air strikes were often unreliable except in mid-morning, after fog and thin stratus cloud dissipated and before the rapid generation of cumulus and storms, which began around noon and could last into the night. This disadvantage was not mitigated until the introduction of radar target marking in 1955.

Navigation was complicated by a paucity of aids and an unending sea of jungle, which yielded few landmarks. This problem was compounded by weak intelligence, which made it difficult to pinpoint enemy locations on the ground. On one hand, Operation Kingly Pile, an attack in 1956 against Goh Peng Tuan and Number 7 Independent Platoon, was a complete success. Intelligence was nearly perfect. An informer gave detailed information to Special Branch that was confirmed twice by ground patrols. Experts spent several weeks in intense preparation. Target marking was successful, navigation was accurate, and the weather cleared. The strike caught the insurgents by surprise and 98 1,000-pound bombs made 14 confirmed kills.¹⁰

On the other hand, an attack against Teng Fook Loong and Number 3 Independent Platoon took several attempts. In 1956, some 545,000 pounds of bombs were dropped on the apparent site of this unit with no effect. Good information

offensive air operations were far from being decisive in winning the conflict

came to light and a further 94,000 pounds of bombs were dropped by five Lincolns and twelve Venoms. But the bombs landed harmlessly 250 yards from the camp. Several days later, a night strike by five Lincolns, dropping 70,000 pounds of bombs, killed four CTs. Only in October, after continuing harassment by both air and ground forces, did the remainder of the platoon surrender.

Even with precise intelligence and the accuracy of bombing, collateral damage remained a serious concern. Two errors in 1950 resulted in a combined total of 12 civilians killed, 31 injured, and collateral damage to a school, while one British officer and seven soldiers died in 1953 when bombs were released prematurely from a Canberra. Clearance was required prior to any attack to ensure the target area was free of friendly civilians, government troops, and valuable property. Even outside populated areas, precautions were required to protect aboriginal Sakais and ensure that intelligence-gathering by Special Branch was not interrupted. These restrictions prevented much collateral damage.

A final limitation was damage assessment, which was nearly impossible from the air due to the jungle terrain and thus relied on ground sources. But friendly troops often failed to inspect air attack sites because of their inaccessibility or the demands of ongoing operations. Moreover, the guerrillas removed their casualties and were forbidden to speak of them. Coupled with the low mental capacity of the average CT, this lack of intelligence meant that little useful information was collected during interrogation.

Although many insurgents said they surrendered out of fear of air attack, the evidence suggests that air strikes were responsible for less than 10 percent of all enemy dead. Indeed, Number 1 (Bomber) Squadron dropped 17,500 short tons of bombs in eight years, over half the campaign total, yet received credit for only 16 confirmed kills. But air attacks did keep the enemy moving and unsettled and increased the number of successful contacts with ground forces. General Briggs stated that "offensive air support plays a very vital role in the main object of the Security Forces, namely, the destruction of bandit morale and the increasing of the morale of the civil population."¹¹ In the last analysis, offensive air operations were far from being decisive in winning the conflict, but they did provide significant support.

Transport Support

Behind the screen of fighters and bombers conducting offensive operations, the real aerial workhorses were air transport units. Their role included medium and short range transport, supply drops, airborne operations, medical evacuation, command, and liaison. This force was the

largest component of airpower used during the conflict, with up to eight squadrons flying fifteen types of aircraft. Given the poor state of ground communications and security force mobility, these aircraft were in constant demand throughout the campaign.

The medium range transport function incorporated general transport flights, supply drops, and airborne operations. These tasks were performed by four RAF squadrons, supplemented by RAAF squadrons and the Royal New Zealand Air Force, flying Dakota and Valetta aircraft (with Beverley, Hastings, and Bristol transports being added later on). Most of these planes maintained good serviceability rates throughout the Emergency, with Dakota squadrons averaging 75 percent.

General transportation included ferrying troops, equipment, and supplies. Between 1951 and 1954, the conflict resulted in the movement

available and could not insert troops into some areas because of altitude restrictions and a lack of landing zones. Likewise, plans were developed to use paratroopers to reinforce police jungle forts which were accessible only by light aircraft.

The most critical role played by the medium range transport force was dropping supplies. The scope of these operations grew from just 60,000 pounds delivered over the first six months of the conflict to over 700,000 pounds during a single month in 1954. Peak demand was reached in 1955, but operations remained extensive until nearly the end of the campaign. Air drops allowed troops to penetrate the jungle without vulnerable lines of communication or excessive loads.

Equally important, supply drops were needed to construct the deep jungle forts manned by the police. These posts were key to the government strategy of bringing trade, health services, and proper administration to aboriginal Sakais, who were susceptible to intimidation and often forced to provide CTs with food and warnings of government troop movements. It was common to drop over 70,000 pounds of supplies in establishing such forts, some so remote that they were resupplied by air drop throughout the Emergency.

Drops were made through ten yard holes in the jungle canopy, with flights over 200-foot trees at an altitude of 300 feet. Extreme precision was required, because missing by just fifty yards often meant losing the supplies. Aircrews could lose three pounds of bodyweight through perspiration, and their casualty rate was four times that of the infantrymen they supported.¹²

Other limits on the medium range transport included some 18,000 parachutes consumed per year. Few were salvageable after being stuck in treetops, damaged during recovery, or scrounged by soldiers looking for lightweight mosquito-proof sleeping bags. Another was

the loss of ground forces suffered when resupplied in this manner. The final limit was the lack of suitable airfields. Only 17 existed and most were well removed from the front lines in the heart of the country. This was partly overcome by short range transport aircraft [primarily Austers supported by Pembrokes and Pioneers] which could operate from a growing number of local airstrips. In the transport role, these light aircraft carried troops and supplies, evacuated wounded, and made small supply drops. Auster flights were also extensively employed for command and liaison.



Courtesy Imperial War Museum

Spitfire over Malayan coastline.

of 3,000 tons of freight and 35,000 passengers per year. Of particular significance was moving reinforcements. For example, 365 army, naval, and police personnel were airlifted by four Dakotas in 38 flying hours in August 1948. Air transport saved 6,150 man hours that would have been required for surface travel. Other flights carried both passengers and couriers or evacuated casualties to hospitals in Singapore for removal to the United Kingdom by the Far East Casualty Evacuation Service.

Although infrequent, airborne operations by the medium range transport force were a vital supplement to helicopters, which were not always



Courtesy Imperial War Museum

Pioneer aircraft at Fort Kemar with Valetta overhead.

The Pioneer fleet mainly resupplied jungle forts. Indeed, one of the first activities in setting up such a fort was to construct a small airstrip. Pioneers carried some 8,000 passengers and over a million pounds of freight during the peak year of 1956 and made weekly flights to eight of the ten jungle forts in 1957.

The main limitation on the short range transport force was capacity. Pioneers could only carry four passengers and were seldom available for missions other than supplying jungle forts. Austers could carry only one passenger. This was a severe limitation in the command and liaison role, for which commanders often sought to travel with at least one staff member. That left the Pembroke, whose capacity was reduced from eight to six so it could carry emergency equipment for air/sea rescue.

Helicopters were used extensively for both tactical troop transport and medical evacuation. Light helicopters were the S-51 Dragonfly and Sycamore HR-14. The Dragonflies were replaced by Sycamores, which could carry a greater load more reliably. Medium helicopters were Westland Whirlwinds and American S-55s. Whirlwinds posed significant maintenance problems and could carry only three troops, compared to five and serviceability ratings of 80 to 90 percent for S-55s. While modifications brought the Whirlwind passenger load to four, the aging S-55s were retained long after the arrival of newer Whirlwinds.

Helicopters could operate almost anywhere, even in rough jungle. Prior to deployment, security forces were hard pressed to carry the war to

the enemy. Foot patrols took considerable time to penetrate an area, and frequently the insurgents were gone after being warned by aborigines. Likewise, outlying police posts and estates were difficult to reinforce and vulnerable to hit-and-run raids. Helicopters solved this problem, allowing troops to be moved into deep jungle before CTs could withdraw as well as rapidly reinforcing beleaguered garrisons. Not only could troops penetrate far into communist territory, but they arrived fresh and ready to fight.

The flexibility of helicopters was also important for removing casualties. They evacuated some 5,000 during the Emergency. Medical attention was also extended to the Malayan people and helped to gain the trust of Sakai aborigines. Helicopters were periodically used to conduct liaison, transport of people and matériel for rapid intelligence assessment, mount ground reconnaissance, and supply jungle forts. These missions were generally avoided because fixed-wing aircraft could normally undertake them more efficiently, especially once the Pioneer was introduced.

Another helicopter role was crop spraying. Food denial became a crucial operation against the guerrillas, who turned to growing crops in the jungle. Helicopters sprayed toxic chemicals on CT cultivation sites. These missions started in 1952, and by the end of the next year 88 sites had been destroyed.

Air Reconnaissance

Most available maps of Malaya were outdated and of poor quality. Parts of the country had never been accurately surveyed and mapped. Photographic reconnaissance supported the revision of old maps and the preparation of new ones.

Aerial photography was also used for intelligence, planning, and briefing forces for ground and air operations. These activities were particularly important to tracking enemy movements and establishing villages. The object of visual reconnaissance was to identify CT locations. Normally one flight of Austers was assigned to each brigade area, and pilots spent nine hours on average to locate enemy positions. But reconnaissance was effective: it found 155 confirmed and 77 possible guerrilla camps as well as 313 cultivated sites, 31 recultivations, 194 clearings of probable terrorist origin, and 21 aborigine farms under enemy control over a six-month period in 1955.

Both photographic and visual reconnaissance were initially flown by Number 81 Squadron RAF with Spitfires and Mosquitos, and also Number 656 Squadron RAF with Austers. They had a difficult mission. Aside from weather,

the main limitations on air reconnaissance were unreliable aircraft and the danger of compromising ground operations. Although the Austers of Number 656 Squadron were the workhorses, Number 81 Squadron flew aging Spitfires and

reconnaissance aircraft conducted low level flights, which made the insurgents more wary

half the conflict. But problems persisted after the arrival of replacement Meteors, Pembrokes, and Canberras. While reconnaissance aircraft had to avoid endangering security forces, they conducted low level flights over suspected enemy positions, which made the insurgents more wary.

Psychological Warfare

Aircraft were extensively used for psychological warfare, including leaflet and loudspeaker operations. By the end of the conflict there were few insurgents who had not been showered by leaflets or heard a message to surrender broadcast from aircraft. Indeed, psychological warfare was key to the campaign and sought to convince local people of the value of government services and of the promised independence. It was equally important in destroying insurgent morale.

Dropping leaflets from aircraft remained the most common method of dissemination. During the peak year of 1955, 141 million leaflets were dropped, including safe conduct passes, parodies of the enemy leadership, reports of the deaths of key communists, and even enticements to pregnant female terrorists to surrender so their babies could be born in a government hospital.¹³ But leaflets took time to develop and deliver, often arriving after the events which they described had occurred. They also had to be picked up and read, which was easily observed by enemy leaders, who strictly punished their followers for reading them.

Aerial loudspeaker operations were less problematic. Dakotas and Austers had speakers to broadcast continuous loop messages to insurgents. CTs had no choice but to listen to the bulletins, which could be produced within 24 hours of a request. Tapes were targeted to individuals and groups by name and language. Interrogations revealed that many captives considered loudspeaker aircraft highly effective in inducing surrenders.

The effectiveness of airpower in the Malayan Emergency was mixed. From the standpoint of defeating guerrilla forces, "the air campaign could hardly be judged other than a colossal misuse of

resources."¹⁴ Yet in terms of taking the war to the enemy both psychologically and physically, it must be considered a success. It was a force multiplier, maximizing efforts to both eliminate the insurgents and win hearts and minds. When considered as a component of a joint team, airpower was crucial. **JFQ**

NOTES

¹ Malcolm R. Postgate, *Operation Firedog: Air Support in the Malayan Emergency, 1948–1960* (London: Her Majesty's Stationery Office, 1992), p. 29.

² For details on counterinsurgency, see Robert G.K. Thompson, *Revolutionary War in World Strategy, 1945–1969* (New York: Taplinger, 1970), pp. 4–5, and Robert G.K. Thompson, *Defeating Communist Insurgency: Experiences from Malaya and Vietnam* (London: Chatto and Windus, 1966), pp. 50–58.

³ Richard L. Clutterbuck, *Riot and Revolution in Singapore and Malaya, 1945–1963* (London: Faber and Faber, 1973), pp. 169–70; Julian Paget, *Counter-Insurgency Campaigning* (New York: Walker, 1967), p. 48.

⁴ Anthony Short, *The Communist Insurrection in Malaya, 1948–1960* (London: Frederick Muller, 1975), appendix.

⁵ For details see Richard L. Clutterbuck, *The Long Long War: Counterinsurgency in Malaya and Vietnam* (New York: Praeger, 1966), p. 63.

⁶ For an account of operations during this period, see J.B. Oldfield, *The Green Howards in Malaya, 1949–1952* (Aldershot: Gale and Polden, 1953). To get an appreciation of the early food control operations, see the description of Operation Hive in M.C.A. Hennicker, *Red Shadow over Malaya* (London: William Blackwood and Sons, 1955), pp. 131–54.

⁷ Postgate, *Operation Firedog*, p. 40.

⁸ Peter Dennis and Jeffery Grey, *Emergency and Confrontation: Australian Military Operations in Malaya and Borneo, 1950–1966* (St. Leonards: Allen and Unwin, 1996), p. 34.

⁹ Postgate, *Operation Firedog*, p. 49.

¹⁰ Richard Miers, *Shoot To Kill* (London: Faber and Faber, 1959), pp. 56–75.

¹¹ Dennis and Grey, *Emergency and Confrontation*, p. 38.

¹² Postgate, *Operation Firedog*, p. 79; Clutterbuck, *Long Long War*, p. 159.

¹³ For a discussion of psychological warfare, see Archie Derry, *Emergency in Malaya: The Psychological Dimension* (Latimer, UK: National Defence College, 1982).

¹⁴ Dennis and Grey, *Emergency and Confrontation*, p. 43.

The Plight of Joint Doctrine after Kosovo

By PETER F. HERRLY

When the war over Kosovo started, America and its allies faced terminological difficulties that had both strategic and operational import. Briefings at NATO headquarters, the Pentagon, and the White House made reference to an *air campaign* that was underway and a *ground campaign* that was not contemplated. Moreover, nothing was uttered about the maritime component in this effort. This came as something of a shock to military officers and defense specialists who were nurtured in the brave new world of joint doctrine. It was not the way the Armed Forces had agreed to talk about warfighting in the wake of the Goldwater-Nichols Act.

In fact, Operation Allied Force was inconsistent with joint doctrine in both word and spirit. As early as 1991, Joint Publication 1, *Joint Warfare of the U.S. Armed Forces*, and subsequently Joint Publication 3-0, *Doctrine for Joint Operations*, applied the term *joint campaign* to every campaign, whether fought on land, at sea, or in the air. This vocabulary was predicated on common operational practice—capitalizing on firm footing in each dimension of warfare, striking an enemy asymmetrically, and exploiting synergism between maneuver and interdiction. Neither of these seminal doctrinal pubs mentions separate ground, maritime, or air campaigns.

The reaction to such a critique, particularly after the fact, might be so what? Joint doctrine, after all, like other types of military doctrine, serves as an authoritative guide for commanders, not a strait jacket. If it becomes necessary for a commander to fight in another way—and incidentally, to prevail over an enemy—one should not dwell on subtleties like nomenclature.

But the debate runs deeper than terminology and reveals shortcomings in military culture. It demands an inquiry into the development of joint doctrine over the last decade and a look at why it failed so pitifully to describe—if not guide—the largest conflict since the Persian Gulf War.

Background

Congress assigned the authority for developing joint doctrine to the Chairman in what was a mighty grant of influence over the American way of war. The framers of the Goldwater-Nichols Act knew that concepts matter over the long haul and that service paradigms had often diminished military effectiveness in the past.

Efforts prior to 1986 aimed at formulating joint doctrine were faltering, being largely dedicated to constructing a rudimentary hierarchy and highly collegial process that relied on individual services to act as lead agents in drafting new publications. The major problem was that there were very few people in the doctrine business with an appreciation of the unique capabilities of each service and the skill to think through how such capabilities could best be combined.

Colonel Peter F. Herrly, USA (Ret.), held the Chairman of the Joint Chiefs of Staff Chair at the National War College and also served as chief of the Joint Doctrine Division, Joint Staff.

Joint Pub 1 placed the airpower doctrine of strategic attack firmly in the context of a joint campaign

Victory in the Persian Gulf jump-started that process according to the Chairman of the day, General Colin Powell, who commissioned Joint Pub 1. Within weeks of the end of Desert Storm, Powell told the Joint Staff that he wanted air-land-sea doctrine which went beyond AirLand Battle (outer space would be added as a dimension)—and he wanted it fast.

Powell's purpose for Joint Pub 1 was twofold and was reflected in its structure. First, he believed that instilling a genuine joint perspective in the future leaders of the Armed Forces (while preserving the expertise of each service in its respective operational medium) would require at least ten to fifteen years to develop.

Basic changes in service cultures were needed. Second, he thought that overwhelming force as exhibited in the Persian Gulf War concealed some exceptionally diverse doctrinal views among the services, especially on the so-called deep battle area, which could not be resolved quickly. Nevertheless he wanted Joint Pub 1 to provide a hook on which to hang future resolution of these issues.

gradual process of acculturation, especially among mid-level officers. "I want to get to the guys in the engine room," Powell indicated. His target was majors and lieutenant commanders who had developed solid service expertise and were ready to take on wider challenges.

As for the other part of its purpose, providing a hook to resolve joint issues, Joint Pub 1 attempted in its last two chapters to settle some of the conceptual issues dividing the Armed Forces. It came down firmly on the side of friction and fog of war as opposed to the notion that technology can yield *perfect* intelligence. The volume also tried to update the time-honored principles of war by providing fundamentals of warfare in the joint, multinational, and interagency context.

One chapter was quite ambitious. Three of its provisions are particularly interesting today in light of the Kosovo experience. First, it placed the airpower doctrine of strategic attack firmly in the context of a joint campaign, avoiding the term *strategic attack* in favor of the phrase *direct attack of enemy strategic centers of gravity* and closely associating such attacks with a joint campaign, either with air, missile, special operations, and other deep-ranging capabilities or as part of a joint theater campaign. Next, Joint Pub 1 used the concept of joint campaign as a *unifying focus*, a paradigm for the American way of war in which land, sea, air, undersea, and space operations are integrated and harmonized. Finally, it laid the basis for the effort in Joint Pub 3-0 to resolve the issue of deep battle by introducing ideas such as leverage among forces, supporting and supported relationships within a theater, and symmetries and asymmetries in joint warfare. Despite strong attempts by all the services during the intensive six-month drafting and publication process, the terms *ground*, *maritime*, and *air campaigns* appear nowhere in the text.

Deep Battle and Airpower

Immediately after Joint Pub 1 was published in November 1991, the Joint Staff moved to address deep battle, an issue which its own closehold, in-theater assessment of Desert Storm had identified as a major problem. The deep-rooted nature of the problem was revealed by the fact that the services did not even think of the area of battlespace at some distance forward of the front line of ground troops in the same way, nor did they use the same terminology. What was deep battle to the Army, for example, was not deep to the Air Force. At the same time, drafts of Joint Pub 3-0 were so mired in parochialism that a high-level, intensive effort led by the Joint Staff



31st Communications Squadron (Della A. Castillo)

Checking F-15 at Aviano air base.

To meet the first goal, Joint Pub 1 included two chapters on the purpose of military service and values in joint warfare. It also contained examples of the most successful joint campaigns of the past to illustrate that fighting as a joint team was not alien to the American way of war but had characterized its most notable applications. (The corollary should also be noted, that an absence of jointness often marked some of the Nation's least effective operations). The objective was to start a

Helicopters arriving
in Albania.



1st Combat Camera Squadron (Cesar Rodriguez)

AH-64 supporting
Task Force Hawk.



1st Combat Camera Squadron (Michelle Leonard)

began to seek common ground on key issues. At stake was the three quarters of a century-old doctrinal dispute between airmen and the rest of the military over airpower. The debate rose to fever pitch with new precision strike technologies, the appearance of *The Air Campaign* by John Warden, and the role of airpower in the Persian Gulf War.

The solution to the issue in Joint Pub 3-0 (albeit somewhat awkward because of continued service infighting up to the final stages of its development) acknowledged that airpower was equal to land and naval power, that air can be the lead force, and that the air commander can be and often will be supported, not supporting. These formulations were not popular with the Army, Navy, or Marine Corps.

The heart of the approach found in Joint Pub 3-0 was laid out in “Synchronizing Maneuver

and Interdiction,” which highlighted the dilemma such synchronization poses to an enemy:

If the enemy attempts to counter the maneuver, enemy forces can be exposed to unacceptable losses from interdiction. If the enemy employs measures to reduce such interdiction losses, enemy forces may not be able to counter the maneuver.

This pub left it to the joint force commander to “carefully balance doctrinal imperatives (between interdiction and maneuver forces) that may be in tension” and pointed out that the commander may employ interdiction as a principal means of achieving intended objectives, with other components supporting the component leading the interdiction.

But Joint Pub 3-0 also specified that the part of interdiction with a “near-term effect on land and naval maneuver” normally supports that maneuver within an area designated by the joint force commander as a land or naval force area of operation. A nuance of command relationships is that supporting commanders in this context get to prescribe their own tactics, procedures, and so forth. Although the Air Force had held the concept of supporting force to be anathema since 1942, this compromise was adopted.

Finally, Joint Pub 3-0, like Joint Pub 1, did not invoke the term *strategic attack*. Instead, in aid of achieving decisive advantage early on, this volume pointed out that joint force operations may be directed against enemy strategic centers of gravity. This compromise was far from perfect. While joint doctrine firmly embraced the notion of *one campaign*, it did not entirely eliminate the air only option.

Strategic Attack and Kosovo

The fact that Allied Force succeeded without a firm foundation in joint doctrine should not be surprising. It was not a miracle that the major military powers in the world could collectively defeat a small and economically and morally bankrupt state led by a dictator. As Clausewitz noted, “If the political aims are small . . . a prudent general may look for any way to avoid major crises and decisive actions, exploit any weaknesses in the opponent’s military and political strategy, and finally reach a peaceful settlement. If his assumptions are sound and promise success we are not entitled to criticize him.” The termination of the conflict, however, was surely

technology lessens the chance that strategic attack will work

puzzling. Why did Milosevic decide to withdraw his forces? Was it the first-ever triumph of an air campaign? Was it the Russian card? Or had the Alliance mounted a joint campaign, with Kosovar guerrillas serving as a land surrogate, supported by sensors and C⁴I assets of Task Force Hawk in Albania and allied land deployments in Macedonia, coupled with the increasing threats of intervention on the ground? The answer may never be known. In fact, the way the war was fought practically guarantees that we will never know since the Alliance did not use a strategy of compulsion but one of punishment. And Milosevic may never tell (or tell the truth) about why he accepted an agreement.

Kosovo has made it clear why joint doctrine of the early 1990s—although it acknowledged airpower as an equal player in modern warfare—did not adopt the notions of strategic attack and air campaign. There has always been a problem with

strategic attack. Douhet's original idea of 1921 has not changed much. Striking directly at enemy political leadership and popular morale (and/or key industrial or economic targets) will crack the enemy will to resist. But in direct contradiction to the underpinning of strategic attack doctrine, modern industrial and post-industrial societies are not fragile but redundant, and popular will is amazingly hard to crack. This has become complicated by an incremental application of force to first *signal* an enemy that one is serious and then *punish* it. As General Powell has recently stated, the problem with this type of operation is that it permits an enemy the initiative—the enemy decides when it has been punished enough.

Advanced technology lessens the chance that strategic attack will work. Precision weapons coupled with a reluctance to inflict collateral damage result in less shock and certainly less terror. The Serbian people were no doubt getting concerned as hostilities progressed, but it was also clear that NATO airpower was not targeting them except by mistake.

A sense of *déjà vu* arose many times during the Kosovo war, but one of the major ironies was the way in which airmen lamented that their efforts were hampered by political constraints. Inherent in those complaints is a deeper concern over collateral damage, which is understandable if one advocates strategic attack theory: collateral damage runs contrary to that theory, which seeks to shock and frighten an enemy into submission. This point highlights another problem with this doctrine—its contradiction with the laws of warfare, which are based upon deep-seated moral and ethical constraints on the type of targeting most favored by the strategic attack theorists.

That said, why was Kosovo billed as an air campaign? Certainly senior military leaders in the United States and at NATO headquarters know all of the above. For example, the commander of Allied Air Forces Southern Europe expressed the joint doctrine perspective with insight:

We lacked a ground element to fix the enemy, to make him predictable, and to give us information on where the enemy might be. The fact that [the enemy] were in the field and having some success made the Yugoslav

A-10 at Gioia del Colle air base, Italy.



52^d Communications Squadron (Blake R. Boeste)



F-15 crew members, Allied Force.

1st Combat Camera Squadron (Jeffrey Allen)



KC-10 on ramp at Rhein Main.

DOD (Aaron D. Allmon II)

army come out and fight and try to blunt their offensive. They could not stay under cover. And once they moved, or fired their artillery, our strikers learned where they were and could go in for the kill.

The most interesting question for practitioners of the joint operational art is why political leaders picked and even flaunted an air-only option in the first place. Why was the campaign so obviously launched with the hope that sending a signal for a few short days and a few hundred sorties would suffice when joint doctrine clearly indicates both that force must be applied decisively and that hope is not a method? Why were Alliance ground troops expressly taken off the table? Why did NATO launch a campaign where a readily foreseeable enemy reaction—turning the people of Kosovo into a million-person psychological and logistical refugee weapon against the Alliance—was clearly not initially accounted for? And what are the implications of this campaign for the future of joint operations?

The Blind Spot

These questions are linked to the Western preoccupation with casualties. The emphasis on minimal casualties has increased since World War I but has gained momentum since the Cold War. That trend has progressed under the current administration. Neither the drafters nor the approvers of joint doctrine ever anticipated that this concern would grow so strongly and quickly. Certainly allowing 10,000 innocent

Kosovars to perish without risking a single soldier, or bombing a series of rusting hulks because pilots were not permitted to fly lower than 5,000 meters, would not have been deemed credible in 1991.

The reasons for this concern over casualties deserve to be enumerated. First, the media have escalated the obsession with casualties. When gut-wrenching reactions of wives, parents, relatives, and friends of every American casualty or POW is piped live into our living rooms, the calculations of policymakers change. Second, demographics count. As family sizes in the developed nations have decreased, the impact of individual casualties has increased. Third, the distaste for war in the Western world as a policy option also plays a role—virtually forcing national leaders to emphasize humanitarian grounds for conflict. Finally, specific political sensitivities and instincts concerning the use of force by the President and his advisors should not be neglected as causal factors (similar reactions can be found in major European capitals including France, Germany, and Italy).

The Armed Forces have exacerbated this problem. Policymakers have increasingly come to conclude that there is an orderly, discrete, and bloodless military option: the air campaign. Despite the decisions reached about joint doctrine in 1991 and 1992, it is abundantly clear that the concept of an air campaign did not vanish. Ideas count, but so do words. Warden deserves enormous credit, for his book, which expounded an



B-1B taking off from RAF Fairford.

DOD (Jeff Fitch)

air campaign, has had an inordinate influence on policymakers. Such a campaign presents a deceptively cheap way out in a world in which few public officials are willing to risk casualties—or at least unwilling or unable to explain why humanitarian operations are worth the life of a servicemember. So airpower alone has become the policy tool of choice for active combat operations since 1992—and has several times become further distorted to mean only salvos of cruise missiles.

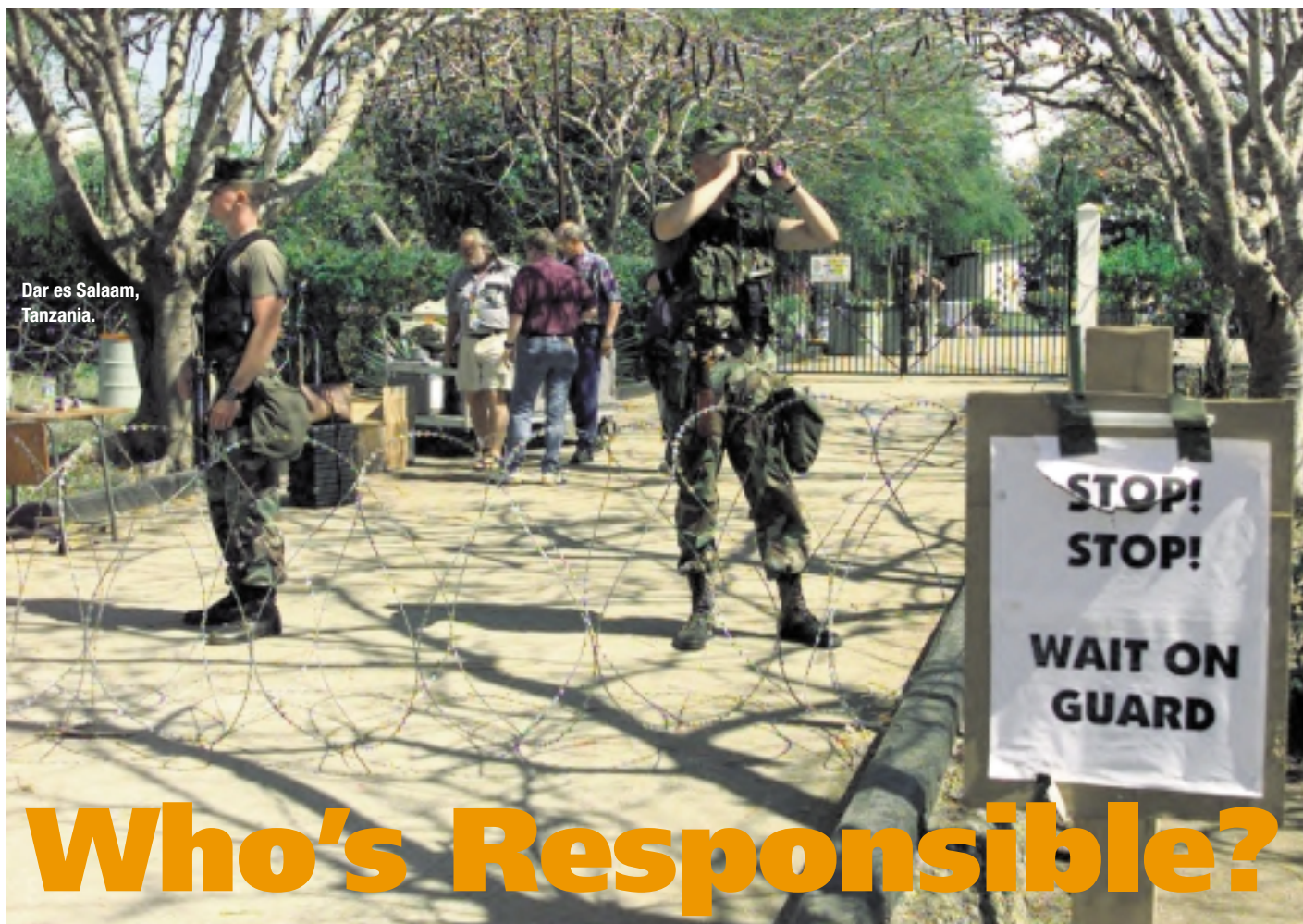
So What's Wrong?

Kosovo lays bare a fundamental problem evaded by joint doctrine during the early 1990s. As French General Philippe Morillon remarked: "What good are members of an armed force who are permitted to kill but not to die?" An obsessive fear of casualties not only robs warfare of useful tools (such as infantry, tanks, and manned aircraft), but on a deeper level strips away its redeeming qualities. Conflict has always presented a terrible dual reality for soldiers: the necessity to kill and the willingness to sacrifice oneself for a greater cause. In Kosovo the cause was just. But what message was sent? That the lives of 10,000 Kosovars are not worth the life of a single American or allied soldier?

The fact that extensive combat operations could last for two and a half months without the loss of one servicemember to hostile fire is an astonishing tribute to the leadership and skill of the participants. It testifies to the hard work over many years to make NATO an efficient military

team on the technical, tactical, and procedural levels. It is also a tribute to joint tactics, techniques, and procedures, and to joint exercises and training. In that sense, the effect of the Goldwater-Nichols Act on joint interoperability has been an unqualified success. But given the horrors inflicted on the Kosovars, we must ask if the right type of campaign was conducted and if the standard of zero casualties can be justified.

Two aspects of jointness—the joint campaign and decisive force, both of which require the display of courage—appear to be jeopardized. Joint Pub 1 must be revised. This is the moment to rethink the reasons for service to the Nation—not in terms of the price we are willing to pay, but the price that we may be allowed to pay. The effects of this reexamination, like every doctrinal pursuit, will have far-reaching implications for the Armed Forces. **JFQ**



1st Combat Camera Squadron (Stan Parker)

Who's Responsible?

Understanding Force Protection

By THOMAS W. MURREY, JR.

Force protection is a contentious issue. Since terrorism is a constant concern, commanders agonize over their responsibilities and demand that their authority be precisely circumscribed. But although confusion persists, the legal basis of force protection has been greatly enhanced in recent years. Once understood, this structure can become an ally in protecting U.S. military personnel.

Terrorist attacks have claimed the lives of over 300 defense-affiliated personnel since 1977.

Yet force protection was not emphasized until after two attacks in Saudi Arabia. The first occurred in November 1995 when a car bomb exploded in Riyadh at the Office of the Program Manager, Saudi Arabian National Guard, that killed five and injured another thirty-five. Then in June 1996, terrorists mounted a devastating attack in Dhahran at Khobar Towers housing complex, detonating 20,000 pounds of explosives in a fuel truck that took the lives of nineteen and wounded hundreds. As Secretary of Defense William Perry later stated, "The Khobar Towers attack should be seen as a watershed event pointing the way to a radically new mindset and dramatic changes in the way we protect our forces deployed overseas from this growing threat."¹

Major Thomas W. Murrey, Jr., USAF, serves as assistant staff judge advocate at Headquarters, U.S. European Command.

Accountability

The force protection role of the Secretary of State is established in the Omnibus Diplomatic Security Act of 1986 which calls for the development and implementation of policies and programs to provide for the security of operations of a diplomatic nature, to include all government personnel on official duty abroad. At first glance it may appear that Congress has given responsibility to the Department of State which it is ill prepared or equipped to handle. However, the law provides for support by other agencies. Moreover, operational control for force protection may be delegated to the heads of the agencies concerned.

The Secretary of State cannot manage assigned security functions universally. The chief of mission in each country—usually the ambassador—directs, coordinates, and supervises executive branch personnel. The Omnibus Act excludes personnel under area military commanders, namely, combatant commanders in chief (CINCs), from security oversight by the Secretary of State

The Secretary of Defense is also accountable for initiating policies and assigning responsibilities for implementing force protection. These duties

CINCs answer for the successes or failures of force protection programs overseas

flow from the Secretary through under secretaries, service secretaries, and Chairman to CINCs. DOD policy is that force protection falls to anyone in command,² but geographic CINCs are the only individuals given the duty by statute. Although the Secretary is ultimately responsible, CINCs answer for the successes or failures of force protection programs for military personnel overseas.

CINCs, however, are not accountable for all military personnel stationed in or deployed to their areas of responsibility. The Secretary has directed that certain military personnel operating in AORs will not be assigned to CINCs and thus are not under their command. These personnel are the responsibility of the Secretary of State unless this duty is delegated back to the Secretary of Defense. Individuals serving with Marine security guard detachments, defense attaché offices, and offices of defense cooperation are examples of military personnel not under CINCs.

As a result, there are two categories of DOD personnel protected overseas: those covered by chiefs of mission and those under CINCs. As simple as that solution seems, there have been disputes between the Departments of State and Defense over certain organizations. In some instances there has been no complete list of DOD organizations within a given country.³ In Spain, the annual report of the American Embassy in

1995 listed sixty DOD civilian and military personnel who were the responsibility of the chief of mission. But when the embassy conducted a recount, including everyone not under a CINC, this figure rose to 962 personnel. After Khobar Towers, the need to address potential problems and replace extant memorandums of understanding (MOUs) between the Departments of State and Defense became obvious.

Universal Memorandum

In December 1997 the Secretaries of State and Defense signed a new MOU that applied to “define the authority and responsibility for the security of DOD elements and personnel in foreign areas not under the command of a geographic CINC.” By allowing operational force protection authority to pass between chiefs of mission and CINCs, the memorandum provided a more logical allocation of duties. In some cases chiefs of mission might have had force protection responsibility for DOD elements even though CINCs might have been in the better position to provide it, or vice versa. The MOU was designed to rectify this problem and establish a principle that responsibility should be assigned based on who can best provide force protection.

Before any country is added to the covered country list in the MOU, the chief of mission and CINC negotiate a memorandum of agreement (MOA) outlining their respective responsibilities, the position of temporary duty personnel, and the direction for the Emergency Action Committee and guidance on coordination.

Once negotiated, a chief of mission will submit the draft MOA to the Department of State for approval. Both State and Defense then take action to place the country on the covered countries list in the Universal MOU, which includes provisions for deletions from the covered country list.

The MOU also addresses the resolution of disputes. If chiefs of mission and CINCs are unable to resolve an issue, they refer it to Washington. If the issue remains unresolved, it is sent in turn to the Under Secretary of State for Management and the Under Secretary of Defense for Policy. If it is not settled on that level, the issue goes to the Secretaries. MOUs may be terminated sixty days after either party gives notice of intention to withdraw from the agreement.

Command Relationships

When CINCs assume force protection responsibilities under MOAs for DOD elements and personnel not previously in their chain, another problem arises: they become accountable for forces with which they have no command relationship. A further issue is responsibility for personnel in temporary duty status or simply passing



DOD (Valerie J. Wearer)

1st Combat Camera Squadron (James D. Mossman)

Sidi Slimane air base, Morocco.



Emplacing blast barriers in Doha, Qatar.

DOD (Shonna Redings)

Foreign national food service workers, Kuwait.

through a country. Scenarios include joint task forces, naval personnel on port calls, aircrews transiting through AORs, NATO personnel, peacekeepers, and DOD contractors. Problems occur when CINCs take on responsibility under country-specific MOAs for military personnel not normally under their command. They have no inherent command authority over these personnel.

The Joint Staff has adopted a solution used on the Arabian peninsula. In October 1996, the Secretary of Defense delegated tactical control over non-CINC assigned forces to the Commander in Chief, U.S. Central Command.⁴ Such control enables CINCs to implement force protection and exercise security responsibilities under the MOU. Moreover, this authority applies to those

personnel temporarily assigned to an AOR, including air crews. The memorandum also authorized CINCs to “change, prescribe, modify, and enforce force protection measures for covered forces . . . inspect and assess security requirements . . . direct immediate force protection measures (including temporary relocation) when, in the judgment of the responsible CINC, such measures must be accomplished without delay to ensure the safety of the DOD personnel. . . .” With this solution, the CINCs now had the protection authority they previously lacked.

NATO Personnel. Military personnel assigned to NATO enjoy no relationship with the Commander in Chief, U.S. European Command (CINCEUR), unless they occupy NATO and U.S. billets concurrently.⁵ If the American half is in the CINCEUR chain of command, CINCEUR will provide force protection through that billet. If the servicemember belongs solely to NATO, he is the obligation of the chief of mission. CINCEUR is responsible for all personnel with whom he has a

command relationship, and the chief of mission cares for the remaining military personnel in that country. In the case of NATO-assigned personnel, this could allow a U.S. servicemember to be the force protection responsibility of CINCEUR, while a peer across the hall falls under the chief of mission. The Universal MOU, along with the country-specific MOAs, aimed to correct that. Unfortunately, at the time this article was written, the memorandum of agreement for Belgium, where many NATO personnel are stationed, had not been negotiated. However, the issue was addressed in the MOA for Turkey, which is in effect. CINCEUR and the chief of mission for Turkey agreed to assign force protection responsibility for all NATO-assigned personnel in Turkey to CINCEUR. When the memorandum for Belgium is completed it is probable that, like the Turkish agreement, most NATO personnel will be assigned to CINCEUR for protection purposes.

Peace Observers. One group that occasionally falls through the force protection net are U.S. military personnel serving as peace observers.

one group that occasionally falls through the force protection net are peace observers

They are assigned to multinational U.N. organizations, often in remote locales far from other DOD personnel.

The normal rules for force protection apply to them: not being under the command of a geographic CINC, they fall under the chief of mission.

For example, an interesting issue arose over a peacekeeping force in Morocco, which is in the U.S. European Command (EUCOM) AOR. Thirty American military personnel are assigned to the U.N. Mission for a Referendum in Western Sahara (MINURSO). This peacekeeping force operates in a disputed area. Originally 26 countries contributed over 1,700 military observers, 300 policemen, and up to 1,000 civilian personnel to serve with this organization. As the sovereignty of the Western Sahara was in question, the local chief of mission did not normally exercise security functions in the disputed region, which meant that he was not accountable for the thirty Americans. However, an agreement was reached that directed him to assume responsibility for all personnel assigned to or on temporary duty to MINURSO.

Contractor Personnel. Another complex issue involves contractors hired by the Department of Defense. Contract employees often accompany U.S. military forces on contingency operations to provide services ranging from food preparation to computer and engineer support. For instance, the engineering firm of Brown and Root performed work in both Somalia and Bosnia. Contractors often eat, work, and live alongside military personnel. By law the chief of mission is responsible

for the safety of contract employees. There appears to be an exception in situations when crises are declared by the National Command Authorities or CINCs.⁶ Then the DOD components work with contractors who provide essential services in order to develop and implement plans and procedures to ensure that their employees can perform. Although the instruction is vague, it can be interpreted as directing DOD components to provide force protection for contractors when either NCA or CINCs declare a crisis. In routine cases, however, DOD has no legal obligation to furnish security for contractors unless specific language is included in the contract.

As long as terrorism remains a threat, force protection will be a vital feature of operations. It is essential that commanders understand the framework for allocating responsibilities. The first and most important step in a force protection program is determining who is responsible for every military unit located overseas. **JFQ**

NOTES

¹ William J. Perry, *Report to the President: The Protection of U.S. Forces Deployed Abroad* (Washington: Government Printing Office, September 15, 1996).

² See DOD Instruction 2000.16, "DOD Combatting Terrorism Program Standards" (September 15, 1996). This statement is taken to mean that commanders on all levels are expected to take measures to protect troops from problems ranging from terrorism to disease.

³ For instance, the U.S. military has over 150 elements across the United Kingdom.

⁴ The qualifier in this case is that responsibility must first be transferred from chief of mission to geographic CINC under a country-specific MOA. CINCs are not accountable for transferred forces until a memorandum is signed and placed on the covered country list.

⁵ CINCEUR is also dual hatted. He commands all military personnel in theater and serves as Supreme Allied Commander, Europe, with responsibility for NATO forces. However, that fact does not change force protection relationships for NATO-assigned personnel.

⁶ See DOD Instruction 3020.37, "Continuation of Essential DOD Contractor Services During Crises" (January 26, 1996), which defines a crisis as "any emergency so declared by the National Command Authorities or the overseas combatant commander, whether or not U.S. Armed Forces are involved, minimally encompassing civil unrest or insurrection, civil war, civil disorder, terrorism, hostilities buildup, wartime conditions, disasters, or international conflict presenting a serious threat to DOD interests."

On August 9, 1999, General Henry H. Shelton, USA, hosted a ceremony which commemorated the 50th anniversary of the establishment of the position of Chairman of the Joint Chiefs of Staff. The event, which was held at Fort Myer in Virginia, also included remarks by President Clinton and Secretary Cohen. Since the post was created by an amendment of the National Security Act of 1947, fourteen officers selected from the Army, Navy, and Air Force have served as Chairman.

GOLDEN ANNIVERSARY

The Chairmen, 1949–1999



General of the Army
Omar Nelson Bradley,
USA

August 16, 1949–August 15, 1953



Admiral
Arthur William Radford,
USN

August 15, 1953–August 15, 1957



General
Nathan Farragut Twining,
USAF

August 15, 1957–September 30, 1960



General
Lyman Louis Lemnitzer,
USA

October 1, 1960–September 30, 1962



General
Maxwell Davenport Taylor,
USA

October 1, 1962–July 1, 1964



General
Earle Gilmore Wheeler,
USA

July 3, 1964–July 2, 1970



Admiral
Thomas Hinman Moorer,
USN

July 2, 1970–July 1, 1974



General
George Scratchley Brown,
USAF

July 1, 1974–June 20, 1978



**General
David Charles Jones,
USAF**

June 21, 1978–June 18, 1982



**General
John William Vessey, Jr.,
USA**

June 18, 1982–September 30, 1985



**Admiral
William James Crowe, Jr.,
USN**

October 1, 1985–September 30, 1989



**General
Colin Luther Powell,
USA**

October 1, 1989–September 30, 1993



**General
John Malchase Shalikashvili,
USA**

October 25, 1993–September 30, 1997



**General
Henry Hugh Shelton,
USA**

October 1, 1997–present

Doctrine

TECHNOLOGICAL UPGRADES

The Joint Electronic Library (JEL) incorporates every title in the joint doctrine publication hierarchy as well as supporting documentation. Published semi-annually on CD-ROM, it can be accessed on the joint doctrine Web site (<http://www.dtic.mil/doctrine>) or GCCS/SIPRNET. In addition to JEL, authorized users can access draft doctrine which is password-protected for coordination purposes.

Forthcoming products include the Joint Doctrine Information System (JDEIS), which will function similar to an Internet search engine. It will link 110 approved joint doctrine publications with the Universal Joint Task List (UJTLS) as well as service doctrine and related material (such as CJCS directives). When JDEIS is in place, users can access joint warfighting information quickly and efficiently, eliminating the need to frequently reprint hard copies. Real-time upload will ensure prompt access to joint doctrine. Since this system is not scheduled for delivery in FY02, the Joint Staff will continue to issue joint pubs and CD-ROM JELs until the unified commands and services indicate that a complete transfer is feasible (estimates range between 3 and 5 years).

Students at professional military education (PME) institutions will have access to Doctrine Networked Education and Training (DOCNET), an Internet-based distributed learning system, on a 24-hour basis. Of 30 planned modules, 6 are found on the Joint Doctrine Web Site: operational art, joint force employment, military operations other than war, joint task force commander, joint fire support, and unified action armed forces.

Another initiative uses the interactive application of doctrine with a video wargame format. The CD-ROM game can be played at home, the office, or an off-site location with a laptop computer and is based on 14 different scenarios. Users will be asked to plan on the strategic and operational levels. Crisis action planning will result in simulated employment on the operational level, thereby providing feedback at each step to indicate consistency with joint doctrine. An effective learning tool, this wargame is CJCS-approved and funded (with delivery in the first quarter of FY00).

The Joint Doctrine Operations Laboratory (JDOL) will use elements of JDEIS, DOCNET, and the video wargame to teach doctrinal and warfighting skills. It will serve as an Internet-based, cooperative, interactive, multiplayer opposing force simulator for exercises, experimentation, and rehearsals in various environments and situations. Civilian officials and military leaders and staffs, regardless of their location, will be able to take part in focused simulations. JDOL will be available worldwide on a 24-hour basis with real-time editing to modify forces, increase OPTEMPO, and change venue and terrain with realistic maps and intelligence

JFQ

JOINT DOCTRINE WORKING PARTY

The Joint Warfighting Center hosted the 23rd meeting of the Joint Doctrine Working Party (JDWP) on April 20–21, 1999, at Fort Monroe. It was sponsored by the Director for Operational Plans and Interoperability (J-7), Joint Staff, and attended by representatives from the combatant commands, services, and doctrine centers.

The participants unanimously agreed to assign doctrine on civil affairs to a future title, Joint Publication 3-57.1, *Joint Doctrine and Joint Tactics, Techniques, and Procedures (JTTP) for Civil Affairs*. The current revision of Joint Pub 3-57 (formerly *Doctrine for Joint Civil Affairs*) provides insufficient coverage of many functions involved in this field and will be retitled *Doctrine for Joint Civil-Military Operations (CMO)*.

It was also agreed at the meeting to eliminate Joint Publication 3-56, *Command and Control Doctrine for Joint Operations*, which never advanced beyond the draft stage. A need was identified to improve coverage of the subject in Joint Pub 0-2, *Unified Action Armed Forces (UNAAF)*.

The U.S. Army Training and Doctrine Command presented a briefing on

homeland defense which is advanced by that service. An Army Center of Excellence for Homeland Defense has been established at Fort Leonard Wood to develop overarching doctrine to assist civil authorities against a range of foreign and domestically based threats against the United States.

JFQ

JOINT PUBS UPDATE

The following titles have been approved through the joint doctrine development process:

- Joint Publication 2-03, *Joint Tactics, Techniques, and Procedures for Geospatial Information and Services Support to Joint Operations* (March 31, 1999).
- Joint Publication 3-07.3, *Joint Tactics, Techniques, and Procedures for Peace Operations* (February 12, 1999).
- Joint Publication 3-09.1, *Joint Tactics, Techniques, and Procedures for Laser Designation Operations* (May 28, 1999).
- Joint Publication 3-15, *Joint Doctrine for Barriers, Obstacles, and Mine Warfare* (February 24, 1999).
- Joint Publication 3-35, *Joint Deployment and Redeployment Operations* (September 7, 1999).
- Joint Publication 3-59, *Joint Tactics, Techniques, and Procedures for Meteorological and Oceanographic Operations* (March 23, 1999).
- Joint Publication 5-00.2, *Joint Task Force Planning Guidance and Procedures* (January 13, 1999).
- Joint Publication 1-02, *Department of Defense Dictionary of Military and Associated Terms* (amended through June 29, 1999).

For joint doctrine updates go to <http://www.dtic.mil/doctrine/update.htm>.

JFQ

CROSS-SERVICE ISSUES

The Air Land Sea Application Center (ALSA) is chartered by the four services to rapidly respond to interoperability issues. It produces guidance for warfighters and develops multiservice tactics, techniques, and procedures, facilitating joint information exchange and operational solutions across the Armed Forces. A key element in the development of ALSA projects is the joint working group process which is comprised of volunteers from the services and subject matter experts, specialists on doctrine, and operators who use the published output. Those interested in participating should contact ALSA by writing to 114 Andrews Street, Langley Air Force Base, Virginia

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23665; calling (757) 225-0902 / DSN 575-0902; or contacting the organization at <http://www.dtic.mil/alsa>.

Recent ALSA publications which can be downloaded via that site include:

- *Multiservice Procedures for Joint Air Traffic Control* (January 1999) offers employment procedures and processes for synchronizing and integrating forces and equipment (see <http://www.dtic.mil/alsa/jatc.htm>).

- *Multiservice Procedures for Joint Task Force Information Management* (April 1999) covers the management, control, and protection of information in a JTF conducting continuous operations (see <http://www.dtic.mil/alsa/jtinfo.htm>).

- *Survival, Evasion, and Recovery* (June 1999) is an easy-to-use, weatherproof, pocket-sized guide on basic survival, evasion, and recovery designed to be of assistance regardless of geographic location (see <http://www.dtic.mil/alsa/survival.htm>).

JFQ

URBAN WARFARE ONLINE

Interest in military operations in urban terrain (MOUT) and the tactics, techniques, and procedures for conducting them during combat and peace operations are reflected in the increasing number of resources found on the World Wide Web.

- The Center for Army Lessons Learned maintains a Web site with information on tactics, techniques, and procedures (see <http://call.army.mil/call/homepage/mout.htm>).

- The Marine Corps Combat Development Command has posted material as well as links to MOUT-related web sites (see <http://www.geocities.com/Pentagon/6453>).

- The RAND Corporation has published studies on urban warfare capabilities (<http://www.rand.org/publications>) including joint doctrine for urban operations. One report even evaluates the impact of such operations (see <http://www.rand.org/organization/ard/research.sums/cities.html>).

- The Foreign Military Studies Office, U.S. Army Command and General Staff College, has issued occasional papers on MOUT including a study on Russian operations (see Timothy L. Thomas, "The Battle of Grozny: Deadly Classroom for Urban Combat," which is found online at <http://call.army.mil/call/fmso/fmsopubs/issues/battle.htm>).

JFQ

LASER LIAISING

Because of its increased accuracy, lethality, and ability to reduce collateral damage, laser guidance weaponry is being frequently employed when combatants

and noncombatants are in close proximity. Joint operations demand common designation procedures and a knowledge of the capabilities and limitations of laser target designators (LTDs) and laser guided weapons (LGWs). Joint Publication 3-09.1, *Joint Tactics, Techniques, and Procedures for Laser Designation Operations*, is a valuable reference on the employment and safety aspects of LGWs and the characteristics of both LTDs and LGWs currently found in the field and fleet.

This volume, which was issued on May 28, 1999, contains basic descriptions of LTDs and requirements for their use with laser spot trackers (LSTs) and LGWs. It considers different types of laser reflections and their effects on LGWs or LSTs. Moreover, it contains a vital discussion on false seeker lock-on and measures to prevent it.

The publication deals with procedures for both artillery and fixed- and rotary-wing close air support. Figures illustrate safety zones and acquisition areas for aircraft while the accompanying text on various LTDs, LSTs, and LGWs treats employment concepts that provide a quick reference for personnel operating in a joint environment.

Moreover, laser codes and safety are covered. The volume explores code compatibility and management as well as codes used with laser-guided bombs and pulse repetition frequency code prioritization. A chapter on laser safety outlines eye safety, fratricide safety due to false lock-on, and organizational safety. Throughout the publication safety considerations and common misunderstandings for designation procedures are presented in blue highlight.

Joint Pub 3-09.1 concludes with tables on both fixed- and rotary-wing capabilities. Other reference tables describe and compare man-portable LTDs and characteristics of specific LSTs and LGWs. In addition, appendices contain detailed designation procedures for both copperhead and fixed- and rotary-wing close air support.

Because future operations will be joint and forces will rely more and more on the accuracy and lethality of precision munitions, it is essential that the services know how to operate with each other when using laser designators and weapons. The tactics, techniques, and procedures found in Joint Pub 3-09.1 will help ensure the successful and safe employment of lasers in a joint environment.

JFQ

Organization

THE ARMY—INTENT OF THE CHIEF OF STAFF

[General Eric K. Shinseki became the 34th Chief of Staff of the U.S. Army on June 22, 1999. He has been Deputy Chief of Staff for Operations and Plans at Headquarters, Department of the Army; Commanding General, U.S. Army Europe; Commander, Allied Land Forces Central Europe; and Commander, NATO Stabilization Force in Bosnia-Herzegovina. Prior to assuming his present assignment, he served as Vice Chief of Staff of the U.S. Army. Following is a summary of his statement of intent.]

The Army places soldiers *on point* in a dangerous world because they are the surest signs of the commitment of the Nation. Our nonnegotiable contract with the American people is to be a warfighting Army—persuasive in peace and invincible in war. Therefore, my overarching goal as CSA must be to provide the leadership, grounded in a vision for the future, to keep this Army the pre-eminent land warfighting force in the world. We will aspire to be the most esteemed institution in the Nation, the most respected army anywhere, and the most feared ground force to those whose actions would threaten the vital interests of the United States. Objectives for achieving this goal that will receive my personal attention are:

- *Increasing strategic responsiveness.* Heavy forces must be more strategically deployable and more agile with a smaller logistical footprint, and light forces must be more lethal, survivable, and tactically mobile.

- *Developing a clear, long-term strategy to improve operational jointness and to implement the goals of Joint Vision 2010.* We will be the leader in joint mission readiness and interoperability. We will allocate resources to research, development, and experimentation so as to support the strategy and tackle the tough organizational changes it dictates.

- *Developing leaders for joint warfighting as well as change.* The selection of senior leaders will be based on their joint warfighting abilities, leadership, and capacity for innovation and change.

- *Completing the full integration of the active and Reserve components.* We are *The Army*—totally integrated into a oneness of purpose—no longer the Total Army, no longer the One Army. We are *The Army*, and we will march into the 21st century as *The Army*.

- *Manning our warfighting units.* Manning the force is an urgent priority. If, after we have structured for the tasks we must be ready to perform, we find ourselves short of formations to accomplish assigned missions, I am

prepared to argue for increases in both structure and endstrength with the confidence that I will be able to gain the support of the Defense leadership.

■ *Providing for the well-being of soldiers, civilians, and family members.* The Army's readiness is inextricably linked to the well-being of its people. Our success depends on the whole team—our soldiers, civilians, veterans, and their family members—all of whom serve the Nation. We make the most significant investment in the Nation's security by properly training, equipping, and supporting them. We must strive to provide adequate housing, schools, and medical and dental care with a quality and access comparable to society at large. When we deploy, our soldiers should know that their families are safe, housed, and have access to medical care, community services, and educational opportunities.

Finally, we are and will remain a values-based institution where loyalty, duty, respect, selfless service, honor, integrity, and personal courage are the foundation of all that we do today and all of our future successes. Our soldiers, who exemplify these values every day, are the best in the world. They voluntarily forego comfort and wealth, face hardship and sacrifice, and confront danger and sometimes death in defense of the Nation. We owe them our tireless efforts, our professional excellence, and our principled commitment to ensure that they remain the world's finest land force for the next crisis, the next war, and an uncertain future. JFQ

This excerpt is taken from the "Intent of the Chief of Staff, Army" which was issued on June 23, 1999. The full text of the statement can be found online at <http://www.hqda.mil/ocsa/intent.ppt>.

THE MARINE CORPS— GUIDANCE FROM THE COMMANDANT

[General James L. Jones, Jr., became the 32nd Commandant of the Marine Corps on April 21, 1999. He has served as Commanding General, 2nd Marine Division; Director of the Expeditionary Warfare Division in the Office of the Chief of Naval Operations; and Deputy Chief of Staff (Plans, Policies, and Operations) at Headquarters, U.S. Marine Corps. Prior to assuming his current position, he was Military Assistant to the Secretary of Defense. The following statement is taken from his guidance to the Marine Corps.]

Our Marine Corps traditions connect us to a proud legacy of past achievements and serve as a bridge to future success. In order to meet the challenge and

promise of tomorrow, marines must possess a thorough understanding of the goals, values, and institutional objectives of their Corps.

Leadership is the heart of our institutional character. Of the many skills and abilities we use in our profession, there is none we prize more highly.

As marines, we are imperfect people living and working in an institution that strives for perfection. That we make mistakes is to be expected. Leadership at all levels determines how we address these mistakes. When we are confident that we will not be held to an impossibly high standard, trial and error will enhance the learning process and encourage us to act with the boldness that should be our hallmark.

Marine families are members of the team, and their support is essential to the health of the Corps. I would ask all to join me in eliminating the term "dependent" in referring to our family members.

Winning battles is our reason for being. For 223 years we have faced our adversaries across the spectrum of conflict "in ev'ry clime and place" and have prevailed time and again. This is what America expects and it is what we will continue to deliver.

The operating forces are our focus. As the source of the combat-ready MAGTFs that are our unique contribution to the defense of the Nation, they are the soul of the Corps. We must provide our units the resources to train, maintain equipment, deploy, and if necessary fight.

Our enduring partnership with the Navy is our institutional center of gravity. The Navy is our stalwart partner in littoral power projection, providing capabilities that complement, support, and sustain MAGTF expeditionary striking power. We will continually explore ways of strengthening the Navy-Marine Corps bond to increase our understanding of each other's direction and goals.

We need to look at those functions marines perform in the supporting establishment and ask ourselves how many can be outsourced. My goal is to return as many marines as possible to the operating forces.

Current trends suggest that future crises will require our participation across the full spectrum of operations—from humanitarian assistance, to peacekeeping, to combat.

I expect marines to be leaders in demonstrating and explaining trust when operating within joint and combined environments.

MAGTFs can support joint experimentation programs. As unique, balanced, combined arms formations, they are ideal for evaluating emerging joint doctrine, force structure, training methods, or equipment in an environment that is a microcosm of the joint operational context.

We will play a key role in contributing to homeland defense. Defending American lives, property, and institutions at home is a principal task of government.

The Marine Corps Reserve is an essential part of the Total Force Marine Corps both in peace and in war. They will continue to fulfill that role under the total force concept. I intend to resource it at a level similar to that of the regular component.

The Marine Corps is inextricably linked to American society. By maintaining a sound relationship with the society we serve, we will build confidence in our institution and support for our efforts.

A promising future lies ahead and I am confident that we are prepared for it because we define ourselves by balanced excellence in the way we train, live, and, if need be, fight—as United States Marines. We must continue to encourage thinking and initiative, emphasize the primacy of the marine and his rifle, and be inspired by the powerful sense of purpose and belonging implicit in the words, "For the strength of the Pack is the Wolf, and the strength of the Wolf is the Pack." *Semper Fidelis.* JFQ

This excerpt is taken from the "Commandant's Guidance" issued on July 1, 1999. The full text can be found online at <http://www.usmc.mil/cmc.nsf/cmc>.

JOINTNESS ABROAD

In 1998 the United Kingdom conducted the Strategic Defence Review (SDR) to determine defense requirements and capabilities for the future. It led to a series of initiatives to consolidate expertise and maximize effectiveness while eliminating duplication and waste. One result was the formation of Joint Rapid Reaction Forces (JRRF) to spearhead a modernized, rapidly deployable, and better-supported front line (see the SDR report at <http://www.mod.uk/policy/sdr/wpindex.htm>; of special note is an essay on joint operations at <http://www.mod.uk/policy/sdr/essay08.htm>).

The review stressed the fact that British rapid deployment capabilities fell short of emerging requirements. There was a lack of combat power, logistic and medical support for simultaneous or prolonged deployments, and command and control arrangements. In addition, a need existed for the capability to react to two concurrent medium-scale operations—one relatively short warfighting deployment, on the one hand, and one more extended nonwarfighting operation, on the other.

JRRF brings together readily available forces from all services. A larger, much improved, and more balanced capability is scheduled to be in place by October 2001. The forces have already been identified and an initial operational capability will be achieved by April 2000. They will be drawn from the deployable high readiness units in each service. From that, tailored force packages can be generated for high and very high readiness operations of every type that can be deployed not only on national operations but also as part of NATO, Western European Union, United Nations, Organization for Security and Cooperation in Europe, or ad hoc coalition forces.

Both naval and air force assets required to reach full capability are nearly in place, including 3 Commando Brigade. Some equipment remains to be delivered: four roll-on/roll-off ships and special amphibious ships, which are currently under construction. JRRF aircraft will be complete with delivery of the short-term RAF strategic airlifter, a critical enabler for rapid deployment.

Army preparations are more complex. One key outcome of the review was the organization of a sixth heavy brigade. This will enable 1 Armoured Division and 3 Division to run three years of training and operations (formation readiness cycle), which is key to maintaining high readiness. With the commitment of significant logistic capability to Bosnia, the initial army capability will be limited to brigade-sized operations where activity levels are low. But this combat power will grow each year as brigades complete the training phase of the formation readiness cycle and they are able to provide a full brigade for warfighting operations while a brigade-sized nonwarfighting operation is being conducted simultaneously.

JRRF will be configured in two echelons, the first on a very high level of readiness and comprised of the following units:

- lead commando group
- lead armoured battlegroup

- lead mechanized battlegroup
- lead reconnaissance battlegroup
- lead aviation battlegroup
- airborne battlegroup
- special forces
- maritime and air forces.

Second echelon forces at a high level of readiness will include:

- 3 Commando Brigade
- Ready Armoured Brigade from 1 Armoured Division
- Ready Mechanized Brigade from 3 Division
- 16 Air Assault Brigade
- maritime and air forces.

To overcome weaknesses in logistic support, the position of joint force logistic component commander was established with responsibility for the reception, staging, onward movement, and sustainability of a joint force to overcome problems exposed in the Persian Gulf during Operation Granby. This is not a standing position, but will draw on expertise in single service logistic units. The commander will have a dedicated joint logistic staff, communications, and life support which is tailored to meet the demands of a given operation.

The JRRF concept is a significant advance. It will generate tailored joint force packages at a high state of readiness that have real punch, sustainable logistic support, and excellent command and control arrangements to meet a variety of current security challenges. **JFQ**

LOGISTICS AGREEMENTS

In 1980 Congress passed the NATO Mutual Support Act (NMSA) which provided DOD simplified authority for acquiring logistic support, supplies, and services without using traditional contracting procedures. It also authorized, after consultation with the Department of State, making agreements with allied nations and organizations and also granted authority to provide logistics support outside normal foreign military sales channels in exchange for cash or replacement in kind.

As originally enacted, NMSA limited its application to NATO allies and organizations and U.S. forces stationed in Europe and adjacent waters. Since then Congress has amended the statute several times. First, it expanded NMSA to allow exchanges of logistics support with non-NATO member nations. Second, it altered the replacement in kind criterion from

identical replacement to include equal value exchange. Third, it permitted the loan of equipment as well as the exchange of airlift services. Finally, it expanded the statute to permit the sale of non-lethal items not listed as significant military equipment on the U.S. munitions list, such as communications.

Reaching an acquisition and cross-servicing agreement (ACSA) involves two steps. First, the Departments of Defense and State declare a country to be eligible. Once a country is accepted, the representatives of the CINC and their foreign counterparts develop an agreement.

For a country to become eligible, the unified command submits a request with justification to the Directorate for Logistics (J-4), Joint Staff, which together with the Office of the Secretary of Defense determines if an agreement meets the interests of national security. If there is concurrence, the Department of State is consulted and then Congress is notified of the intent to declare a country eligible. If no congressional objection is raised within 30 days, the country becomes eligible.

In the next step the unified command holds negotiations using the approved ACSA template as a basis. The draft agreement—with changes to the template lined in—is then forwarded to the Joint Staff. After successful review and approval of the draft, permission is given to conclude the agreement. The Joint Staff in turn delegates that authority to the CINC and both parties sign.

These agreements permit exchanges of logistics support, supplies, and services consisting of food, billeting, transport, petroleum, lubricants, clothing, communications, medical assistance, ammunition, base operations, storage, facility use, calibration, port handling, and training (but not weapon systems, major end items, initial quantities of replacement parts and spares, or significant military equipment items on the munitions list under the Arms Export Control Act).

The United States has ACSAs in place with 39 nations and 62 others are eligible. They are routinely used to respond to peacekeeping, disaster relief, and contingency operations and include:

- airlifting supplies to three million people left without power during ice storms in Canada
- providing two roll-on/roll-off ships to deploy the Allied Rapid Reaction Corp into Croatia
- delivering vehicles and equipment in support of a noncombat operation in Africa

- loaning radio beacons to allied forces in Bosnia
- providing food and billeting in exchange for bridge construction in Hungary
- trading medical services in Tuzla for like services in Sarajevo.

ACSAs are powerful logistics tools. Under them countries can pay less for goods and services than the foreign military sales rate. Payment may be made in cash, replacement in kind, or equal value exchange, and it can be made after the fact. Accounting, reporting, billing, and collecting remain service responsibilities. When an agreement is used to support contingencies, humanitarian and foreign disaster assistance dollar ceilings do not apply.

JFQ

Education

CJCS ESSAY COMPETITION

The 18th annual Chairman of the Joint Chiefs of Staff Strategy Essay Competition was conducted on May 20–21, 1999, at the National Defense University in Washington. The contest was begun by General David C. Jones, USAF, the 9th Chairman, to challenge the students at intermediate and senior colleges to write original essays on significant aspects of national security strategy and is open to both resident and non-resident students from all services as well as their civilian classmates.

This year's winners were:

- Ms. Connie L. Stephens (National War College) who won first place for an essay on "The Revolution in Media Affairs: Reinventing U.S. Strategic Communications in the Era of Slobodan Milosevic."
- Mr. Mark R. Sanderson (College of Continuing Education, Naval War College) who was awarded second place for an essay on "NATO, the United States, and Russia: Flexible Security after the Cold War."
- Major David W. Coffman, USMC (College of Naval Command and Staff) who took third place for an essay on "Operational Art and the Human Dimension of Warfare in the 21st Century."

On June 14, 1999 Lieutenant General Richard A. Chilcoat, USA, President of the National Defense University, presented awards on behalf of the Chairman to the winners in a ceremony at Fort Lesley J. McNair. The winners received a certificate signed by the Chairman and a collection of professional military books provided through the generosity of the NDU Foundation. The three winning essays were published under the title *Essays 1999* by NDU Press and can be accessed at the Web site shown in the advertisement below.

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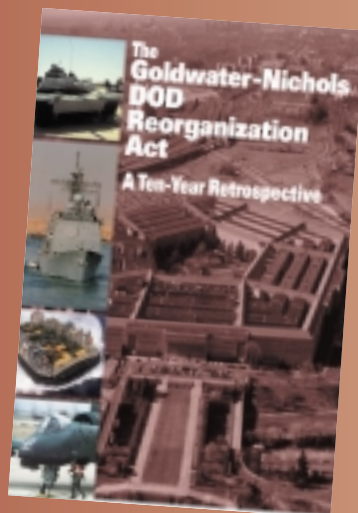


Recognizing the winners, 18th CJCS Essay Competition

NDU (Mark Mieske)

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This volume captures the perspectives of a group of defense officials and military professionals, each of whom was closely associated with the Goldwater-Nichols Department of Defense Reorganization Act of 1986 as framer, implementer, or expert observer of this landmark piece of legislation:

- DAVID C. JONES**
Reform: The Beginnings
- JAMES R. LOCHER III**
Building on the Goldwater-Nichols Act
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On Revolutions, Barriers, and Common Sense
- JOHN P. WHITE**
Meeting the Needs of the Secretary of Defense
- JOHN M. SHALIKASHVILI**
Goldwater-Nichols Ten Years from Now

Joint Force Quarterly Essay Contest on

Military

INNOVATION

To stimulate innovative thinking on how the Armed Forces can remain on the cutting edge of warfare in the 21st century, *Joint Force Quarterly* is pleased to announce the 1999–2000 “Essay Contest on Military Innovation” sponsored by the National Defense University Foundation, Inc. The contest solicits contributions on exploiting technological advances in warfighting as well as on the development of new operational concepts and organizational structures. Essays may be based on either historical analyses of military breakthroughs or contemporary trends in the conduct of war.

Contest Prizes

Winners will be awarded prizes of \$2,500 and \$1,500 for the two best essays. In addition, a prize of \$1,000 will be presented for the best essay submitted by an officer in the rank of major/lieutenant commander or below (or equivalent grades), regardless of nationality.

Contest Rules

1. Entrants may be military personnel or civilians (from the public or the private sector) and of any nationality. Essays written by individual authors or groups of authors are eligible.
2. Entries must be original in nature and not previously published (nor under consideration for publication elsewhere). Essays derived from work carried out at intermediate and senior colleges (staff and war colleges), universities, and other educational institutions are eligible.
3. Entries must not exceed 5,000 words in length and must be submitted typewritten, double-spaced, and in triplicate (no electronically transmitted contributions will be accepted). They should include a wordcount at the end. Documentation may follow any standard form of citation, but endnotes rather than footnotes are preferred.

4. Entries must be submitted with (a) a letter indicating the essay is a contest entry together with the author's name, social security account number (or passport number in the case of non-U.S. entrants), mailing address, daytime telephone number, and FAX number (if available); (b) a cover sheet containing the contestant's full name and essay title; (c) a summary of the essay which is no more than 100 words; and (d) a biographical sketch of the author. Neither the names of authors nor any personal references to the identity of the contributors should appear in the body of the essays (including running heads or other distinguishing markings such as office symbols).

5. Entries should be mailed to: Essay Contest, ATTN: NDU–NSS–JFQ, 300 Fifth Avenue (Bldg. 62), Fort Lesley J. McNair, Washington, D.C. 20319–5066.

6. All entries must be postmarked no later than June 30, 2000 to be considered eligible.

7. *Joint Force Quarterly* will hold first right to publish all entries. The prize-winning as well as other essays submitted in the contest may appear in future issues of the journal.

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Available soon . . .

Strategic Assessment 1999

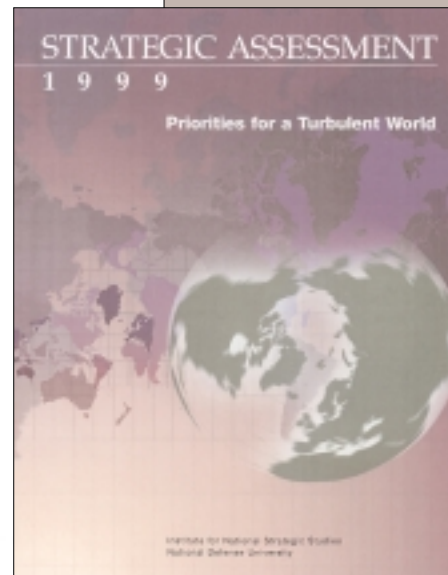
Priorities for a Turbulent World

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ONE OF AIRPOWER'S FOUNDING FATHERS

A Book Review by

THOMAS A. KEANEY

MacArthur's Airman: General George C. Kenney and the War in the Southwest Pacific

by Thomas E. Griffith, Jr.
Lawrence, Kans.: University of Kansas
Press, 1998. 338 pp. \$39.95
[ISBN 0-7006-0909-1]

As an airman with the credentials of a founding father, George C. Kenney championed the innovative and flexible use of aircraft, developing many concepts now typical of modern warfare. A new biography, *MacArthur's Airman: General George C. Kenney and the War in the Southwest Pacific* by Thomas Griffith, superbly portrays these accomplishments. Essentially, as other airmen of his time made their names in strategic bombing operations against Germany and Japan, Kenney pioneered control of the air, airlifting men and supplies, suppressing enemy air defenses, operating from sparse bases, and other activities common to the theater air commander today. His career deserves the attention of not just airmen, but of anyone who is involved in joint operations.

The author, an Air Force officer himself, fills a gap in the literature on American airpower with a remarkable account that will no doubt be the standard work on Kenney for years to come. Aside from an autobiographical memoir which was published in 1949 (*General Kenney Reports*), no other work on Kenney's wartime service in the Southwest Pacific has appeared. While Griffith uses Kenney's own writing extensively, he goes considerably beyond that, consulting both public and private archives as well as other published and unpublished sources. The result is a balanced treatment that offers background on events which occurred during Kenney's service and elaborates on key aspects of air operations which he influenced. Citing technical reports, official memoranda, flight

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George Kenney
in Manila, 1946.



U.S. Army

logbooks, and the like, Griffith confirms some of Kenney's viewpoints, refutes others, and covers subjects that Kenney himself avoided or downplayed. While Griffith includes Kenney's service during World War I and the interwar period, the book is weighted toward his World War II experience. The account stops there, however, so we learn nothing of his subsequent years as the first commander of Strategic Air Command or later as the commander of Air University.

As *MacArthur's Airman* explains, Kenney's early career provided varied experiences that would aid him later. Before entering military service, he studied engineering at the Massachusetts Institute of Technology, then started a construction firm, building roads and bridges. Enthused by aviation early on, he made his first flight in 1910 thanks to a British flyer, Claude Graham-White, who was taking part in a competition in Boston where they met. That began his fascination with flying, and when America entered World War I, Kenney joined the Army Signal Corps, took flight training, and left for the front as an observation pilot. In France he located and photographed troop concentrations and also managed to shoot down two enemy aircraft, earn a Distinguished Service Cross and Silver Star, and establish his

reputation as one of the Army's finest air commanders.

Griffith points out that Kenney not only had combat experience, but also taught tactics and doctrine, researched aircraft development and acquisition, and served as an operations staff officer. That gave him intimate knowledge of aircraft operations as well as aviation design and engineering. Indicative of Kenney's expertise is the fact that the Chief of the Air Corps, Major General Henry ("Hap") Arnold, sent him to France with Lieutenant Colonel Carl Spaatz as a special observer in April 1940. Kenney sent a report back to Washington that was focused not on doctrine, but on requirements for armored seats for pilots, leak-proof fuel tanks, and better high-altitude equipment, the nuts and bolts of combat operations.

Surprisingly for someone destined for high command, Kenney had only limited experience as a unit commander. In the interwar years he spent only two tours, each less than a year long, in command of an operational aircraft squadron, and those were not notable successes. In 1920, for instance, his observation squadron lost 22 of its 24 aircraft in less than a year under his leadership. It would take 18 years before he was

Douglas A-20-A over
Hawaii in 1941.



U.S. Air Force

offered another flying command, which he then had to accept in the form of a demotion: as a major he commanded an observation squadron, a position usually held by a lieutenant. Griffith notes but does not address reasons for this lack of command time or its effect. He does indicate, however, that Kenney's irreverent attitude toward his superiors on the Army General Staff caused his removal from staff positions.

Most of the book deals with Kenney's wartime role under General Douglas MacArthur, and here the author displays considerable insight into the nature of Kenney's contributions. Much of his experience was gained while serving as MacArthur's air commander in the Southwest Pacific from 1942 until the end of the war. He operated in a theater with extensive distances between island air bases and scant resources in men and matériel. To even establish bases, he had to coordinate land, sea, and air operations to seize territory from the Japanese, then plan extensive engineering projects to carve operating bases out of the jungle. Airpower doctrine developed in the interwar period had little to offer on such matters so Kenney improvised both air operations and aircraft. His flexibility made island-hopping campaigns possible, operations that characterized MacArthur's push through New Guinea and the South Pacific to the Philippines. Although they often disagreed, MacArthur said of his

senior airman: "Nothing that Spaatz or any other air officer has accomplished in the war compares to what Kenney has contributed and none in my opinion is his equal in ability."

Kenney emphasized control of the air in every operation. First, since he had to work with aircraft units scattered many miles apart with poor communications between bases—a far different situation than that faced by 8th Air Force bases in England—Kenney formed what he called air task forces. This brought together elements of flying units from several bases for a specific campaign. These units then operated from a single base to facilitate coordination and planning. The Air Force composite wings of the early 1990s reflect this concept.

Second, Kenney dealt with the problem of scarce resources by fostering innovation and motivating his entire command to follow this example. He kept aircraft in service by scavenging parts from downed planes and modifying plans to meet particular theater needs. Most importantly, he gave extra attention and decorated ground officers and airmen who devised new procedures or modified available equipment to meet other requirements.

Finally, Griffith cites Kenney's ability to adapt command organization to fit circumstances. Army doctrine called for

establishing an air support command in which aircraft and targeting would be under the control of ground commanders, not air commanders. Kenney opposed such a command because of limited resources in his theater, instead issuing orders that kept these responsibilities in his command. MacArthur supported the concept. These arrangements mirrored developments in the North African theater where General Dwight Eisenhower recommended a similar realignment. Anyone interested in current debates over the joint force air component commander, priority given to close air support, and joint targeting should study these earlier struggles over airpower.

It is worth noting that Griffith does not shrink from considering Kenney's shortcomings. Like many of his contemporaries, Kenney thought the Japanese racially inferior and less capable of becoming first class aviators, which led to inaccurate estimates of the enemy. Griffith also notes that Kenney disliked the Navy and was reluctant to cooperate in joint operations or share assets. But Kenney's difficulties also extended to members of his own service. His drive to secure B-29s ran contrary to Arnold's plans, and his continued insistence on obtaining them aggravated relations with Arnold and others at a time when the Army Air Force sought to present a united front on B-29 use. Griffith is probably correct in asserting that Kenney's close association with MacArthur led to a perception that Kenney had divided loyalties in the airpower debate. Moreover, Kenney had long been known for his combativeness in organizational infighting.

MacArthur's Airman portrays George Kenney as a cantankerous, single-minded advocate of airpower who possessed the technical and organizational skills to make it effective in the most difficult of circumstances. In his nuanced assessment of Kenney and his times, Griffith confirms the importance of Kenney in airpower history and sheds light on how airpower became integrated into the conduct of military operations. Issues that preoccupied Kenney—the value of intelligence, organizing theater air resources, coordinating land, sea, and air operations, and others—remain as vital today for joint warfighting as they did during his career.

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THE GREYING OF AN ALLIANCE

A Book Review by

ROY W. STAFFORD, JR.

NATO Transformed: The Alliance's New Roles in International Security

by David S. Yost

Washington: United States Institute of Peace Press, 1999.

450 pp. \$19.95

[ISBN 1-878379-81-X]

Written prior to the Alliance's intervention in Kosovo, *NATO Transformed*, by David Yost, is a prescient and thought-provoking look at the new European security environment. It addresses the fundamental question of the purpose of the North Atlantic Alliance and its post-Cold War roles. The author concludes that the organization is undergoing an ad hoc transformation to a mechanism for collective security in Europe. He considers continued American engagement, the gap between U.S. and European military capabilities, the difficulty in achieving consensus on defense policies, and the requirement for a U.N. mandate for NATO action, issues that were all at play in Kosovo.

With the central threat that provided the focus of Alliance defense planning and the rationale for its existence gone, questions on continued NATO existence and functions have been prominent in the debate over European security and the role of the United States. Despite recognition on both sides of the estuary that NATO was overtaken by events, it has adapted remarkably to a changed security environment. Rather than shrinking, it has grown both in members and missions.

The author provides a framework for analysis in the introduction by distinguishing between *collective defense*—traditional alliances against external threats—and *collective security*—compacts among states against threats to stability based on the principle that peace is indivisible. After a look at the Alliance during the Cold War, Yost turns to the metamorphosis of NATO in its fifth decade: cooperation with former enemies, enlargement, and crisis management and peace operations across a wider Europe.

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NATO 50th Anniversary Summit, 1999.

DOD (R.D. Ward)

NATO Transformed addresses these issues thoroughly. With meticulous scholarship and analysis, Yost reviews the evolution of the Alliance over the past decade with special emphasis on what the primary role of NATO should be in the post-Cold War era—its traditional core function of collective defense or broader and more demanding cooperative security missions. He deduces that NATO must do both. “The United States and its allies will have little choice but to pursue a two track policy . . . pursuing collective security aspirations to the extent that this is feasible and prudent, but maintaining collective defense posture as a hedge in case those aspirations cannot be fulfilled.” However Yost is concerned that in embracing new roles, to include crisis management, peacekeeping operations, and extensive institutional arrangements with former adversaries, NATO risks losing the military capabilities, cohesion, and focus necessary for collective defense.

The heart of this book is the analysis of NATO roles in crisis management and intervention outside the territory of its members and the impact these functions may have on the core mission of collective defense. The author asserts that ambitious and demanding non-Article 5 operations such as those conducted in the Balkans have become the main focus of force planning and operations. He recognizes the dilemma that confronts decisionmakers between preparing for a range of likely security challenges in the region which do not directly threaten vital allied interests—notably in the former Yugoslavia—and preparing for more demanding but less likely threats of an

attack on allied territory. If the Alliance limited its focus to the traditional mission of collective defense, its military capabilities would atrophy and it would be seen as a vestige of the Cold War with decreasing relevance. On the other hand, an undisciplined involvement in the range of conflicts that dot the Euro-Atlantic region, in keeping with the “peace is indivisible” concept, risks undermining allied cohesion, overextending military forces, and diminishing the capability to fulfill the core collective defense mission.

Yost concludes that, despite frequent references to collective security in NATO documents, in practice the allies have been selective in determining when and how to intervene in non-Article 5 contingencies. Yost uses the term “cooperative security” to describe the consensus-based coalitions of the willing. Theory is following practice as it has throughout Alliance history. Its doctrine is being written in response to the wars of Yugoslav succession. While Yost is concerned that NATO may overreach, his well-considered judgment is that the Allies are likely to remain cautious about engaging in conflicts beyond members’ territory. The difficulty of achieving and maintaining cohesion in Kosovo reinforces his assessment.

The strategic concept adopted at the Washington Summit falls short of the author’s call for the Allies to preserve the core common defense mission and clarify its collective security activities. While the concept that emerged from the 50th Anniversary Summit states that NATO

“must maintain collective defense,” it gives greater attention to new challenges including crisis management. The rhetoric and actions of the post-1989 period have centered on broader security requirements. And NATO’s only uses of force in its history were not in response to attacks on an ally but to affronts to human rights and regional stability. The author argues that the core collective defense mission and integrated military structure must be maintained and that the military capabilities to perform this mission are being eroded. The Alliance thus risks overextension in taking on a wider range of security functions.

A major threat to collective defense and cohesion is the decline in European military capabilities. The much heralded peace dividend of the immediate post-Cold War years is still alive and well on the Continent and has led to a marked drop in forces available for combat operations and a growing technological gap between European and American militaries. This breach, obvious during the Persian Gulf War and in NATO air operations over Bosnia, surfaced in Kosovo where most combat sorties and virtually all precision strikes were conducted by the United States. Unless this trend is halted, effective military capabilities will increasingly rest with U.S. forces given low threat perceptions and continued cuts in European defense budgets. This is a formula for acrimony within Alliance councils and for criticism by Congress of American commitments in Europe.

This book is a must read for anyone interested in European security and NATO. Yost has focused on key issues relating to evolving Alliance roles in crisis management and peace operations beyond the frontiers of member nations. He concludes that NATO is not endeavoring to establish a Wilsonian system of collective security but rather has adapted on an ad hoc and selective basis to the range of challenges in a post-Cold War Europe. Yost’s warning that the Alliance must retain and improve its collective defense capabilities as a hedge against untoward developments in Russia and as a base for crisis management and peace operations is right on the mark.

In the final analysis there is little sign that our European allies will take the necessary steps, especially increasing defense spending, to arrest a decline in forces and the growing technological gap which is developing between Europe and the United States. **JFQ**

GLOBALIZATION FOR DUMMIES

A Book Review by
JOHN A. NAGL

The Lexus and the Olive Tree: Understanding Globalization

by Thomas L. Friedman
New York: Farrar, Straus, and Giroux,
1999. 394 pp. \$27.50
[ISBN 0-374-19203-0]

From the collapse of the Soviet Union to the Asian financial crisis to unending ethnic wars in the Balkans, the world appears to be operating under new rules on the eve of the 21st century. But who can crack the code on the new world disorder? Tom Friedman claims to be that man. A foreign affairs columnist for *The New York Times* and the winner of two Pulitzer Prizes for reporting from the Middle East, Friedman won a National Book Award for *From Beirut to Jerusalem* in 1988. Now in his second book, *The Lexus and the Olive Tree*, he turns to the interaction between international relations and global economics to decipher the late 20th century world with an unending gift of clarity.

Moreover, the title of the book actually makes sense. Lexus is a metaphor for globalization that the author perceives as the key organizing principle of the post-Cold War world. Globalization is a result of the integration of world financial markets, nation states, and technological advances on an unprecedented scale. It is a process that is altering everything from how people buy books to how wars are fought. Globalization, through information technology and a global marketplace, is increasingly shaping the world in the image of America. This fact is not universally popular, and Friedman argues that many nations and people will resist by holding onto the olive tree, which represents “everything that roots us, anchors us, identifies us, and locates us in the world.”

One irony of the technological and economic forces that are shaping the world today is that they dramatically increase the power of individuals and small groups. As a result, those who resist the Americanization of their olive trees

can present a real threat—what Friedman calls “the backlash against the system.” Usama bin Laden and the World Trade Center bombers—as well as domestic terrorists who bombed the Murrah building in Oklahoma City in protest against government policy—typify the new dangers of a globalized world.

Friedman explicitly reflects upon much of the post-Cold War literature. Like the Tofflers in *The Third Wave*, he assumes that the information revolution will forever change human existence. And like Francis Fukuyama in *The End of History and the Last Man*, he considers that the eclipse of communism leaves no alternative to democratic capitalism as an organizing principle for states. Friedman also disputes the conclusion reached by Samuel Huntington in *The Clash of Civilizations and the Remaking of World Order* that cultural forces will inevitably destabilize the international community and the thesis promoted by Paul Kennedy in *The Rise and Fall of Great Powers* that the United States, like all previous great powers, is heading for a fall.

But one need not consult other authors to appreciate Friedman’s argument, which is why his book has been dubbed “Globalization for Dummies.” Many of his stories, although amusing, have deeper meanings which make the point. Among them is the tale of an Israeli boy who asked Martin Indyk, the American ambassador, for his autograph at the opening of the first McDonald’s in Jerusalem. The teenager, who thought Indyk was an envoy from McDonald’s, did not want an autograph on discovering Indyk represented the United States and not the golden arches.

Many readers will be more interested in the defense rather than the diplomatic implications of globalization. In this area Friedman relies on a political theorist, Michael Doyle, who noted that economically advanced, liberal democracies have never fought each other. If all the great powers are liberal democracies, they comprise a zone of peace in which war is essentially inconceivable. However, democracies account for only a seventh of the world population. Other nations around the globe—which are not liberal democracies or do not have industrialized capitalist economies, or either—do not enjoy the same freedom from war among states or conflict inside their own borders. Instead traditional balance of power politics, mercantilism, and instrumental nationalism have all too often made life “nasty, brutish, and short.”

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This instability will require intervention by liberal democracies, under the leadership of the United States, to create the conditions for progress.

Friedman believes that it is not only the moral duty of liberal democracies to intervene, but that it is also in their interest; for those nations and individuals denied the rewards of globalization will strive to destroy the system. Therefore, the revolution in military affairs must be pursued not only to deter peer

competitors, but to defeat potential enemies who long to return to the olive tree of fond memory—and who will use modern technology to do so. Bin Laden, for instance, coordinates his terror network via the Internet and cellphones.

The Lexus and the Olive Tree uses the concept of globalization to explain the current world order and predict the future direction of global events. To the

extent the military understands the forces that drive history, we may even be able to prescribe directions for U.S. policy to make the future more favorable. In an increasingly complex and fast-moving world, the collapse of Asian currency markets or ancient nationalisms stirred up by tyrannical leaders may be the cause of conflicts that affect U.S. interests. This book is an owner's manual for the globalized world. Read it or be left behind. **JFQ**

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Published for the
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by the Institute for National Strategic Studies
National Defense University
Washington, D.C.