Joint Experimentation

Revisiting *JV 2010*

ASIA–PACIFIC SECURITY

Deployment Doctrine

Force Protection

98
97
Autumn
Winter

Joint Vision 2010 *provided the first overarching joint operational framework for the services.*

—Henry H. Shelton

Farewell
Message

our margin of superiority is arguably greater than it has ever been

While packing for the final PCS of my 39-year career, I came across some early issues of *JFQ*. The Autumn 1993 issue caught my eye because it appeared on the eve of my tenure as Chairman. The issue opened with a farewell by my predecessor, General Powell, who made what was a striking but perhaps unnoticed observation at the time. He challenged us to safely manage force reductions "without losing the high quality that has become the hallmark of America's military." In retrospect, his comment has characterized the last four years.

Thanks to the dedicated efforts of every soldier, sailor, marine, and airman, our margin of superiority over potential foes is arguably greater than it has ever been in the past. With a tempo that included more than forty major operations and JTF deployments, leaders on every level, from NCOs to our most senior flag officers, ensured that we remained focused on the mission and on combat readiness.

But there is a risk in focusing so intensely on the present that we do not give enough thought

PHOTO CREDITS

The cover features military students practicing free fall over Colorado River (43ᵈ Communications Squadron/Howard Blair). The front inside cover shows soldiers preparing to land on Husky Drop Zone, Alaska (U.S. Army/Michelle J. Davis); landing craft off Camp Pendleton, Kernel Blitz '97 (Fleet Combat Camera Group, Pacific/Michael D. Degner); Republic of Korea submarine surfacing near *USS Kitty Hawk* (U.S. Navy/Robert Morales), and aircrew placing "pogo sticks" under U–2 (U.S. Air Force/John K. McDowell). The photo on the table of contents (opposite) captures *USS Hornet, USS Constellation*, and *USS Kiska* during Fleet Week '97, Naval Air Station Alameda (U.S. Navy/Steven G. Crawford). The back inside cover depicts landing craft pulling into Kuwaiti port (Fleet Combat Camera Group, Pacific/Jeff Viano). The back cover shows paratroopers loading onto C–141 during JTF Exercise 98-1 (4ᵗʰ Combat Camera Squadron/Bill Kimble), launching F–117A for deployment to Kuwait (U.S. Air Force/Val Gempis), *USS Coronado* near Waikiki for Fleet Battle Experiment Bravo (U.S. Navy/Ted Banks), and CH–53 lifting off from *USS Wasp* (U.S. Navy/Daniel S. Stokes).

and energy to preparing for dangers looming over the horizon. Concentrating all our precious resources on handling near-term challenges results in the assumption of significant risk in the long term—risk that could place our men and women of the Armed Forces in greater danger during conflict.

The new challenge is to remain fully capable of overmatching any potential adversary while channeling our enthusiasm, innovation, and resources into preparations for the future and ensuring that America retains the finest fighting force in the world.

Positioning ourselves for continued greatness in the 21st century is a complex proposition that involves far more than purchasing new weapon systems. There are various dimensions to this situation which require the thoughtful participation of military professionals on all levels. The revolution in military affairs is not just about husbanding information age technologies, precision strike, and stealth. It is every bit as dependent on new organizational structures, new operational concepts, imaginative approaches to old tactical problems, and furthering joint teamwork.

The foundation for ensuring the ability to protect our vital interests into the next century is under construction. You see it being built day to day, brick by brick, in every joint exercise, with each joint publication, and even in contentious but productive interservice debates over operational concepts. You are the architects and builders of our future military. As you carry out this project, remember that you have been charged with protecting this great Nation, providing for the welfare of its sons and daughters, and preserving a legacy of millions of veterans who have gone before.

I am eternally grateful for your exceptional efforts and selfless dedication in these past four years. Good luck in your careers and God bless you all.

JOHN M. SHALIKASHVILI
Chairman
of the Joint Chiefs of Staff
(1993–1997)

The President with the Chairman, Chiefs, and CINCs in May 1996.

A Word from the New
Chairman

I n July 1996, my predecessor signed a seminal document entitled *Joint Vision 2010*. It established a conceptual blueprint for transforming emerging concepts and technologies into joint operational capabilities to deter or defeat threats envisioned for the early 21st century. That vision provided the first overarching joint operational framework for the services and built upon their core competencies, institutional values, and cultures. In advancing towards the same beacon on the not-so-distant horizon of 2010, we have passed several key milestones—with more to come. The next task is to operationalize *JV 2010*—transforming its concepts of joint warfighting into reality.

Operationalizing *JV 2010* is relatively simple. It requires a three-step approach which starts slowly and accelerates as funding and various other pieces fall into place.

The first step will be significant. Perhaps as early as 1999 a joint headquarters element will be identified to monitor CINC and service experiments, battle labs, and other activities while it also conducts small *JV 2010* warfighting experiments. Initial experiments must focus on command and control and operational architecture. The next step will require information superiority experiments to test concepts and capabilities vis-à-vis the information revolution. The final step will include experiments focused on precision engagement, dominant maneuver, full dimensional protection, and focused logistics that will culminate in 2004 with Global Challenge. This massive experiment will examine all the operational concepts in *JV 2010* and their synergy in achieving full spectrum dominance. The year 2004 will be pivotal because it will set the stage for the Quadrennial Defense Review in 2005 and inform the central decisions that will shape the force of 2010.

I envision several options with regard to joint warfighting experimentation. First, we could use a distributed net, electronically linking many geographically dispersed forces and test ranges. A key tenet of *JV 2010* is the ability to mass effects rather than forces. Why not apply this notion to joint experimentation and use superior data connectivity to move electrons, not people? Second, we could

enlist service and joint battle labs to maximize the benefit of experimentation activities. Finally, to make this work, we must assign the responsibility for joint warfighting experimentation to a specific person, perhaps the commander in chief, U.S. Atlantic Command, who already plays a significant role in joint training and exercises.

Aggressive joint experimentation will be important in properly assessing *JV 2010* concepts and developing capabilities to realize the vision. We are creating roadmaps to assess its operational concepts. This is a team effort involving the entire joint community and the Office of the Secretary of Defense. To ensure we are on the right azimuth, we will use warfighters with their operational savvy to rigorously examine these capabilities in the mud, salt water, air, and space. This is where we must rely on your brain power and support. We need smart operators to provide ideas on joint warfighting experiments, enlarge the debate, and

> **I invite the CINCs, services, and major commands to comment on efforts to operationalize *JV 2010***

continue the dialogue on *JV 2010*. We also need support to assess the vision's operational capabilities during upcoming exercises. I therefore invite the CINCs, services, and major commands to comment on efforts to operationalize *JV 2010*— and ask that they keep the joint community posted on warfighting experiments and associated exercises through contributions to future issues of *Joint Force Quarterly.*

Joint experimentation will be the true engine for exploring concepts contained in *JV 2010*. It will examine areas where real breakthroughs will be made in warfare between now and 2010, for discovering those leap-aheads is what *JV 2010* is all about.

Look at the potential breakthrough areas. One operational concept is precision engagement. How will the precision engagement of *JV 2010* differ from the way firepower is employed today? We lose the total effectiveness of both precision weapons and many long range weapons because of inefficiencies in space and time. Ground weapons are assigned to subordinate commanders and there is a delay in bringing them to bear elsewhere on the battlefield even if their range allows. Our 72-hour air tasking order

Embarking Army guns on Navy LCAC, JTF Exercise 98-1.

26th Marine Expeditionary Unit (C.D. Clark)

process is good for prolonged campaigns but is often slow in reacting to changes on the battlefield measured in minutes or hours.

If information technology could provide battlefield commanders with a complete picture of threats and opportunities on the enemy side, we could put many weapons on target in seconds or minutes with available in-range firepower. A joint task force could drastically increase the effects of its weapons and take advantage of quick openings when instant firepower makes the difference. The rudiments of this revolutionary breakthrough are a common operational picture shared across the battlespace, management tools to facilitate decentralized execution under centralized oversight, and new doctrine and training. If we can make the necessary changes to pull it off, we can support much faster battle rhythms and attack an enemy in a manner which we can only dream of today. That is what joint experimentation is all about.

> aggressive *JV 2010* experimentation must proceed because it is an investment in our future

We will use simulation, gaming, and field exercises to develop technology and doctrine to achieve breakthroughs and then subject ourselves to rigid assessment to see if they can be done. Joint experimentation will demand original thinking: hooking up dissimilar systems, tying together seemingly incompatible hardware and software, and establishing new processes and procedures. No doubt there will be occasional failures, but that doesn't concern me. Thomas Edison conducted 50,000 experiments to develop a new storage battery. Asked if failures frustrated him, he replied: "What failures? I now know 50,000 things that don't work." Experimentation means the freedom to fail, because it is through such failures that we discover truths which help the next experiment. Thus we will ultimately reap the benefits of a *JV 2010*-capable force.

We are making plans on a solid foundation. The publication of *Concept for Future Joint Operations* expanded on *JV 2010*. We also created a sound management process for implementing that vision. The Joint Staff is leading a collaborating endeavor with the Office of the Secretary of Defense, CINCs, services, and defense agencies to design and sponsor joint experiments and other assessment events unique to *JV 2010*. We will also conduct analysis to determine the implications of changes for doctrine, organization, education and training, matériel, leadership, and personnel. Such experiments are more than technological infusions or demonstrations. They permit the study of operational concepts, organizational structure, and doctrine as well as emerging technologies.

We must ensure parallel development in each of these areas to maximize capabilities for future joint commanders to perform complex missions.

Our next product, *Joint Vision 2010 Implementation Master Plan,* will appear in Summer 1998. This document will be a watershed for integrating efforts to assess *JV 2010* concepts and operational capabilities. More importantly, it will provide assessment roadmaps for the process of operationalizing *JV 2010* concepts.

However, there is a major challenge to operationalizing the vision: Where will the dollars, people, equipment, and time for joint experimentation come from? Both the CINCs and services already have full rucksacks as they work on current and near-term issues. Experimentation could build on current and planned activities by the CINCs, services, and defense agencies, though even leveraging existing experimentation efforts may not suffice. The report by the National Defense Panel identified a need for $5-10 billion annually for the transformation effort. This money would fund initiatives in joint experimentation, information operations, space, and other areas. The report suggests using offsets realized from another round of base closures and other efficiencies, but the task of finding resources in a zero-sum gain environment is problematic. Regardless, aggressive *JV 2010* experimentation must proceed because it is an investment in our future.

This is a stimulating time for the Armed Forces and the Nation. In less than two years we have issued a joint vision, expanded it in *Concept for Future Joint Operations*, devised a process to implement it, and will soon publish *Joint Vision 2010 Implementation Master Plan*. The exciting part and perhaps the most challenging milestone is still ahead: transforming key *JV 2010* concepts into capabilities through joint experimentation by warfighters in the field and fleet. I look forward to your innovative ideas and comments on operationalizing this vision.

HENRY H. SHELTON
Chairman
of the Joint Chiefs of Staff

General Henry H. Shelton, USA, assumed his position as the fourteenth Chairman of the Joint Chiefs of Staff in October 1997.

Letters . . .

FOR THE RECORD

To the Editor—In "War Criminals—Testing the Limits of the Military Force" which appeared in your last issue (*JFQ*, Summer 97), F.M. Lorenz makes the following statement about the efforts of the Malaysian Battalion (MALBAT) in Somalia on October 3, 1993:

When U.S. Rangers were under attack . . . the Malaysian force had the only armored vehicles in Mogadishu capable of mounting a rescue effort. But they refused to engage pending approval from Kuala Lumpur, and that took more than five hours.

That assertion is not only untrue but is totally unfounded. Based on our records, the situation that evening unfolded as follows:

■ On October 3, 1993, at approximately 1645 hours, UNOSOM II Headquarters requested MALBAT Headquarters to provide assistance to the U.S. Quick Reaction Force (QRF) to extricate approximately 70 U.S. Rangers and crew members of Cobra helicopters trapped in the vicinity of the Bakara Market.

■ Earlier the Rangers had mounted an operation to arrest Farah Aideed near the Olympic Hotel where Aideed was meeting with his followers. The U.S. troops met with stiff resistance. In the ensuing firefight, two Cobras were shot down and a third sustained damage but managed to land safely at New Port. Subsequently, four rescue attempts by the remaining U.S. Rangers failed to break through the rebel defenses and also suffered heavy casualties.

■ The first MALBAT company assembled at New Port and was ready for final orders at 1755 hours and the second company assembled at 1830 hours. They were mounted on 32 APCs. In just about two hours, the two companies under the Malaysian commander, Col Latiff, were ready to deploy and "the decision came from him and never from Kuala Lumpur."

■ After further planning, the task force commander decided that the coalition force for the operation was to comprise two U.S. QRF companies mounted on MALBAT APCs, but with Malaysian drivers, gunners, signallers, vehicle commanders, and officers. There was also another company of U.S. Rangers on HUMVEEs and one troop of Pakistani tanks. The coalition force departed New Port for Bakara Market at approximately 2325 hours. The rescue operation was under the command of LTC William David, USA.

In the operation MALBAT sustained one soldier killed and six wounded as well as having two APCs destroyed. It was the combined effort by the Rangers, MALBAT, and Pakistani troops that resulted in success. It must be stressed that the whole operation from briefing to deployment and execution was done at night, which is inherently difficult and complex. Any delay was largely due to the force having to appreciate, coordinate, and plan what was a dangerous rescue operation.

At all stages of the effort MALBAT acted spontaneously under Col Latiff and did not refer to Kuala Lumpur. Testimony by MG Thomas M. Montgomery, USA, deputy force commander of UNOSOM II, and LTC William C. David, USA, commander of 2/14th Infantry, verifies these facts.

The men and women of the Malaysian Armed Forces are a dedicated, disciplined, reliable, and courageous force. In peacekeeping missions, through diligent esprit de corps, willingness to cooperate, and self sacrifice, they have gained a reputation for trust and prowess. The "Malaysian Tigers" are respected and accepted wherever they go.

With the highest esteem for *JFQ* I request that you print this letter to correct the record.

—Col Chia Chan Sing, RMAF
Defense Attaché
Embassy of Malaysia

RESCUING THE QDR PROCESS

To the Editor—After reading your series of articles on the Quadrennial Defense Review (QDR) in the last issue it seems clear the Armed Forces approached the process by seeking to maintain the status quo instead of engaging in a real debate on the best force structure for the future. The review process must be rescued to make significant changes in the size and shape of the force. Unfortunately, this recent review reveals that many have forgotten that the military exists to achieve national interests, not to perpetuate service interests. Secretary Cohen appears to have been duped by this subterfuge.

A basic problem arises in the Secretary's "Report of the Quadrennial Defense Review." He indicates that "we have carefully protected the readiness of our military to carry out its currently assigned missions." Our force structure can't sustain its current operations tempo let alone maintain it with a reduced force structure. Additional force reductions will place an increased burden on an already over-tasked military, and if they are made in the wrong areas, as the QDR report proposes, the Armed Forces will be ill prepared to exploit the revolution in military affairs.

Cohen also asserts, "The information revolution is creating a revolution in military affairs that will fundamentally change the way U.S. forces fight. We must exploit these and other technologies to dominate in battle." We need a force structure that will capitalize on technology. Yet the "Highlights of the QDR Decisions" describe a force structure that emphasizes a stratagem of maintaining large fielded forces in preparation for the force-on-force battles of the past. One must ask the Secretary, "Where are we exploiting the revolution in military affairs and how is this force structure going to fundamentally change the way U.S. forces fight?" The proposed structure tells Americans that the military is simply planning to fight future wars of attrition with large fielded ground forces.

As "The QDR Process—An Alternative View" by Jim Courter and Alvin Bernstein points out, "The Air Force will lose a whopping 27,000 active duty personnel and get only 339 new F–22s instead of 438. In addition, QDR calls for no further production of the B–2 bomber despite the findings of a deep-attack weapons mix study that additional B–2s could be decisive in halting aggression overseas." Courter and Bernstein seem surprised that force reductions should fall most heavily on the Air Force given its dominant role in the Gulf War, but they shouldn't be.

Although allied airpower was decisive in the Gulf War and prevented large numbers of casualties, the methodology (read: subterfuge) used in the QDR process had to maintain the status quo. Thus the Army keeps 10 active combat-ready divisions so the Nation can plan on having large fielded forces available for a World War II-era force-on-force battle of attrition in the 21st century. That's amazing. Courter and Bernstein are on target in stating that "airpower . . . should continue to receive the highest priority, not only for MRCs but also to discourage regional aggression by a rogue state bent on dominating its neighbors." They seem to have a better understanding of the force structure America needs than our Secretary of Defense and senior military leaders.

Possibly the National Defense Panel can cut through the word salad in the QDR report and provide an honest account to Congress on force structure. Their strategy as described in "National Security in the 21st Century: The Challenge of Transformation," offers hope. Panel members should look long and hard at the changing character of war along with other considerations and develop a force structure recommendation based on American security interests, not service interests.

The Secretary of Defense must also action. First, he must recognize that the services postured themselves for the largest share of the defense budget vis-à-vis the QDR process at the expense of the American taxpayer.

One need only read issues of *Military Review* from the 1950s to find arguments that are prevalent in the Army today—the only way to fight a war is with soldiers on the ground; it takes a tank to kill a tank. What if national objectives are not to hold territory but simply to influence another state? Might not seapower or airpower as employed against the attempted coup in the Philippines in 1989 be the correct option? Didn't Desert Storm prove that airpower can kill tanks? Adhering to a doctrine that emphasizes heavy tank divisions is ludicrous and misguided.

The Navy vision statement, *Force 2001, Vision, Presence, Power*, poses a service positioning itself to stay at the current level of 12 carrier battle groups through FY03 and increase the number of cruisers from 46 to 76. Is that force based on national interests or the Navy's? Imagine the savings if the Navy decreased its force structure by two, three, or four carrier battle groups. America could receive a phenomenal windfall, but is that what is best for national defense?

In the case of the Air Force, one is told it will have the ability to find, fix, and kill anything that moves on the earth's surface. Does that mean the Air Force should receive an inordinate share of the DOD budget? Although such capabilities may exist in the future, they won't be realized in the near term and are thus irrelevant for current decisions on force structure. Wouldn't national interests be better served if the Air Force engaged in a debate free of service parochialism to determine the optimum force structure? Wouldn't Air Force interests be furthered if all the services acted in the same way?

Common sense tells us that in an era of budget constraints America can't afford to fund a force structure based upon service interests. Victory on the battlefield of tomorrow will only be achieved if we rise to the challenge and work together today to place America's interests ahead of service interests.

Yet history suggests that significant changes will occur only when they are forced on the services. The current era of jointness didn't come about because our military leaders introduced a far-reaching reorganization of the defense establishment but because Congress visited the Goldwater-Nichols Act of 1986 on the Armed Forces. The key figure in making changes should be the Secretary of Defense.

The QDR process must be conducted every four years only after a healthy debate on defense issues without any service parochialism. The Secretary should direct the services to determine a force structure by employing the operational concepts in *JV 2010* (dominant maneuver, precision engagement, focused logistics, and full-dimension protection) as focal points of an optimum force structure. Dominant maneuver and precision engagement may mean that the Army must shed part of its structure in favor of airpower and spacepower. Focused logistics may result in the Army becoming the single DOD manager in the realm of logistics. Full-dimension protection may signal that the Navy theater-wide ballistic missile defense sea-based system is the only such system. Only after honest debate can we determine the right answers.

Recent experience suggests that change must be forced on the services—it can't be induced from inside the defense establishment. We must overcome service parochialism. The QDR process needs to be rescued or America will be the loser.

—Lt Col Andrew L. Giacomini, Jr., USAF
Instructor, U.S. Army Command
and General Staff College

EMPLOYER SUPPORT

To the Editor—John Tillson's article entitled "Improving the Management of Reserve Forces" in your last issue struck me as a particularly thorough and insightful look at the Reserve Components and their effective utilization. It is no longer a matter of using or not using the Reserves, but rather when and how. I can only think of one issue which is painfully obvious to me as a Reservist that was left unaddressed—the role of the employer, civilian or government.

The Nation is rewarded by the cost-effectiveness of available military forces. Individuals receive compensation and have their other personal needs met. But the employers of this country have to cope with unanticipated departures of Reservists. Some benefit and recognition should be provided to them. Failure to do so will only exacerbate the current problem and could significantly degrade our Reserve forces.

—LCDR Charles Schminke, USCGR
Jacksonville, Florida

THE FOG OF RMA

To the Editor—I was bemused by the letter from James Blaker in your last issue (see "Crashing Through the Barricades," *JFQ*, Summer 97) commending "debate, experimentation, and reasoned discussion" on the revolution in military affairs (RMA). It stands in stark contrast to his agenda in *Understanding the Revolution in Military Affairs: A Guide to America's 21st Century Defense* (Progressive Policy Institute, January 1997) which calls for dismembering current force structure and replacing it with his notion of RMA. That proposal would result in a massive cut in our land forces (the Army by 39 percent and Marines by 28 percent), assets that in light of today's strategic environment will be needed over the next twenty to thirty years. Such an argument implies that we are beyond the point of experimentation and ready to embark on the RMA course.

The real danger in the argument advanced by Blaker and like-minded observers is an almost blind faith in what RMA is and where it is going. The problem with that dogmatic view is that the lessons of military history teach us that jumping into the future without first being grounded in the fundamental and unchanging nature of war, which also demands an understanding of history, can result in military catastrophe.

The French army and air force; the British army, Royal Navy, and Royal Air Force; the U.S. Air Corps; and the Italian army, navy, and air force jumped into the future without reference to the past with catastrophic results for both those at the sharp end of the spear and their nations. Pundits have even worse records. As we now know, Basil H. Liddell Hart, J.F.C. Fuller, Giulio Douhet, and Billy Mitchell got almost everything wrong and only extraordinary skills with the pen saved the reputations of Liddell Hart and Fuller from ruin. Militarily, only the German army and American experimenters in amphibious and carrier warfare got it partially right. This is not a really good record on which to base the huge risks that Blaker advocates.

In 1924 airmen in Britain, trumpeting the arguments of Lord Trenchard that a few strategic bombers (which, of course, wouldn't need fighter aircraft) could replace the army and Royal Navy in the defense of the United Kingdom, said that while a counterforce strategy "is the method which the lessons of military history seem to recommend . . . the Air Staff are convinced that the former [an all out attack on cities] is the correct one." Blaker has intimated that I and my fellow historians are pessimists. In this respect he is correct: history does reveal that the search for the magic bullet in the annals of military technical innovations in peacetime has more often than not led to disaster. Progress is only made when military institutions pay attention to the past and innovate in careful, measured steps based on real tests and experiments. A little history may help Blaker and his fellow zealots to innovate while remaining in touch with the world of fog, ambiguity, and friction.

—Williamson Murray
Air and Space Museum
Smithsonian Institution

CALLING OUT THE MILITIA

To the Editor—I take issue with the interpretation of Article I, Section 8 of the Constitution in "Forgotten Mission: Military Support to the Nation" by David L. Grange and Rodney L. Johnson (*JFQ*, Spring 97), specifically their use of the term *Militia*. While it is true that the Constitution provides "for calling forth the Militia to execute the laws of the Union," I question if today the term can be applied to the Department of Defense as the authors seem to assume. Article I, Section 8, stipulates the four following points:

■ *To raise and support Armies*
■ *To provide and maintain a Navy*
■ *To make rules for the Government and Regulation of the land and naval Forces*
■ *To provide for organizing, arming, and disciplining, the Militia, and for governing such Part of them as may be employed in the Service of the United States, reserving to the States respectively the Appointment of the Officers, and the Authority of training the Militia according to the discipline prescribed by Congress.*

The first two points refer to the Army and Navy; the third states that the Federal Government has the power to govern and regulate the land and naval forces, that is, the Army and Navy. It is the fourth point that gives concern. Whereas earlier the authors use the phrase "land and naval forces" when referring to the Army and Navy, here they introduce *Militia*. If they meant the forces already referred to why didn't they refer to them in the same way? Or why did they not earlier use Militia instead of land and naval forces? I believe this difference is intentional and that they were referring to a third military force. Further examination of this section of the Constitution and other writing at this time sustains this position.

The framers of the Constitution gave the Federal Government power to govern and regulate the Army and Navy ("land and naval Forces"). There is no reason under the fourth point to again give the Federal Government the power "for governing such Part of them as may be employed in the Service of the United States." That power was already granted—unless they meant to signify that the Militia differs from those forces mentioned earlier. It should also be noted that this phrase specifically refers to governing only that part "in the Service of the United States," which implies that some other governmental body governs the rest.

The fourth quote also gives the States certain powers over the Militia. The first is the power to appoint the officers in the Militia, clearly different from the current practice in which the officers in the Armed Forces are appointed by the President. The second is the authority for training the Militia "according to the discipline prescribed by Congress"

which enables the Federal Government to provide a uniform set of standards for training.

This view of the Militia as a separate force from the Army and Navy is further substantiated by Article II, Section 2 of the Constitution which states that "The President shall be Commander in Chief of the Army and Navy of the United States, and of the Militia of the several states, when called into the actual Service of the United States." If the term *Militia* referred to the Army and Navy there would be no reason to separately call it out. In addition, this phrase points out that the Army and Navy are entities of the Federal Government, and the Militia belongs to the States.

What was the Militia when the Constitution was being drafted? In 1781 Thomas Jefferson wrote that the Militia of Virginia consisted of "Every able-bodied freeman, between the ages of 16 and 50." He also noted that "The law requires every militia-man to provide himself with the arms usual in the regular service." Further amplification of what was meant by the fourth point is found in *Federalist Paper No. 29* by Alexander Hamilton that cites the same section of the Constitution as in the fourth point above. Hamilton then argued that the reason for the Militia is to reduce the necessity of maintaining a large standing army. He further stated that the Militia consists of the people at large and underscored that "it will be possible to have an excellent body of well-trained militia ready to take the field whenever the defense of the State shall require it. This will not only lessen the call for military establishments, but if circumstances should at any time oblige the government to form an army of any magnitude that army can never be formidable to the liberties of the people while there is a large body of citizens, little if at all inferior to them in discipline and the use of arms." James Madison, in *Federalist Paper No. 45*, wrote that the Militia is clearly so much larger than any military force within the realm of possibility that the advantage is clearly with the States.

On control of the Militia, Hamilton asserted in *Federalist Paper No. 29* that "the particular States are to have the sole and exclusive appointment of the officers," thereby reiterating Article I, Section 8, which reserves "to the States respectively the Appointment of the Officers."

Thus the Militia as referred to in the Constitution is not the Army or Navy or any other part of DOD—despite current opinion to the contrary. It should also be pointed out that in the article by Grange and Johnson the quote of Article IV, Section 4 of the Constitution omits a key part of the phrase which changes the meaning of the quote. This excluded section states "and on Application of the

Legislature, or the Executive (when the Legislature cannot be convened) against domestic violence." A reading of the full article makes it clear that the word "legislature" refers to the state, not the Federal, legislature which is consistently referred to as Congress. Therefore the Federal Government cannot send in military support until the State has requested it.

A footnote: Grange and Johnson cite the Shays Debtor Rebellion in 1786 as an example of the "role of the Armed Forces in crises," thus implying that Federal forces suppressed the rebels. In January 1784 the American military establishment consisted of one regiment of 527 infantrymen and one battery with 183 artillerymen. In June 1784 under the Articles of Confederation Congress disbanded the Army because it was "inconsistent with the principles of republican government" in time of peace. All that remained were 80 artillerymen guarding stores at West Point, New York, and Fort Pitt, Pennsylvania. Until 1789 the Army had no infantry forces. In August 1786 Captain Daniel Shays, a veteran of the Revolutionary War, led a mob of farmers against the courthouse at Northampton, Massachusetts, to protest that former soldiers who could not pay their debts were having farms forfeited and were being sentenced to prison or condemned to involuntary servitude. In January 1787 Shays led some 1,200 rebels to Springfield where they confronted 600 militiamen defending a local arsenal. The Militia, having the advantage of artillery, routed the Shaysites who were pursued by a newly arrived force of Massachusetts Militia who crushed the rebellion in late February. On September 17, 1787, the Constitution was signed and on August 7, 1789 the War Department was created. The Army was formed on September 29, 1789 and consisted of 846 men.

—CDR James M. Winterroth, USNR
Carson, California

POLITICAL OBJECTIVES

To the Editor—"Keeping the Strategic Flame" by Carl Builder (*JFQ*, Winter 96–97) should be mandatory reading for every leader or soldier who must operate in the strategic arena. The future viability of the Armed Forces lies in understanding the political context of everything in which they become involved. All military activities, even training exercises, have political purposes that are, or should be, their primary purposes. If this is clearly understood, the Armed Forces will be able to significantly increase U.S. influence—whether that means causing someone to do something or not to do something. This is another way of formulating the familiar Clausewitzian adage that war is a continuation of politics by other means. Adopting this way of thinking will also rekindle the strategic flame that

Builder says is almost out or is at least in hiding among the American military.

Understanding the criticality of political ends (Builder's strategic interests) is vital for both soldiers and politicians. The latter must understand the need for explicit political guidance for the three days of war—the day before, the day of, and the day after. If this occurs, and the military responds quickly and appropriately, war will be deterred or fought for the desired outcome. Either outcome can be considered a victory since the conflict will terminate when political goals have been achieved. (As Builder properly indicates, this is not necessarily destruction of an enemy: "military power can sometimes be brought to bear when it is applied without first defeating defending enemy forces." Sun Tzu's notion that it is better to defeat an enemy's strategy than its army is one clear example of this point.)

Politically savvy officers are needed to help politicians develop clear political objectives that can be translated into military objectives. These political military operatives should be trained and attuned to function at the intersection of the political and military—that gray area where the strategist is important. The Army used to have a program for this purpose—the Army Strategist's Program. Unfortunately, it has languished. Bernard Brodie, a noted strategist of the nuclear era, argued that strategy was too important to be left to military professionals. He said "we need people who will challenge, investigate, and dissect the prevailing dogmas" of foreign and defense policy. Students of strategy must know the "inevitable limitations and imperfections of scientific method in strategic analysis and decisionmaking," particularly shortcomings of practitioners "whose greatest limitation is that they sometimes fail to observe true scientific discipline."

It must be understood that the "most basic issues of strategy often do not lend themselves to scientific analysis . . . because they are laden with value judgments and therefore tend to escape any kind of disciplined thought"; and last but not least, the Clausewitzian admonition on the "need to stress the superior importance of the political side of strategy to the simply technical and technological side" is particularly relevant to nuclear deterrence in the post-Cold War period.

Builder gets to the heart of this dilemma: "The burden of strategic thinkers is to explore beforehand what may be worth doing and why." The military should break out of its fixation on planning, programming, and budgeting and its computer-oriented mindset and develop a feel for the political by doing just what Brodie advised. Failure to do so begs for a repeat of the problems encountered in Vietnam and Somalia. Revitalizing and rekindling the strategic flame could start at the war colleges with the formation of a specialized strategist's track. This would provide skilled practitioners of strategy as espoused by Brodie. In time, they could be the mentors of a generation of strategists. Such efforts are necessary to answer Builder's call to rekindle the strategic flame.

—COL Bruce B.G. Clarke, USA (Ret.)
Topeka, Kansas
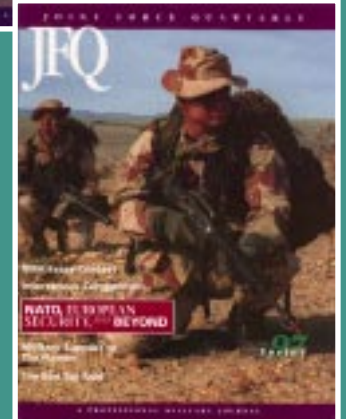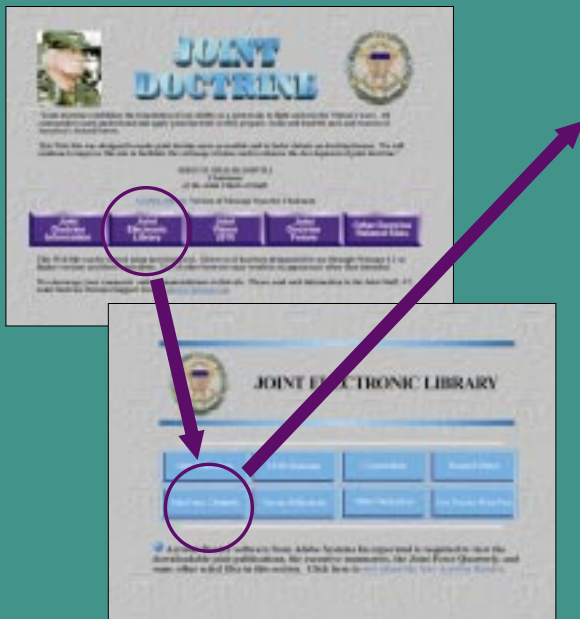
Experimentation—

Joint

Unlocking the Promise of the Future

By DAN COATS

While everyone agrees that the Cold War has ended, we have yet to achieve a consensus on future military capabilities and the defense policies needed to realize them. The Quadrennial Defense Review (QDR) concluded that we should pursue a balanced force structure in the near term but did not set priorities for developing new capabilities. While there is a template in *Joint Vision 2010* to guide this quest it has failed thus far to effectively focus development efforts since it is regarded as being all things to all people. Consequently, those of us on Capitol Hill are presented with a range of competing approaches to future warfare. Some advocate precision strike by airpower and others argue for decisive landpower while still others favor rapid dominance that destroys an enemy's will to resist. The list goes on and on. The problem is that each approach requires a radically different investment policy, organizational structure, and doctrine. How can Congress determine which of these various approaches is best suited for the battlefield of the next century?

Defense planning guidance soon will appear for the preparation of programs which extend all the way to 2005. Yet it will be drafted without benefit of an overarching joint process to prepare the Armed Forces for the future. I doubt this guidance will accelerate or terminate programs in order to prioritize the development of warfighting capabilities. Without a coherent process on which to base such critical decisions, the Pentagon is likely to default in favor of bureaucratic processes which stifle change. Given this situation many observers claim that we are

true advances in operational concepts are likely to be joint

The Honorable Dan Coats represents the State of Indiana in the U.S. Senate and chairs the AirLand Subcommittee of the Armed Services Committee.

sustaining a Cold War defense establishment which is partly a military anachronism and partly a domestic jobs program.

In a farewell speech before the National Press Club, General John Shalikashvili stated that "our Nation has never been more secure" and that the delta between U.S. defense capabilities and those of any other nation is greater today than at any time during his career. However, the challenge lies in evolving joint warfighting capabilities to maintain that delta under future Chairmen. This may be the most pressing national security challenge Congress faces today.

The real issue, then, involves developing a means to determine how much of what is enough by when in order to achieve the objective of full spectrum dominance in the 21st century. While implanting information technology in extant organizations and operational concepts is important, I believe that only by integrating such technology with changes in organization and doctrine, based on truly joint concepts, can our capabilities be maximized. It was this type of integration that made *Blitzkrieg* and carrier aviation revolutionary—new technology used in new ways with new force structures.

During the 1930s, combat aircraft, tanks, and radio communications were available in both France and Germany. But through the efforts of von Seekt and Guderian, the Germans leveraged them with new organizations and doctrine to develop more effective warfighting capabilities. Thus the development of *Blitzkrieg* offers insight into creating change. Today we have a different set of innovations—Internet data transfer, stealth, precision munitions, space-based communications, and others. The true advances in operational concepts enabled by this technology are likely to be joint and may not be fully appreciated as yet. Consequently, the transformation from post-Cold War to information age capabilities cannot be relegated to decentralized service prerogatives.

AH–64 firing Hellfire missile.

Rather, it is a joint challenge to be resolved with joint processes that drive decisionmaking. Perhaps it is time to establish a joint force specifically charged to experiment with employing new technologies, in new ways, under new organizational structures as a means of finding those genuine leaps ahead in warfighting capabilities.

The Congress is also confronted with a striking dichotomy of views on the scope, pace, and approach to this military transformation. Secretary of Defense William Cohen testified that we cannot transform our military without base closings and defense infrastructure reform, while the new Chairman, General Hugh Shelton, advocates an incremental crawl-walk-run approach that takes until 2004 to produce capstone joint experiments. On the other hand, the National Defense Panel (NDP) vigorously argued that challenges in the early 21st century may place this Nation's security at far greater risk than we face today. Correspondingly, they recommend fundamental change by creating a Joint Forces Command with the mission, forces, and resources needed to drive this transformation through joint experimentation. The NDP report indicated that the need and timing for establishing this transformation process is "absolutely critical" and "urgent."

The United States has been unprepared at the outset of wars in its past. Our Nation rallied to eventually overcome these threats, but at a cost—not only in fiscal terms, but in lives. In the very near future, technology will enable a different range of threats we must be prepared for. There is no more pressing issue than the stewardship of our military capabilities to meet the national security requirements of the next century.

This article offers a congressional perspective on this joint challenge that introduces factors to drive development of warfighting capabilities, discusses uncertainties associated with competing operational approaches, and provides ideas on the process of joint experimentation.

Development Factors

Future military capabilities should be shaped by three factors: an assessment of the enemies we are likely to face; the technology that will enable us to employ military force in new, more effective ways; and the fiscal resources we invest for national defense.

The QDR report concluded that the world will remain a dangerous place with a full spectrum of uncertainties and evolving threats including weapons of mass destruction, information operations, and an array of asymmetric means to exploit our operational vulnerabilities. Many of these threats will be enabled by commercial-off-the-shelf technologies even more advanced than those fielded by our forces. Future capabilities must be developed to address these probable threats to U.S. interests in the 21st century. But how should we sort through all the different opinions to determine which threats matter? Clearly we need an overarching process to prioritize which threats must be addressed first, which can wait, and which do need not to be addressed at all. Notwithstanding these threats, many argue that we may be in the midst of a strategic pause since there is no regional or global peer competitor on the horizon. This pause does not imply that the Armed Forces are not busy, but rather that America has a historic opportunity to militarily prepare now for an uncertain future.

A second component driving development of future capabilities is the promise of advanced technology—things that are achievable by virtue of technological enhancements. Technology already provides significant advances in collecting information, processing it to gain situational awareness, communicating this awareness throughout our joint force, and responding with precise, accurate, and effective combat power. Thus we have the potential to increasingly coordinate activities across widely dispersed forces operating at higher speeds and tempos over greater distances. Advances in technology drive competition among capabilities that shape our vision of future warfare, including anti-access capabilities versus force projection, information operations versus precision strike, and missiles versus active defense. But how should we assess the outcome of these and other choices to highlight which technological opportunities will provide leap-ahead capabilities?

USS Maine conducting surface navigation operations.

Yet we cannot address each and every threat. And we cannot have all the potential technology since the development of future capabilities is limited by a third factor—fiscal resources available for defense. The budget resolution concluded last summer provides about $260 billion annually in real terms through 2003. The QDR report indicated that this level of funding is adequate to reach the defense procurement goal of approximately $60 billion annually, but only as long as infrastructure, manpower, and operational reforms are undertaken. Thus far Congress has failed to support more base closings, depot reform, and other efficiencies. Consequently procurement will likely languish in the $50 billion range, virtually ensuring that all the major systems currently proposed by the services cannot be procured. Yet given this environment, what will drive the cross-service trade-offs to prioritize investments in those areas that will make a difference on the next century's battlefields?

The threat and technological and fiscal factors can be addressed by an array of evolving warfighting paradigms. But how do we determine which paradigm provides the utmost in enhanced capabilities? No briefing on the value of paper systems and computer simulations will ever answer this question. I would suggest we augment the efforts of think tanks, white papers, and slide transparencies with something real: a process of joint experimentation using real joint forces, with real systems, exercising force-on-force in a real joint battlespace to determine what goes first, what must wait, and what gets terminated in developing our future capabilities.

Competing Paradigms

Unfortunately, we are not on a course toward making these decisions. The QDR process addressed only separate service experimentation initiatives such as *Force XXI* in the Army, the network-centric warfare concept in the Navy, *Sea Dragon* in the Marine Corps, and Air Force battle labs. In large part these initiatives are not joint or experimental. Yet despite the publication of *Concept for Future Joint Operations*, there is little meaningful discourse on a joint process that is either in place or on the drawing board to drive the implementation of *Joint Vision 2010*.

Without such a joint focus we will face operational approaches which are uncomplementary substitutes and which need radically different investment strategies. But the reality of budget constraints is that we cannot afford to pursue every investment strategy. Moreover, we have little if any fiscal maneuvering room for error in selecting which systems and capabilities to pursue. As Chairman of the AirLand Subcommittee, let me introduce two diametrically opposed visions—airpower versus landpower—which members of Congress need help to sort out.

Marines preparing to embark on CH–53E.

And we must remember that even during the most favorable conditions of Desert Storm we could not destroy Iraqi Scuds. If an enemy masses its formations deep in the battlespace and segregates them from its populace, airpower may work wonders. However, an enemy is likely to disperse its forces to put fewer platforms in the submunition footprint of our precision weapons. This tactic can exhaust our inventory of preferred munitions or expend them at uneconomical rates.

Furthermore, an enemy may mix combatants and noncombatants within the effective radius of our weapons and put the United States in a position of inflicting unacceptable collateral damage. Through 2010 our integrated joint C4ISR process may still be unable to definitively distinguish between friend, foe, noncombatant, and decoy partly because our sensors will continue to generate information faster than we can fuse and analyze it. Consequently, the fog of war will persist. And it cannot be effectively penetrated from above by fixed-wing platforms traveling at great speed. Therefore, our lack of assured battlespace awareness may continue to frustrate our ability to employ airpower to destroy anything other than fixed sites which an enemy would probably know was to be attacked.

Therefore, we must jointly experiment to determine whether our intelligence system, when coupled with our targeting and mission planning processes, is robust and reliable enough to support this airpower approach. If it can, then perhaps we should pursue more bombers and expeditiously reassess the over $300 billion we plan to spend on tactical fighters or landpower enhancements. But if it cannot, then we may never be able to differentiate let alone employ airpower to engage moving targets. Airpower thus cannot be decisive and we should emphasize investments in landpower.

Landpower. On the other hand, landpower proponents point to experiences in Desert Storm and Joint Endeavor and argue that on-the-ground staying power, either real or perceived, is needed to compel an enemy to accede to our strategic objectives. They envision employing ground forces to conduct dominant maneuver as a means of gaining a positional advantage which enables the use of decisive force in attacking enemy centers of gravity. This compels an enemy to either react from an untenable position or surrender.

Airpower. Some observers advocate relying on air and space capabilities to control a potential enemy through situational awareness, global reach, and precision strike. They argue that we can contain massive land assaults with bombers, tactical aviation, and missiles while reducing enemy strength so profoundly that large ground counteroffensives will never be required. This approach has major implications: increased airpower investment, downsized land forces, and new joint concepts through which land forces support decisive air operations by herding targets, securing the front, and mopping up the battlefield.

However, there is no consensus even among ardent airpower advocates on this approach. Current DOD efforts appear to emphasize short-range tactical fighters over bombers and missiles. Others advocate increases in stealthy long-range bombers since their global response capability can support the halt of armored forces and swing between two major theater wars while requiring no forward basing. Still others argue that the combination of long-range bombers and naval carrier groups will have increasing value as complementary deterrent and warfighting assets and that the role of land-based fighters will diminish because of their reliance on access to in-theater basing and its associated vulnerability to force protection threats.

But critics doubt that airpower can do the job. Can it decisively engage the broad range of targets we may face? They argue that airpower has never been decisive despite great success in the Gulf War. They claim that employing it effectively in the open deserts of Southwest Asia may be far more basic than "containing" disjointed infiltrating forces on the Korean peninsula or in Bosnia.

the fog of war cannot be effectively penetrated by fixed-wing platforms

Like airpower advocates, landpower proponents pursue several organizational approaches. The *Force XXI* initiative retains heavy divisions of over 15,000 soldiers. Others argue the Army should be reorganized into smaller, faster, more deployable, and more lethal units. They propose

FY–22 on flightline, Nellis Air Force Base.

99th Communications Squadron (Brett K. Snow)

Paladin weapon system.

DOD (Helene C. Stikkel)

separable, information-enabled, high technology combat groupings of 5,000 soldiers. Still others are considering combat teams that can call upon an enhanced array of joint fires. This decision over ground warfighting organization is not solely an Army or Marine decision. Rather, it is a matter of jointly organizing landpower with air and seapower to achieve full spectrum dominance.

But critics question whether landpower can achieve positional advantage. Why are we confident that land forces will be assured access to forward regions when adversaries are likely to employ cruise missiles, deep-water mines, and other anti-access means to disrupt strategic deployments? In the future we are unlikely to have six months to build up our land forces as we did during Desert Shield. And even if we gain access to a region, could we deploy heavy, logistics-intensive Army divisions fast enough to be viable on tomorrow's battlefield? Moreover, once in theater, would such forces and associated immobile support and command centers be able to conduct high speed, high tempo operations to lessen vulnerability to precision strike, information operations, and other asymmetric threats? If not, then perhaps we should pursue new, smaller organizations such as combat groups to enhance deployability, agility, and survivability.

Landpower skeptics criticize this approach since it may constrain the potential effectiveness of airpower. Why should we hold back airpower capabilities for weeks or months while building up heavy ground forces for a decisive counteroffensive that may not be necessary? Again I would suggest that we must jointly experiment to determine whether landpower can overcome challenges in strategic deployment, operational mobility, and full dimensional protection. If it can, then we should rapidly increase Army and Marine Corps budgets to recapitalize antiquated ground systems. But if it cannot, then dominant maneuver will remain an illusion and we should invest in airpower.

Both the airpower and landpower approaches raise several key questions. And each implies significant shifts in defense investment. Yet the reality is that we simply cannot afford both approaches by 2010. So the issue is whether technological benefits, when coupled with changes in force structure and doctrine, decisively enhance either of these paradigms or require us to examine a completely different approach. We must realize that insights from service initiatives cannot be the only basis for addressing this issue since they are focused on different problems and use different scenarios, threats, conditions, and enablers. So how do we sort through their conflicting conclusions? More fundamentally, how do we determine which even addresses the right set of problems? Only a coherent process of joint experimentation will provide policymakers and senior officers with the insights to address this issue. Without it, the Air Force will argue for increased investment at the expense of Army and Navy programs and vice versa. This is not the recipe for implementing *Joint Vision 2010.*

Experimentation Process

If we do not put an overarching process in place very soon, we will fail to motivate the tough decisions necessary to accelerate procurement in systems that are really needed and cancel or stretch ones that are not in order to realize the joint vision. I believe a joint experimentation process can serve as the basis for investment decisions both in the Pentagon and on Capitol Hill. At a minimum, this process should incorporate organizations, facilities, resources, and common terminology.

First we need a viable organization for joint experimentation with someone clearly in charge and with the authority to make changes. While this could be the commander in chief of U.S. At-

joint training **is not**
joint experimentation

lantic Command, the process of developing future capabilities is momentous enough to consider designating a new CINC, with responsibility for joint experimentation, training, and doctrine, such as the "Joint Forces Command" recommended by the National Defense Panel. Various organizations may work as long as they ensure the habitual association of forces from all the services which are focused, equipped, and resourced for experimentation. The force must be equipped with advanced technology in a way that is both jointly synchronized and fenced. Moreover, this experimentation force must possess or have ready access to all operational and tactical joint enablers which might be used in a battlespace, such as intelligence, surveillance, and reconnaissance (ISR), C[4], logistics, and force protection. Some have proposed a standing JTF with rotational lead among the services. This approach may work if each service pays attention to it when not in charge. But, for example, would the Army heed the conclusion of an Air Force-led JTF that divisions should be reorganized into smaller combat elements? Accordingly, some advocate a larger vanguard force that incorporates three-star-level organizations from every service—an Army corps, numbered Navy fleet, Marine expeditionary force, and numbered Air Force. These vanguard commanders could undertake a series of experimentation initiatives at varied echelons and establish JTFs from their assets for exercises. Either approach might work given the firm commitment and leadership of the Secretary of Defense and Joint Chiefs.

Second, we should instrument and electronically link a complex of service training sites to provide a joint facility for experimentation which could employ the suite of joint operational and tactical C[4]ISR, logistics, and other enablers to produce valid conditions for field experimentation.

C–17A taking off.
U.S. Air Force (Paul R. Caron)

This would offer the capability, for example, to determine whether dominant battlespace awareness can be actually achieved. Furthermore, this complex would form the basis for joint force-on-force experimentation to investigate enemy reactions to new paradigms of warfighting by understanding our operational vulnerabilities. For instance, how would an Air Force-led JTF attack *Force XXI*? It is through such exercises and the resulting knowledge that we can develop the means to avoid, mitigate, and counter enemy reaction to advanced capabilities. In short, this netted underpinning could enable the Joint Chiefs to obtain the kind of data necessary to assess capabilities, address vulnerabilities, and unlock the future promise of technology.

Third, the joint experimentation process must be adequately resourced. Funding should be fenced by DOD and not reallocated to pay bills during the budget review. In this vein, I agree with the NDP recommendation that a major force program be established to fiscally support the CINC with the mission of joint experimentation, such as that provided to U.S. Special Operations Command. These funds should not only provide for operations and support, but also serve as a reserve to quickly integrate or develop system enhancements based on experimentation insights. For example, this reserve could be invested in doubling the bandwidth of a battalion commander's Abrams tank if experimentation demonstrated the need for such a capability. Such initiatives cannot be postponed until the next DOD budget cycle. They must be pursued right then and there.

Fourth, we need a consistent joint language to specify capabilities as the foundation for joint experimentation. Today we have no common way to articulate what the Armed Forces are and are not capable of doing. This list of capabilities should then drive a standard set of tasks. And it is the end-to-end operational architecture for performing these tasks that we should investigate through joint experimentation. For example, what is the best way to conduct attack operations for theater missile defense in terms of sensors, command and control, and weapons?

One further point: *joint training* is not *joint experimentation*. While current exercises provide unified commands with superb opportunities to enhance readiness today, they do not investigate the potential for tomorrow's revolution in military affairs. We need training and experimentation to realize the shape-respond-prepare strategy outlined in the QDR report. It is the purpose of joint experimentation to validate those capabilities that are on track, find those that provide leaps ahead, and determine those that are failures. It is essentially a process of identifying winners and losers across

platforms, systems, and operational concepts. And we must be committed to accelerating winners and terminating losers. Some will consider the cost of these failures wasteful. But to the contrary, identifying failure is successful experimentation. True failure would mean continuing to invest in systems before knowing what will or will not work on the battlefield of the next century.

Simply put, the joint construct for experimenting with technologies, operational concepts, and force structures to discover true advances in warfighting capabilities is poorly acknowledged and resourced. How are we determining the transformation strategy that bridges our forces from current capabilities to a revolution in military affairs? The Secretary and Chairman must provide guidance and leadership to develop a process that breaks down bureaucratic barriers and explores ways to achieve full spectrum dominance. The joint experimentation construct presented here can identify technologies, systems, and organizational changes that should be accelerated, and perhaps more importantly, those that should be divested. The latter will provide fiscal fuel in a flat defense budget to accelerate the development and fielding of advanced technologies.

Establishing this experimentation process will be difficult since the services jealously guard dwindling force structures, systems, and platforms. But we cannot let experiments take a back seat to service initiatives on future capabilities. We may find the key to future capabilities is not only in tanks, ships, and aircraft they advocate, but in communications, intelligence, and other enablers. If so, we need a joint process to tell us which programs should be slowed or terminated, as well as the joint courage to shift budgets to accelerate genuine advances in warfighting. The ultimate test of jointness may be that the services will lose discretion over major investment decisions. But without such jointness each service

may partially implement its stovepiped solution and thus deny us a coherent joint operational concept for the future.

This is not meant to discourage interservice competition. Rather, we should foster it within a framework of joint experimentation that answers some of the troublesome questions posed here. For example, the issue of whether airpower can be decisive in the containment phase of a conflict is so critical that it cannot be resolved through interservice bickering over the results of simulations. We need to jointly demonstrate whether this concept is viable since it will help us determine where, when, and how our limited defense resources should be invested.

Congress has taken a first step, though admittedly small, in highlighting this debate on the development of new capabilities. The Senate Armed Services Committee directed in the *Report on the National Defense Authorization Act for Fiscal Year 1998* that the Secretary, in consultation with the Chairman, review service experimentation efforts and submit an experimentation plan aimed at rapidly conceptualizing and developing forces and operational concepts that will be needed through the 2010 time frame (five specific provisions are shown in the accompanying list).

Our second step will be to consider legislation in the defense authorization for fiscal year 1999 based on the Secretary's joint experimentation plan and the recommendation of the National Defense Panel.

In closing I am struck by the words of General Malin Craig who, as Chief of Staff of the U.S. Army in 1939, reflected on the lost opportunity of the interwar period:

What transpires on prospective battlefields is influenced vitally years before in the councils of the staff and in the legislative halls of Congress. Time is the only thing that may be irrevocably lost, and it is the first thing lost sight of in the seductive false security of peaceful times. . . .

We too may live in such times. Yet we must accept that the fate of democracy may be in our hands. We need courage to push through this false security and prepare for the future. We must not squander this strategic opportunity to develop new capabilities that can shape the 21st century. **JFQ**

Joint Experimentation Plan

The report should be submitted by March 30, 1998 and address the following:

1. How the fielding of advanced technologies is being synchronized across the military services to enable the development of new operational concepts.

2. How command, control, communications, and computer (C^4) and intelligence, surveillance, and reconnaissance (ISR) capabilities are being integrated jointly to achieve information superiority.

3. How service experimentation is being linked with the joint experimentation plan designed to implement the *Joint Vision 2010* operational capabilities.

4. How vulnerability assessments of new technologies are being conducted.

5. Whether an experimentation Joint Task Force should be established.

—*Report on the National Defense Authorization Act for Fiscal Year 1998*

Leaping Ahead

Patriot missile launcher, Saudi Arabia.

DOD (Pete Williams)

to the 21st Century

By D E N N I S   J.   R E I M E R

The strategy advanced in the recent Quadrennial Defense Review (QDR) reflects the world as it is, not as we may wish it was. Its strategy is captured by the terms *shape-respond-prepare*. First, it recognizes that we have a unique chance to shape the international environment. Second, we must have the ability to respond to a full spectrum of crises wherever national security interests are at risk around the world. Last, we must prepare for the future. This may be the most difficult part of the strategy because it calls for discipline and courage to manage risk, balancing the needs of today against the requirements of tomorrow.

While shaping and responding to a changing world we must prepare joint forces to conduct traditional and new missions with innovative means. To anticipate the future we must overlook the constraints imposed today on technology and military capabilities and focus on 2020. Managing risks, making investments, and looking forward are keys to retaining the initiative.

Our analysis of the future also indicates that the United States needs a capability identified as *strategic preemption*, either preventing or halting a crisis before it gets out of control. This will involve speed and agility to analyze contingencies and the capability to respond with coherent and effective joint forces. The competence needed to deal with such challenges must be matched by the physical and mental agility of forces that can react anywhere in the world and conduct a full range of military operations in combination with other government agencies and allies.

The Pentagon has accepted that diminishing manpower and resources will further drive the requirement for joint organizations in the future. These constrained resources, the greater need for jointness, and a credible strategy bring us to a

General Dennis J. Reimer, USA, is the thirty-third Chief of Staff, U.S. Army.

Joint Experimentation and Integration

- designs, tests, and fields new joint organizations
- develops and tests new joint doctrine and JTTPs
- rapidly prototypes, tests, and fields leap-ahead systems
- links troops, combat developers, matériel developers, testers, and industry
- establishes prototype for full spectrum, seamless joint training
- a catalyst for cultural change

California

Nevada

Naval Weapons Center, China Lake ●

● Nellis Air Force Base

Twentynine Palms Marine Corps Base ●

● National Training Center

● Naval Amphibious Base Coronado

Change (vertical axis) / **Time** (horizontal axis)

- Integrated JTF
- Joint Warfighting Experiments
- Joint C⁴ISR
- Joint Wargames
- Joint Doctrinal Change
- Develop Standing JTF

strategic crossroads. Should we stay on a Cold War glide path or exploit the strategic window of opportunity to leap into the next century?

Creep or Leap?

Joint forces must be designed from the ground up as a total package to meet the diverse and robust requirements of the future. This demands a complete integration of joint doctrine, training, deployment, and equipment. These forces must be smaller, more mobile, and harder hitting. They must exploit the potentiality of information age technology on all levels of war. Headquarters must be continually streamlined and modified to meet new situations. Conflicts in the 21st century will require major advances in mobility and information processing. The Nation can no longer afford the ponderous forces and constraints of the past.

Our forces must be more strategically mobile, capable of moving quickly anywhere around the world. They must be strategically, operationally, and tactically agile, flexible, and versatile by design. The versatility to handle complex missions and to pivot from one to another is essential. A characteristic of missions in the next century will be the ability to quickly transition between the use of lethal and nonlethal means.

To achieve essential strategic and tactical mobility and flexibility, our forces will also have to be logistically unencumbered. No service can afford the level of combat equipment and supplies that were pre-positioned during the Cold War. As we become more mobile and capable, logistical systems must also be agile. The key enablers, both now and in the future, are information and technological solutions that place the right logistics in the right place at the right time.

The issues that prepare the Army for tomorrow are in many ways the same as those facing the other services and DOD as whole. In the last two years the Army has expended a lot of energy mapping a path forward. It appears that during this "strategic opportunity" both the Army and the United States are at an historic crossroads. We know where we must go.

Recent experience has indicated how to leap ahead. Last spring we conducted an advanced warfighting experiment (AWE) at the National Training Center—the premier Army combat training center—to explore the potential of information technologies on the tactical level. This experiment provided us with a glimpse of the future. That was exciting because the Army realized a quantum leap in force effectiveness by leveraging information technologies with current equipment. But it was disconcerting because we learned

Fire direction center, National Training Center.

115th Mobile Public Affairs Detachment (David Burkle)

first hand the magnitude of testing, training, and integration needed to increase our effectiveness to the full potential of 21st century capabilities. The result was that AWE revealed a unique opportunity to make the transformation from an industrial age force to information age force with unparalleled capabilities—if we do it right.

The principles of this transformation are clear. All our forces—land, sea, and air—must be balanced, appropriate, and relevant. They must be strategy-driven; that is the only way to develop and maintain coherent forces with reduced resources. The national military strategy should also be the gauge by which forces are measured.

while we must "train the way we fight," both fighting and training will be joint in the next century

Most importantly, senior leaders must break the service-parochial paradigms of the past and align defense resources with national strategy. With continued pressure on resources and global demands for U.S. forces, future capabilities must be linked to a strategy and built from a coherent and integrated plan.

While we must "train the way we fight," both fighting and training will be joint in the next century. The Army learned long ago that tough training up front means readiness and saving lives in the long run. This basic truth applies to joint forces as well. A force of such diverse capabilities and complexity will necessitate rigorous experimentation and training to meet the demands of team cohesion, high operational tempo, and operational agility.

To chart our future, three areas must be changed. First, a process of joint experimentation and integration must be established. Second, our defense modernization strategy must be realigned to meet a new security strategy. And third, the revolution in business affairs must be exploited by the Department of Defense.

Joint Experimentation and Integration

It is generally agreed that our forces will almost always fight jointly in the future. A look at operations conducted since 1989 indicates that 25 out of 27 were joint. The road ahead starts with the concept of a standing JTF to accomplish truly joint experimentation and integration. Forming it may not be as difficult as it seems.

Joint experimentation and integration offers a mechanism to promote ideas, develop tactics, techniques, and procedures, and produce the doctrine and systems for the joint force. A standing experimental JTF would also realize the concepts and capabilities advanced in *Joint Vision 2010*. The term *standing* in this context means not ad hoc or temporary. The JTF charter would not call for developing capabilities just because they were needed or absent in the past; rather it would build capabilities for future challenges as consistent with rapid technological advancements and strategy.

Although establishing a standing JTF would be a bold step, the risks could be mitigated by an incremental and layered approach. The task force could add capabilities gradually as concepts and interservice procedures evolve. Initial work could begin with existing assets and joint doctrine development. The pace of evolution would be a function of how quickly complementary service capabilities are integrated. The size and composition of the JTF headquarters would be based on two compelling needs: experimentation and integration. Further requirements for deployability and warfighting could be added as the organization matures.

One way of initiating this process would be to link training and experimentation centers in the southwestern United States functioning in real time through a virtual environment with existing simulation technologies. This could be done with a standing JTF headquarters and elements from each service. A standing JTF is the only efficient way to conceptualize and develop genuine joint forces. Through simulations, a JTF could create a synthetic battlefield to design and test doctrine and organizations. That would begin to harness complementary core service competencies.

M–1 during advanced warfighting experiment.

115th Mobile Public Affairs Detachment (David Burkle)

55th Signal Company, Combat Camera (Larry Aaron)

Synthetic aperture radar terminal.

Joint experimentation would initially exploit service battle labs by electronically connecting facilities at Fort Irwin, Twentynine Palms, Nellis Air Force Base, Coronado, and China Lake in a consortium. A JTF also could develop and test operational concepts and doctrine. Concepts that spring from the classroom and simulations must be validated before investing in equipment.

Next, simulation and integration could stimulate exploration of virtual weapon prototypes and then model systems exactly as they would be fought in a joint organization. As such virtual

we have learned that exciting things can happen when troops have the freedom to experiment

weapons function in a virtual battle both their performance and cost effectiveness can be evaluated. Interface designs and interoperability tests can reveal how well future equipment will meet multiple service requirements. Users of virtual prototypes will provide feedback on design inputs. Designs could be tested for warfighting utility and streamlined acquisition by rapid convergence of virtual prototyping and hands-on experimentation by soldiers, sailors, marines, and airmen.

The second level of experimentation and integration would include joint field exercises and maneuvers. A JTF would experiment with the best ideas on the ground to see if they really work in the hands of troops. Experimentation would not be constrained to doctrine but would also include the development of tactics, techniques, and procedures at echelons down to the individual soldier. We have learned that exciting things can happen when troops have the freedom to experiment. This leap-ahead approach offers the services tremendous opportunities.

As the fidelity of future simulation and integration increases, the task force would begin to see the continued overlap and merger of collective training domains: virtual, constructive, and

live. Tomorrow's simulation will witness the continued reduction of live training as simulation provides a better return on investment. But in some cases troops could remain in tactical operations centers, control centers, cockpits, and command information centers and train with actual units in the field. The capability to mix and match the various training domains and units will be limitless.

One of the most exciting aspects of this proposal is that such an organization, if properly designed, could become a cultural catalyst for both intra- and interservice changes. Certainly it would assist our leaders in removing institutional barriers that preclude the synergistic capabilities our forces will require in the 21st century.

Defense Modernization

The second major requirement in seizing this strategic opportunity for change is to realign our defense modernization strategy. This is a way to ensure that service modernization programs are complementary—a genuine joint, integrated modernization strategy. It requires that we refocus modernization investments. Current capabilities, with some enhancements, are adequate to take us through 2010. We must refocus our scientific and technology base on legitimate joint warfighting requirements—pulling forward the technology that will be needed for 2020.

Once such a JTF exists questions about which weapon systems and technologies should be developed become almost inseparable from the capabilities and efficiencies required by a new joint force. If we are indeed at a strategic crossroads, then it is time to recapitalize and explore untested joint capabilities and ensure that they are coherent with national military strategy.

As technological breakthroughs occur and potential enemies are outmatched by our military innovations, it is prudent to focus our modernization strategy on improving equipment through software upgrades and technical insertions. Until the next generation of procurement programs is tested and integrated, new starts of major weapon systems should be carefully evaluated in light of recommendations emerging from an experimental JTF.

Refocusing modernization in concert with an experimental task force will stimulate change in thinking, planning, organizing, and training within the Armed Forces. Such a JTF will become the centerpiece for change and catapult us ahead in joint military capability.

Revolution in Business Affairs

A revolution in military affairs and the strategy of shaping-responding-preparing cannot be realized on an integrated joint level without a simultaneous revolution in business affairs. We must not overlook changes in innovation and productivity that are revolutionizing American industry.

A new partnership with industry and Congress is required to fully develop the forces of the future. Even in light of the tremendous downsizing since the Cold War, we still need to streamline our headquarters, reduce infrastructure, and offer incentives to make management more efficient. DOD must learn from the corporate world's ability to rapidly adjust to shifts in the marketplace and make that part of military culture.

The experimentation and integration task force is an important link between a revolutionary modernization strategy and allocating resources. As technological changes accelerate, the defense establishment is not well equipped to analyze joint resource allocation. The Cold War approach of large homogenous modernizing will quickly make U.S. forces irrelevant as technology continues to impact equipment capabilities and organizations. The unprecedented pace of change will make it impossible for the military of tomorrow to maintain coherence without an institutionalized process to help make investments to maximize scarce resources. The linchpin and focus for such decisions will be a fully functioning integrated JTF.

The Quadrennial Defense Review reveals a strategic window that provides the opportunity to fundamentally reshape our forces for the next century. It requires that the defense community as a whole embrace an alternative way of leaping ahead. To make that path a reality, we must initiate the concept of joint experimentation and integration. We must also identify those synergies found in service modernization plans and transform them into a coherent defense modernization plan while adopting those efficiencies found in the industrial sector.

We are all pressed by the demands of day-to-day operations, but we must embrace reform. Our leaders must adopt the new strategy of shaping-responding-preparing and ensure that *JV 2010* becomes a reality. We do not need a smaller version of the Cold War force; the future will require a force designed for a changing world. That is the essence of the QDR process. **JFQ**

Grasping 2010

Naval forces in Arabian Gulf.

with Naval Forces

By ROGER W. BARNETT

To achieve U.S. security objectives it is necessary to anticipate the environment in which future military operations may be conducted. Projections about the politico-military scene in 2010 influence current defense policies, from force structure to contingency planning. National security requires that both planners and programmers get it right, for the stakes are high. A systematic way is needed to anticipate:

■ what the Armed Forces will be called upon to do
■ where, when, and against whom they will operate
■ what joint and multinational forces will be available
■ how to employ forces in the optimum manner
■ what risks must be run under various employment schemes.

Roger W. Barnett is professor of naval warfare studies at the Naval War College and coeditor of *Seapower and Strategy.*

This article focuses on how naval combat forces should be employed in 2010. Narrowing that focus presumes the Nation will want to maintain capable forces to underwrite its security and that of its allies and friends around the globe. It also accepts that use of force will be circumscribed by a variety of organizational, operational, legal, and moral constraints. Moreover, it emphasizes naval combat operations, not humanitarian operations or presence.

Joint Vision 2010 provides an operational structure for operations in the early 21st century through four operational concepts: dominant maneuver, precision engagement, full dimensional protection, and focused logistics. These concepts are part and parcel of *Naval Operational Concept* and *Operational Maneuver from the Sea* issued by the Navy and Marine Corps, respectively. For analytical purposes they can be applied within the context of the accompanying illustration as a

means of grasping 2010 with naval forces. While the concepts describe the environment of the future in terms of critical tasks being faced by naval forces, operations cannot be factored into its constituent parts because of inevitable overlap and duplication.

Dominant Maneuver

Maneuver is accomplished relative to something else. In operational art, maneuver helps to gain positional advantage over enemies. Importantly for force planning and military operations, all our enemies will be located overseas as they have been throughout this century. Force movement, maneuver, and sustainment over long distances will remain hallmarks of the Armed Forces. Thus the success of overseas movement will be a function of protecting both lines of movement and communications.

Being relational, successful maneuver will rely on the ability to identify, locate, and track strategic and operational targets. For centuries a defining characteristic of warfare at sea, selecting, finding, and tracking the right target continues to be the most difficult and important action in the realm of naval warfare. This will require on-scene forces in addition to space-based sensors in the time frame under consideration. To find and track the right target, commanders must be capable of staring, not merely looking. Manned and unmanned airborne platforms perform this function in the most effective way.

successful maneuver will rely on the ability to identify, locate, and track targets

Once a target has been identified, operational maneuver can take place with respect to it, to operational depths, for either offensive or defensive purposes. Once a target has been located and tracked, a commander can optimize the effectiveness of maneuver. Being relational, maneuver also includes actions to contain or constrain enemy movements or mobility.

Maneuver constitutes an integral part of a commander's plan, and actions will be organized, integrated, and coordinated to facilitate it. Both operational security and deception will heighten its impact, for they offset enemy efforts to neutralize or negate it.

An enemy's capabilities to reduce the effects and value of operational maneuver in the future will depend on its intelligence, surveillance, and reconnaissance (ISR) and command and control (C^2), and whether it has forces agile enough to offset its adversary's ability to maneuver. An enemy will likely control interior operational lines while we operate on exterior lines.

In the final analysis, operational maneuver enables operations in depth to achieve strategic or operational objectives. Tasks within this operational list might include:

- shows of force
- demonstrations
- forcible entry through airborne, amphibious, and air assault
- reinforcing and expanding lodgments
- raids
- penetrations, direct assault, and turning movements
- direct actions
- unconventional warfare
- taking the battle to an enemy, countering its initiative, defeating its attack, and conducting retrograde operations
- overcoming operationally significant barriers, obstacles, and mines
- operational countermobility through employment of an operational system of obstacles, carrying out sanctions, embargoes, or blockades, and undertaking maritime interception.

Operational maneuver also includes actions taken to control operationally significant land areas, gain and maintain air and maritime superiority, isolate the theater of operations, or provide assistance to friendly nations in resource and population control.

Potential enemies may seek to prevent friendly forces from achieving dominant maneuver, which implies that the success of the above tasks will be highly situation-dependent. Recognizing that strategic and operational objectives will probably be located ashore, which tasks can be achieved in pursuit of the objectives will depend not only on an enemy, location, and time, but on the ability to enable and facilitate tasks through operational maneuver. Maneuver also increases the effectiveness of precision engagement, full dimensional protection, and focused logistics.

Precision Engagement

The delivery of ordnance on target has evolved to the point where *brilliant* munitions can achieve virtual pinpoint accuracies. Whereas in 1943 it took 1,500 B–17 sorties dropping six one-ton bombs each to destroy a 60 by 100 foot target with 90 percent probability of a kill, by 1970 it required 176 F–4 sorties in the Vietnam War. Today, it takes one laser-guided bomb delivered by one strike aircraft (10 foot circular error probable). By 2010 this will not change much simply because significantly greater accuracy will not be needed—the problem will become one of locating and identifying targets.

Precision engagement includes bombs, rockets, missiles, artillery, and nonlethal means that are delivered to operational depths. It also encompasses placement of troops ashore. As described

above, order of magnitude increases in accuracy have reduced the need for weight of ordnance on target and the explosive power of individual weaponry. Greater accuracy means fewer weapons with smaller warheads to accomplish the same effects with much less collateral damage.

In the future precision engagement will become first an exercise in targeting and then in allocating targets to the most appropriate weapon system. Targeting involves identifying, locating, classifying, tracking, and prioritizing targets. Operational targets are those that will have a decisive effect on campaigns and major operations. Precision engagement will most likely be a joint and multinational undertaking.

Precision engagement can be employed for offensive counterair, suppression of enemy air defenses, and interdiction of air, surface, and subsurface operational targets. Special operations forces can be deployed as part of precision engagement for many of the same purposes as attacks by air or non-air breathing weapons. They are especially useful for negating or neutralizing enemy weapons of mass destruction.

Other operational concepts are also supported by precision engagement. It can facilitate dominant maneuver, underwrite full dimensional protection, and provide cover for focused logistics. It can also disrupt enemy command and control networks or even put them entirely out of commission.

The speed with which attacks can be delivered on the right target will have greater import as 2010 approaches. This is because of the difficulty in target location and identification and enemy interest in countertargeting. Few key targets will be stationery even on the strategic and operational levels, and deception will be a major part of countertargeting plans. The time from location and identification of a target to weapon arrival will become more significant for success. This means weapon systems will need great responsiveness and flexibility and that weapon flight time must be minimized. Proximity of launchers to a target, the line of acceptable risk, and high flight speeds will help to compress the sensor-to-shooter-to-target sequence. The full sequence—including the shooter-to-target segment—must be included.

nonlethal fires can take the form of electronic and information attack

Damage and munitions effects assessments have always been part of targeting and will be no less crucial in the future. Four related factors are exercising a growing influence on precision engagement: friendly casualties, fratricide, collateral damage, and unintended consequences.

The threshold for accepting casualties has unquestionably dropped since World War II, but how far is debatable. The effect on precision engagement is that risk of own-force casualties must be factored in with greater care.

As the speed with which war is conducted on the tactical, operational, and strategic levels has increased—thus shortening decision time—the danger of blue-on-blue engagement has grown. Weapons lethality, moreover, adds another sort of risk. The premium on fast decision-making and trigger-pulling together with accurate weapons increases the chance of fratricide. Improvements in determining locations brought about by the global positioning system and advances in identification technologies will help, but the sensitivity will remain.

Collateral damage has been ameliorated by precise weapons with smaller explosive yields. Nevertheless, the advent of precision has increased the demand for greater accuracy which again underscores the necessity of selecting and identifying the right target.

The last factor, unintended consequences, has a further depressing influence on precision engagement. The possibility of unintended consequences arises when force is used. Yet problems multiply when potential unintended consequences with low risks begin to have a serious impact on targeting. One case was the nuclear winter debate of the 1980s, but the question appears in much less catastrophic situations when the use of force is considered. Potential environment damage and anticipated costs of reconstructing what may be damaged fall in this category.

Considerations of collateral damage and the like have increased interest in nonlethal or less-than-lethal precision engagement. Nonlethal fires can take the form of psychological operations, electronic and information attack, and nonlethal munitions. Their object is the same as lethal fires, but their application and utility are more restricted. The difficulty of damage assessment and lack of confidence in its effectiveness may well require that their targets also be attacked by lethal fires.

Sensors for damage and munition effect are becoming more discerning but remain quite complex and difficult. Imperfect as such assessments are by necessity, commanders will use them to make decisions on reprioritization and reattack.

Fire support coordination will remain significant. Its complexity, difficulty, and relevance all increase when ground forces are introduced ashore (requiring a need for tactical and operational precision engagement to support them), enemy activity increases, and operations are more joint and multinational.
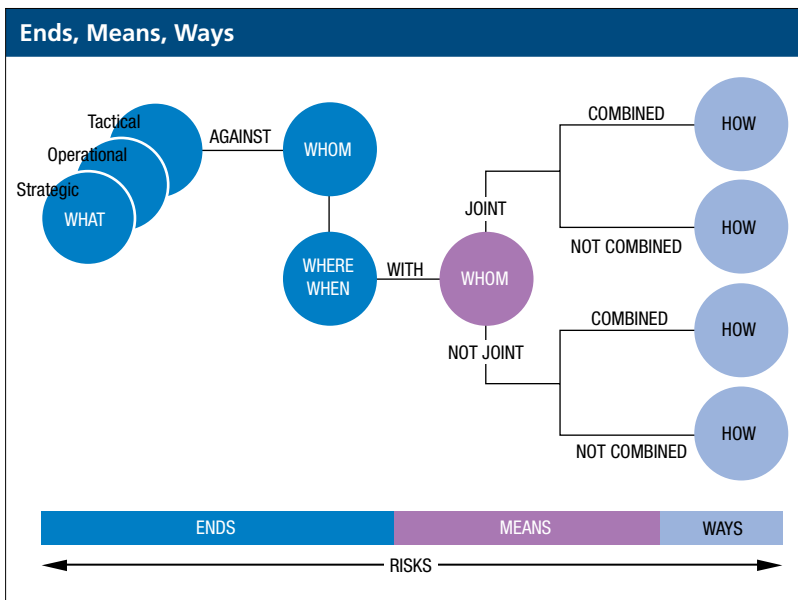
Ends, Means, Ways

Ends, Means, Ways

Although the above illustration contains nothing new, it depicts the issues addressed in this article. Ends are provided to operational commanders by higher authority and are circumscribed in place, time, and intensity. That is, they are not unlimited and do not pertain to unconstrained political goals such as unconditional surrender. Instead, they can require removing an enemy force from friendly territory, restoring international borders, quelling an insurgency, protecting access to important resources such as fuel oil and water, or offsetting a coercive threat. Of major interest and the focus of offensive efforts by commanders, strategic and operational targets are on land. It is unlikely in the 2010 time frame that operational objectives will be located at sea. There will be no battlefleets to confront, ballistic missile launching submarines to attack, or at-sea assets to neutralize or destroy which would have an effect on the operational or strategic level.

Traditionally the purpose of an offensive attack was to delay, disrupt, destroy, or degrade enemy forces or critical tasks and facilities and affect their will to fight. With precision engagement, operational and strategic targets can be attacked with the intention of directly influencing the course and outcome of the conflict.

In sum, while weapons have become brilliant, other considerations weigh heavily upon the ability of precision engagement to achieve its objectives. An enemy will try to deny the requisite targeting information and keep targets moving. Joint and multinational forces will be constrained by the concern over hitting the correct target, risk of friendly casualties, collateral damage effects, and difficulties with assessing the results of attacks.

Full Dimensional Protection

Finding and successfully attacking the right target represents the greatest operational impediment to achieving strategic and operational objectives. Clearly, then, countertargeting must be a key concern for the commander. This is underscored by the necessity to keep friendly casualties as low as possible.

Attaining the ends for which force is being applied is the overriding issue for commanders. They cannot be insensitive to the survival and effectiveness of their own forces; yet survival is not the goal but merely a contributor to it. Thus, full dimensional protection for the force is important but is neither the highest concern nor the objective of commanders.

Commanders seek to conserve their fighting power. Full dimensional protection is a way to achieve that goal. It may be passive (deception, armor, electronic countermeasures, operations and communications security, and dispersal) or take the form of three dimensional active defenses. Full dimensional protection includes the defense of joint and multinational land, sea, air, space, and special operations forces; bases; and lines of communication from:

■ enemy operational maneuvers and concentrated land, sea, and air attack
■ natural occurrences—primarily weather
■ terrorist attack.

Also included are protection of operational level forces, systems, and civil infrastructure of friendly nations and groups in military operations other than war.

As noted above, each operational concept is linked to the other three. In the case of full dimensional protection, both dominant maneuver and precision engagement will perform major roles in a commander's plan to protect his forces. Operational command and control, focused logistics, and ISR will likewise contribute synergistically to protection.

Full dimensional protection in 2010 will benefit from decades of recognition that protection of one's force begins at enemy launch points. Attacking enemy offensive systems by destroying missile launchers, aircraft on the

Patrol craft off
San Diego.

ground, ships in port, and tanks and artillery before they come into range of friendly forces will remain the preferred action. The rule will be the farther from the defended force, the more desirable the defensive action.

Another straightforward principle of full dimensional protection is that layered defenses are more effective than nonlayered ones. Two layers, each 60 percent effective, will have a combined effectiveness of 84 percent. A third 60 percent layer increases overall effectiveness to 94 percent. (If layers are each 80 percent effective, the second layer provides 96 percent overall and the third 99 percent.) Given a choice operational commanders will erect layered defenses—whether against aircraft attack, tanks, ballistic missiles, or submarines.

For the same reason, while moving targets are difficult to attack, they are easier to defend. Commanders will probably be obliged to provide operational protection for fixed points—bases, airfields, supply depots, ports—but where possible keep their forces mobile for increased security.

Operational defense from three dimensional attack for forces at sea will fall primarily, but not exclusively, on naval forces. Mine and antisubmarine warfare are primarily naval activities. Operational air and missile defense, on the other hand, will likely be joint or multinational.

In the time frame under consideration few of the potential threat countries for expeditionary operations will have robust over-the-horizon surveillance and reconnaissance capabilities. Many, however, will be capable of indiscriminate attacks like the 1987 Iraqi assault on *USS Stark*. Fewer still will be capable of operating naval or air forces at appreciable distances from home bases, which means that lines of communication in open seas should be relatively secure, depending on the enemy. As naval forces approach land, however, the operational environment becomes more dangerous and operational protection more challenging. This vulnerability can never be fully negated but has been ameliorated, and can be in the future, by a combination of increasing the stand-off ranges of naval sensors and weapons, greater stealth, dominant maneuver, operational deception, and better tactical warning and attack assessment. The commanders of joint and multinational forces must not only secure the at-sea lines of communications, but the land and air lines.

Although chemical and biological warfare (CBW) threats will be of concern to land forces, they are less vexing for naval forces because enemy targeting problems are dominant. If an enemy can target a ship, why should it not put a hitting weapon on it rather than a chemical warhead, which is less reliable, more costly, and more

difficult to deliver? The logic against CBW use on ships, especially at long ranges, is strong.

Nevertheless, commanders will be responsible to protect their force from weapons of mass destruction. Deterrence against their use has been weakened by the lack of a counterthreat in kind and by their increased value as an asymmetrical response to systems deployed by the United States and its allies. Indeed, chemicals and biologicals have become "the poor man's atomic bomb" and many countries either have these capabilities or will have them by 2010.

information superiority is a byproduct of high quality C² underwritten by ISR

U.S. Navy

Mine countermeasure
support ship
USS Inchon.

Focused Logistics

All things considered, it is the ability to provide focused logistic support to project forces that makes those forces and their deterrent threat so effective. The United States is by far the world leader in intertheater lift, both sea and air, and it has the only force of prepositioning ships placed strategically around the globe. Strategic sealift, land prepositioning, and host nation support round out the significant, unparalleled U.S. infrastructure designed to lend operational support.

Naval forces are the most self-sustaining of all military formations. They invariably arrive at the scene with filled fuel bunkers, magazines, and storerooms. Demands for focused logistic support stemming from high-intensity combat operations are great, however, and failing to attend to them will place any campaign or major operation at risk.

Each operational theater will be different in terms of in-place operational support available to commanders and the difficulty faced by lift forces. Operational commanders are responsible for organizing required support from wherever it is based.

They must identify operational needs as soon as possible and establish priorities for employing resources. They must prepare to sustain both the tempo and continuity of all engaged forces throughout a campaign or major operation.

Support is complicated by the number and type of forces assigned. Joint and multinational forces will massively increase arms, ammunition, and equipment replenishment requirements over the comparatively simple needs of a naval expeditionary force. Responsibilities include not only synchronizing the flow of fuel, food, and ammunition, but also maintenance of equipment in the theater, coordination of manning to provide uninterrupted flows of trained units and replacements, management of casualties, and support of personnel and health services. The latter includes both personal welfare and comfort (finance, chaplain, legal services, clothing and individual equipment, laundry, bath, evacuation of wounded and sick blood management, and graves registration). The range of support is broad, dynamic, and demanding, and it is a major part of the planning process.

ISR and C²

In the words of *JV 2010*: "We must have information superiority: the capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same." The success of dominant maneuver, precision engagement, full dimensional protection, and focused logistics all pivots on information superiority, which is a byproduct of high quality C² underwritten by ISR.

Joint and multinational operations are inherently more complex, and thus much more taxing on command and control arrangements, than single service operations. It is anticipated that most combat on the operational level in the future will be joint, multinational, or both. The concomitant increase in complexity and difficulty of command and control must be planned well in advance.

The first level of activity in gaining information superiority involves collecting information on the theater of operations, tasks to be performed, and friendly and enemy orders of battle. These and geophysical factors vary from theater to theater. Insofar as U.S. and multinational forces have been previously or routinely deployed in a given theater, the task of setting the stage will be eased. Depending on objectives, commanders will determine their critical information requirements, thus prioritizing the information flow.

Operational intelligence includes deciding when, where, and in what strength an enemy will stage and conduct military activities. As such, it underwrites each of the four operational concepts.

USS Seawolf (John E. Gay)

Manning helm of
USS Seawolf.

Assumptions and assessments made about operational intelligence will have a key influence on the conduct of campaigns and major operations.

Important tasks will include preparing an operational collection plan. In 2010 this will be aided by new systems in the atmosphere and space. Much intelligence collection, reconnaissance, and surveillance will be directed at finding, identifying, and tracking targets. Enemies, however, will become more sophisticated even with more supportive technologies.

This task, which includes determining prospective enemy courses of action and intentions, is vital. Enemies will seek to present friendly forces with *faits accompli* or at least take advantage of surprise. Thus indications and warning for theater operations will be an essential output of the process. U.S. collection and analysis efforts must also anticipate the various levels of surprise and plan to negate their effects. Friendly forces probably cannot prevent surprise but should be capable of withstanding and offsetting its effects.

Intelligence collection, processing, exploitation, and dissemination is a continuing demand throughout a campaign or operation. It must not tire of aggressively discerning enemy intentions or providing positive identification and location of all theater forces.

Commanding subordinate forces requires delineating responsibilities among commanders. The overall commander issues orders and rules of engagement. Because maneuver, engagement, and protection benefit from attacking an enemy early, special rules of engagement or relaxations may be needed. Coordination and synchronization are also high priorities.

Among the command and control tasks is organization of a joint force headquarters. There must be procedures to develop a joint C^2 structure,

establish liaison structures, integrate joint force staff augmentees, deploy headquarters advance elements, and institute command transition criteria.

Information warfare will become more important because, among other things, it carries the potential for significant destruction with little violence. Commanders will integrate and coordinate the use of operations security, military deception, psychological operations, electronic warfare, and physical destruction for command and control warfare, probably in ways not yet fully considered. Information and C^2 warfare have offensive *and* defensive dimensions. Future commanders will be more attuned to their requirements and will monitor and adjust operations as they occur.

Finally, commanders will need to provide public affairs within their theater of operations. Media relations will become more complex and difficult because the ability of the media to collect information will undoubtedly increase.

The analysis of naval forces on the operational level in 2010 begins with a consideration of the tasks to be accomplished. Such tasks and their locations are confined in size and difficulty and are finite in number. Since operational objectives will likely be ashore, the focus will be on land.

Maneuver by naval forces takes place at sea where they enjoy broad freedom of movement. Ships can be vectored to a given location without committing to action. Operating on the high seas, they incur no political costs in repositioning for advantage. This will not change in 2010. Relative to an action taken by an enemy, at-sea mobility translates into dominant maneuver.

From areas secured by dominant maneuver and by full dimensional protection, naval forces can engage with precision. Targets can be attacked by aircraft, missiles, and guns and by landing Marine forces. Such areas can be secured until joint air and land forces arrive to exploit critical vulnerabilities. Operations are sustained as long as required by focused logistics.

The differences between today and 2010 can be found in the relative ability of friendly and enemy forces to locate, identify, and attack targets. High quality ISR in conjunction with updated C^2 procedures and organizations will give an advantage to friendly forces. Executing the concepts found in *JV 2010* will bring success so long as the risks remain low. Refined doctrine, improved organizational relationships, and focused and purposeful training must be combined with new weapon systems to ensure future success. **JFQ**

Marine securing beach during Bright Star '97.

AV–8B landing on *USS Peleliu* during Kernel Blitz '97.

Pacific Fleet Combat Camera Group (Bryan K. Logan)

U.S. Navy (Benjamin D. Olvey)

Joint Vision 2010—
A Marine Perspective

By F. G. H O F F M A N

The strategic environment today is markedly different than the bipolar context that shaped defense priorities and organizations for decades. In contrast to a monolithic enemy, we confront myriad threats arising from geopolitical change, an international economy, and the proliferation of technology. Moreover, despite hyped predictions about a revolution in military affairs, the nature of war has not and will not change though its character will undergo a major transformation. This will be manifest in the forms of warfare, technological developments, and enemies who appear on the battlefield of the future. Preparing for such diversity requires a capacity to adapt and innovate.

To stimulate such a capacity within a joint warfighting framework, the Joint Chiefs of Staff issued *Joint Vision 2010: Preparing for the Future* in July 1996. This article compares that vision with the primary operational concept of the Marine Corps, *Operational Maneuver from the Sea*, and evaluates its utility in the current strategic environment.

F.G. Hoffman is an analyst at the Marine Corps Combat Development Command and author of *Decisive Force: The New American Way of War*.

Those familiar with the business world recognize the use of a common vision to stretch the imagination of a corporation, create new expectations, and cause a sense of urgency for proposed change.[1] The services routinely issue vision statements or white papers (such as *Force XXI* by the Army, *Forward . . . From the Sea* by the Navy, and *Global Presence* by the Air Force) to convey changes in direction and highlight the horizon of future warfighting capabilities. The Commission on Roles and Missions of the Armed Forces found such visions helpful if somewhat self-serving and recommended that they be "harmonized" by a central vision to drive joint requirements.[2]

As a result of the commission's report, *JV 2010* was published to provide a "template" to channel the collective efforts of the Armed Forces. Its issuance was accompanied by controversy. Early drafts were decidedly technical and didn't mention the requirement for high quality personnel supported by effective training and education. They also conflicted with the way military doctrine looks at warfare—which is essentially Clausewitzian. Critics of these early drafts emphasized the enduring human dimension of war over the transitory impact of technology. The drafts introduced new buzzwords and ahistorical assumptions on technical innovation in lieu of time-tested concepts about the inherent friction and ambiguity of warfare. One got the feeling that the term *enemy* did not exist in the document's lexicon. Basic concepts like fog, friction, chance, and the independent and adaptive will of an enemy were replaced by an unrealized *information dominance*. Just as serious, these early drafts imposed a centralized style of command and control (C^2), enabled by information technology, to achieve dominant levels of situational awareness.

the Marine Corps view of the future strategic environment reveals chaos in the littorals

The direct involvement of the Joint Chiefs was critical to rectifying the faults in the drafts. Ultimately the need for quality people, real presence, and a range of capabilities across the entire threat spectrum was included. The final version was heralded as a new warfighting strategy.[3]

The Vision

The Marine Corps view of the future strategic environment reveals danger and opportunity. Danger—chaos in the littorals—is characterized by myriad clashes of national aspirations, religious intolerance, and ethnic hatred. Opportunity emanates from advances in information management, battlefield mobility, and the lethality of conventional weaponry. Such changes in the operational environment, representing both new threats and enhanced capabilities, raise many questions.

Specific answers to these questions are unknown today. However, Marine preparation for the future is captured best in the concept *Operational Maneuver*. Building on the foundation laid by . . . *From the Sea* and *Forward . . . From the Sea*, *Operational Maneuver* describes what naval forces should be able to do in the near term. It will not define every naval involvement in the next century, but the skills, techniques, and capabilities which it suggests will provide naval forces with a solid basis for innovation. The heart of *Operational Maneuver* is "the maneuver of naval forces at the operational level, a bold bid for victory that aims at exploiting a significant enemy weakness in order to deal a decisive blow."[4]

What makes this concept differ from others is the extensive use of the sea as an operating base—simultaneously a major avenue for moving forces and a barrier. *Operational Maneuver* uses sea-based logistics, sea-based fire support, and the ocean as a medium for tactical and operational movement. In both of these cases the sea is an operational advantage.[5]

JV 2010 and *Operational Maneuver*

There is no single answer to future challenges. *Operational Maneuver* is not the complete solution, but it has applicability over a range of requirements. A joint vision is needed to cover the entire spectrum and provide focus to developing an array of capabilities. It must be tied to both projected security needs and enduring goals and interests. *JV 2010* is intended to accomplish this with "a common direction for our services in developing their unique capabilities." It defines this direction through four generalized operational concepts that should be applicable across the conflict spectrum. It stresses that each concept is based on information superiority. Its object is to create a military that is "persuasive in peace, decisive in war, and preeminent in any form of conflict."

The best way to appreciate the relationship between *JV 2010* and operational capabilities being sought by the Marine Corps is to compare the operational concepts and end state of *JV 2010* with key elements of *Operational Maneuver*. The conceptual template in *JV 2010* is grounded in four concepts—dominant maneuver, precision engagement, focused logistics, and full dimensional protection, supported by information superiority—to achieve full spectrum dominance. As we will discover, each of these concepts can be compared to and is supported by *Operational Maneuver*.

Bjugn Cave, Norway.

Dominant Maneuver

JV 2010 defines dominant maneuver as "the multidimensional application of information, engagement, and mobility capabilities to position and employ widely dispersed joint air, land, sea, and space forces to accomplish the assigned operational tasks." The aim of maneuver is to achieve a decisive advantage by controlling the breadth, depth, and height of the battlespace. The heart of *Operational Maneuver* is the maneuver of naval forces on the operational level for a decisive effect from the sea. It strives for victory by exploiting a significant enemy weakness in order to deal a dominant or decisive blow. It is multidimensional in its applying C^2 and intelligence systems to discern enemy disposition and critical weaknesses and in employing shipborne or aviation assets to maneuver against or engage an enemy. It also requires joint forces to attain battlespace superiority over the littoral region.

Operational Maneuver is more than movement of forces through the littoral region itself. The movement of units through the battlespace alone may be indecisive or even counterproductive. It does not qualify as operational maneuver, which is an effort directed against a vulnerable enemy capability—something basic to its ability to effectively continue the struggle. In short, *Operational Maneuver* is designed to accomplish exactly what *JV 2010* seeks, the application of "decisive force to attack enemy centers of gravity at all levels and compel an adversary to either react from a position of disadvantage or quit."

Precision Engagement

The joint framework in *JV 2010* consists of "a system of systems that enables our forces to locate the objective or target, provide responsive C^2, generate the desired effect, assess our level of success, and retain the flexibility to reengage with precision when required." It seeks to shape the battlespace from extended ranges. *Operational Maneuver*, on the other hand, seeks to employ highly responsive fires from extended ranges or from ship-based naval aviation assets. Aviation elements must be prepared to operate ashore in an expeditionary mode to ensure responsiveness to maneuvering ground forces. The concept is also based on improved mobility ashore and will take advantage of

sea-based fires and shore-based fire support systems with improved tactical mobility. To support rapidly maneuvering forces, *Operational Maneuver* requires improved fire support coordination systems and procedures to increase responsiveness. Forces afloat and ashore can thus deliver fires with increased range and improved accuracy and lethality—a central aim of precision engagement.

Finally, in *Operational Maneuver* the Marines seek to employ supporting engagement fires to exploit maneuver which capitalizes on and maximizes the effects of fires. This is predicated on robust C⁴ISR architecture that enhances situational awareness as well as assured responsive fire support. *JV 2010* supports a similarly robust network that can enhance situational awareness. But *Operational Maneuver* provides for a wide array of engagement options for joint force commanders including nonlethal technology for use when less than deadly force is desirable. This option offers a unique capability to implement *JV 2010* at the lower end of the conflict spectrum.

Full Dimensional Protection

JV 2010 emphasizes controlling the battlespace "to ensure our forces can maintain freedom of action during deployment, maneuver, and engagement while providing multi-layered defenses for our forces and facilities at all levels." Naval forces executing *Operational Maneuver* can assist commanders in meeting this concept. Once again, what distinguishes this concept from all other forms of operational maneuver is the extensive use of the sea as a means of gaining and sustaining advantage. This is what preserves freedom of action and, by layering air, surface, and subsurface defenses, what affords "full dimensional" defense. A sea-based posture, situated over the horizon and supported by C³I systems, organic theater air defense, and theater missile defense provided by the Navy, can be extended over the maneuver forces as they move towards assigned objectives.

a naval posture avoids fixed sites that may have been precisely targeted by an enemy

This offers an advantage when an enemy has the capability to employ weapons of mass destruction. A naval posture offers unique abilities by matching demands for full dimensional protection with responsive maneuver and engagement capabilities. This posture avoids the use of fixed sites such as airfields, ports, and prepositioned stocks (see photo on opposite page of equipment stored in Norway), all of which may have been precisely targeted by an enemy for strikes early in an intervention.

Focused Logistics

Focused logistics is achieved by "the fusion of information, logistics, and transportation technologies to provide rapid crisis response, track and shift assets even while en route, and deliver tailored logistics packages and sustainment directly at the strategic, operational, and tactical level of operations" in *JV 2010*. *Operational Maneuver* seeks the same level of fusion on all levels of war. For most of the 20th century, the utility of sea-based logistics was limited by the voracious appetite of landing forces for fuel, large caliber ammunition, and aviation ordnance. As a result, the options available to such forces were reduced by the need to establish, protect, and make use of supply dumps. Opportunities for decisive action were then lost as needed supplies accumulated on shore. *Operational Maneuver* requires rapid movement, not merely from ship to shore but from ship to objectives distant from blue water. Speed and mobility comparable to assault forces will be necessary for logistics elements responding to the demands of *Operational Maneuver*. Logistics flow must be efficient, secure, and timely, with the option to remain sea-based or buildup support areas ashore. While some operations may require the establishment of bases ashore, the practice of separating ship-to-shore movement from the tactical and operational maneuver of units ashore will be replaced by maneuvers in which forces are rapidly moved from ships at sea directly to assigned objectives hundreds of miles inland.

Operational Maneuver—like *JV 2010*—recognizes that logistics support must be efficient, secure, and timely. The Marine Corps is pursuing various "precision logistics" projects through its warfighting lab and CSS Enterprise, an initiative of the combat service support (CSS) community. The option to remain sea based or buildup support ashore gives JTF commanders means to ensure the efficiency, security, and timeliness of CSS. Delivery and matériel handling means, supported by C² systems able to communicate requirements, provide the "right time, right place" support set forth in the framework of *JV 2010*.

The combination of long-range weapons precision and greater reliance on sea-based fire support will greatly reduce the need for supply facilities ashore in the near future. As a result, the logistical tail of landing forces will be smaller, ship-to-shore movement faster, and operations ashore able to start without the traditional "buildup phase." The mobility of maneuver forces and their reduced infrastructure ashore will facilitate rapid reembarkation and redeployment. This

**LCAC entering
well deck of
USS Fort McHenry.**

will enable landing forces to quickly deploy—fight and then recock for other crises faster than before. In sum, "focused logistics" can be met by tailored logistics support in *Operational Maneuver*.

Information Superiority

Information superiority is defined in *JV 2010* as "the capability to collect, process, and disseminate an uninterrupted flow of information while exploiting or denying an adversary's ability to do the same." This superiority underpins the operational concepts in *JV 2010*. While it properly reflects the relational and competitive nature of information in combat, this definition is narrowly focused on technology and the movement of information rather than the idea of gaining knowledge or the more basic concept of enabling commanders to apply professional judgment while exercising command and control in combat.

The execution of *Operational Maneuver* is built on a solid foundation of operational theory and proven C^2 techniques as issued in Marine Corps Doctrinal Pub 6, *Command and Control*.[6] This doctrine emphasizes the human dimension of warfare to complement the scientific element of communications technologies or intelligence systems. By contrast, existing joint doctrine, while acknowledging and citing some elements of

Marine doctrine, stresses technology and systems over fundamental C^2 doctrine. In fact the principal joint C^2 volume, Joint Pub 6.0, *Command, Control, and Intelligence Systems Support to Joint Operations*, primarily considers technology and systems. Moving electrons or collecting vast amounts of data is not the same as effective C^2. Marine Corps doctrine stresses effective leadership, articulation of the commander's intent to guide subordinates, maximum initiative from subordinates, and decisionmaking with less than perfect information.

When combined with a robust C^2 system and effective training and education oriented on rapid decisionmaking on all levels of command, the added speed and flexibility generated translates into a high tempo of operations. With greater tempo, vulnerabilities can be exploited before they are reduced, opportunities seized before they vanish, and traps sprung before they are discovered. In short, Marine forces seek to act quickly so that an enemy cannot react effectively. *Operational Maneuver* stresses the need to acquire, maintain, and exploit information and deal with

Directing HMMWV off landing craft, Kernel Blitz '97.

1st Marine Division, Combat Camera (Sylvia Rios)

uncertainty. The importance of advanced information technologies is acknowledged by C³I capabilities desired for this concept, but the cognitive and creative elements brought about by a well trained leader also are stressed. Simply put, information superiority serves as a key enabling element in the C² tenets of *Operational Maneuver*.[7]

This is a central difference between *JV 2010* and *Operational Maneuver*. The operational environment for the latter is characterized by a dynamic, fluid situation. In such a chaotic setting, JTF elements require commanders and staffs who can tolerate ambiguity and uncertainty and make rapid decisions under stress. The Marines seek similar leaders and develop them by improving their capacity to identify patterns, seek and select critical information, and make quick decisions. This intuition-based decisionmaking cycle will be enhanced by extensive investments in education, gaming, and combat simulation activities, and by battlefield visualization techniques. Interest in tactical decisionmaking games, wargaming vignettes, and Marine Doom computer games reflects this bedrock understanding. Such investments will yield leaders who make informed judgments, act decisively, and ensure that *Operational Maneuver* and *JV 2010* are successfully executed.

> **JV 2010 does not do justice to C² requirements as the Marines define them**

From a Marine perspective, the key to this capability lies more in doctrine and training than in hardware and computer technology. *JV 2010* suggests that information superiority is generated by technology alone and underestimates the basic contribution of trained and properly educated leaders who have been immersed in tactical decisionmaking environments over many years.

Full Spectrum Dominance

The ultimate objective of *JV 2010* is a military that can achieve "full spectrum dominance," an Army term for competence across the conflict spectrum. The quest to be "preeminent in any form of conflict" is stated but rarely addressed in detail. By contrast, *Operational Maneuver* is not limited to the high end or conventional side of the conflict spectrum. Indeed, in a world where war will be conducted in many different ways, the very notion of conventional warfare is likely to fall from use. For that reason the techniques in *Operational Maneuver* must be applicable in situations ranging from humanitarian relief to a high-stakes struggle against a rising superpower. *Operational Maneuver* is designed to meet the need for engagement, crisis response, conflict prevention, and fighting and defeating various threats.

JTF commanders can employ C³I capabilities and the tactical mobility systems inherent in *Operational Maneuver* to maneuver forces precisely and decisively in peacekeeping, humanitarian, counterterrorism, and sanction enforcement tasks. The sea-based posture of the concept permits "the freedom of action for our forces and limits their vulnerability during combat and noncombatant operations," as called for in *JV 2010*. *Operational Maneuver* also provides precision engagement ranging from one well trained individual to an expeditionary force. Overall, *Operational Maneuver* appears more applicable to gaining "preeminence in any form of conflict."

Operational Maneuver is a concept that is largely compatible with the desired capabilities sought in *JV 2010*. It provides commanders with dominant maneuver and precision engagement across the conflict spectrum and from the sea. Sea basing provides additive force protection while enhancing logistics and operational flexibility. Information superiority as outlined in *JV 2010* does not do justice to C² requirements as the Marines define them, but it does pose the requirement for offensive and defensive information warfare, an emerging field which neither the Marine Corps nor *Operational Maneuver from the Sea* have addressed explicitly.

Although the overall intent and content of *JV 2010* are laudable, considerable work remains to validate and implement it. The devil is in the details and creating a process that allows the joint community to move from general concepts to concrete combat capabilities. The evolution will have its challenges. Until they are addressed, bringing *JV 2010* to fruition will be an elusive goal.

JV 2010 makes a few references to high quality people, professional training, and the need for

physical presence in the form of "boots on the ground," but it has a clear technological focus. We must avoid the illusion of attempting to impose certainty on the battlefield.[8] Technology offers improvements in the speed and accuracy of human decisionmaking, but it can't eradicate the impact of friction, fog, and chance in warfare. We know that it can enhance both the ways and means of fighting. But it can't eliminate the myriad factors that make war a distinctly human endeavor.

Another potential downside exists in what some call "strategic monism"[9]—the reliance on a single strategic approach. Diverse threats do not allow us to only have hammers in our toolbox. If you only have a hammer every problem looks like a nail. *JV 2010* seeks to integrate rather than supplant strategic concepts and functional service capabilities, but the dangers of strategic monism are never far away.[10] Time will reveal what sort of toolbox *JV 2010* creates: all hammers or a set of reliable capabilities for a range of tasks.

Successful innovation requires institutional processes to explore and to systematically test and refine stated concepts or visions. Such empirical processes and concepts are "literally a *sine qua non* of successful military innovation in peacetime."[11] Experimentation takes place in a climate that tolerates diversity and debate. This is the best breeding ground for substantive innovation and is a solid defense against doctrinal and institutional rigidity.

In a brief preface to *JV 2010*, General Shalikashvili said: "Our organizational climate must reward critical thinking, foster the competition of ideas, and reduce structural or cultural barriers to innovation." To prevent *JV 2010* from becoming a static fixation or procrustean bed that arbitrarily hampers innovation, experimentation is needed. Since its appearance, however, the Joint Staff has yet to develop such a process.

JV 2010 will ultimately be evaluated by how well it supports national objectives. To meet future challenges, our strategic means must be far more agile. We will increasingly require flexible people and adaptive organizations to function in fluid environments. Our national security strategy calls for proactively shaping the international environment, emphasizing relationships with friends, allies, and coalition partners. *JV 2010*, on the other hand, has a warfighting focus with stress on the upper end of the conflict spectrum. Implementing it literally would structure our forces purely for warfighting rather than engagement, presence, or crisis response. The Chairman and CINCs will not let this happen, but the dilemma must be resolved.

A joint vision should guide the Armed Forces from rigid or single service solutions toward an evolving, comprehensive framework to deal with any and all challenges. Operating in such an atmosphere requires flexible, adaptive forces that can reorganize and reorient rapidly in response to new tasks and missions. *JV 2010* must promote adaptation and innovation. It must generate both doctrine and forces to proactively shape the security environment of the next century. Rather than channeling it must advance innovation on a wide front. We live in a period of uncertainty and must be capable of operating and even thriving in that medium. The sooner this reality is accepted, the sooner we can implement *JV 2010* and really prepare for the future.   **JFQ**

N O T E S

[1] See James C. Collins and Jerry I. Porras, *Built to Last: Successful Habits of Visionary Companies* (New York: Harper, 1994), and Perry M. Smith, *Taking Charge: A Practical Guide for Leaders* (Washington: National Defense University Press, 1986).

[2] *Directions for Defense: The Report of the Commission on Roles and Missions of the Armed Forces* (May 1995), p. 2–2.

[3] Robert Holzer, "JCS Forms Strategy for Future Warfare," *Defense News*, July 22, 1996, p. 4; Robert Holzer, "Shali Pushes Future Force Strategy," *Defense News*, August 29, 1996, p. 4.

[4] "Operational Maneuver from the Sea," *Marine Corps Gazette*, vol. 80, no. 6 (June 1996), special insert.

[5] Charles C. Krulak, "Operational Maneuver from the Sea," *Naval Institute Proceedings,* vol. 123, no. 1 (January 1997), pp. 26–31.

[6] U.S. Marine Corps, *Command and Control* (October 1996).

[7] For an overview of Marine Corps views on C^2 relating to the fundamentals of warfare and decisionmaking, see Paul K. Van Riper, "Information Superiority," *Marine Corps Gazette*, vol. 81, no. 6 (June 1997), pp. 54–62.

[8] This has been updated as Marine Corps Doctrinal Pub 1, *Warfighting* (June 1997). See also Barry Watts, "Clausewitzian Friction and Future War," *McNair Paper* no. 52 (Washington: National Defense University Press, October 1996).

[9] MacKubin T. Owens, Jr., "The Hollow Promise of JCS Reform," *International Security*, vol. 10, no. 3 (Winter 1985–86), pp. 98–111.

[10] Mackubin T. Owens, Jr., "Goldwater-Nichols: A Ten-Year Retrospective," *Marine Corps Gazette,* vol. 80, no. 12 (December 1996), pp. 48–53.

[11] Barry Watts and Williamson Murray, "Military Innovation in Peacetime," in *Military Innovation in the Interwar Period,* edited by Williamson Murray and Allan R. Millett (New York: Cambridge University Press, 1996), p. 410. See also Williamson Murray, "Innovation: Past and Future," *Joint Force Quarterly*, no. 12 (Summer 1996), pp. 51–60.

Airpower

and the

Changing Nature

of Warfare

British F.E. 2b being readied for night attack, World War I.

By R I C H A R D P. H A L L I O N

This century has been characterized by the widespread impact of technology in many fields. Mechanization, communications, and data processing have profoundly influenced every significant aspect of human activity. The internal combustion engine transformed transportation. Journeys that took weeks or months in the past now take days or hours. There are few if any places in the world that are truly unknown or unexplored. Out of necessity the nature of warfare also has changed.

Richard P. Hallion is the Air Force Historian; the author of 14 books on aerospace history, he was curator of the Air and Space Museum, Smithsonian Institution.

Swords, muskets, machine guns, artillery, tanks, airplanes, and rockets have all had their day on the evolution chain of weaponry. Warfare as we know it today combines the most modern of these elements to create a third dimension that has irrevocably transformed land and sea warfighting. While airmen can point to numerous evolutionary steps in airpower dating back to World War I, it is the second great war that gave the first convincing demonstrations of air warfare to a disbelieving military community.

The Historical Record

During World War II, when British land forces were too weak to fend off an invasion by the *Wehrmacht*, the Royal Air Force defeated the *Luftwaffe* and forced the dispersal of barges and ships massing for attack. Britain thus became the first nation whose national survival was secured by airpower. Later, hammered by air attacks that disrupted his operations in the Western Desert, Rommel complained after the battle of Alam Halfa that the Royal Air Force:

had pinned my army to the ground and rendered any smooth deployment or any advance by time-schedule completely impossible. . . . Anyone who has to fight, even with the most modern weapons, against an enemy in complete command of the air, fights like a savage against modern European troops, under the same handicaps, and with the same chances of success.[1]

Besieged in Normandy in summer 1944, Rommel echoed his desert commentary in diary entries and conversations with fellow commanders: "The enemy's air superiority has a very grave

effect on our movements. There's simply no answer to it."[2] His naval aide, Vice Admiral Friedrich Ruge, ruefully wrote, "Utilization of the Anglo-American air force is the modern type of warfare, turning the flank not from the side but from above."[3] The same held true in Italy, where the German commander, General Frido von Senger und Etterlin, complained that Allied air attacks had put him in the position of a chess player who could make only one move to an opponent's three.[4]

German casualties increasingly came from Allied air attack, with artillery second and infantry weapons third

Accompanying this impact of airpower on surface mobility was a decided shift away from the traditional means of winning surface campaigns, namely inflicting heavy casualties and material loss on an enemy by battering its fleets or land armies. In land combat after 1943, German army casualties increasingly came from Allied air attack, with artillery second and infantry weapons third. By the end of 1944, air attack was the overwhelming cause of German casualties in the field due to hostile action. In the Pacific Theater, naval warfare saw a similar evolution from traditional naval strategy. A joint U.S. Army-Navy postwar assessment of Japanese ship losses found that 48 percent stemmed from submarine attack, 45 percent from air attack, and only 0.45 percent from surface vessels.[5]

Courtesy of Special Collections, NDU Library

Erwin Rommel.

High technology since 1945 has generally borne out the lessons of the airpower campaigns prior to V-E and V-J days. During the Korean War, the majority of communist losses came from U.N. air attack: 47 percent of troops killed along with 75 percent of tanks, 81 percent of trucks, and 72 percent of artillery destroyed.[6] More significantly, the situation in Korea was in fact saved by joint and coalition air operations during the critical opening weeks of the war, down through the bitter fighting on the Pusan perimeter. As Lieutenant General Walton Walker, the commander of all U.S. ground forces in Korea in 1950, commented, "If it had not been for the air support that we received from the Fifth Air Force we would not have been able to stay in Korea."[7]

In the Gulf War decisionmakers recognized that air attack constituted the logical means to defeat Iraq. Testifying before Congress during the air campaign, General Colin Powell declared: "Airpower is the decisive arm so far, and I expect it will be the decisive arm into the end of the campaign, even if ground forces and amphibious forces are added to the equation."[8] In the Persian Gulf most Iraqi prisoners cited fear of air attack—or the experience of having survived one—as the reason for surrendering.[9]

Today the capabilities available to the air campaigner, particularly in precision attack, mean even more remarkable achievements may be obtained, as the two most recent experiences, the Gulf War and Bosnia, have clearly demonstrated. The current Air Force posture statement, *Global Engagement*, argues that in the next century "the strategic instrument of choice will be air and space power."[10]

Warfare Needs

The last hundred years have witnessed a military revolution: 3–D warfare (particularly air and now space) that has overturned previous tradition and experience. Ironically, sculptures in the British Museum from the age of savage Assyrian kings reveal how court artists visualized the value and versatility of aerial war, with gods on flying disks shooting arrows into their foes as Assyrian forces charged forward on the ground.

Perhaps the best indicator of what the airpower revolution has meant is that surface and air forces increasingly select air armament as their weapons of choice: attack helicopters, battlefield missile systems, submarine-launched cruise missiles, carrier-based strike airplanes, and land-based fighters and bombers. For this reason, armies and navies worldwide are developing air and space forces, supplanting traditional expenditures on troops, tanks, and warships.

The most dramatic example of this shift is the proliferation of attack helicopters in military inventories worldwide and the growing recognition that they represent more than "flying tanks" or adjuncts to artillery and armor. The newsletter of the British Army Air Corps (which will field the Apache in December 2000) recognized the challenge of going beyond conventional thinking:

The attack helicopters will be a divisional manoeuvre asset, capable of operating in the deep, close, and rear battles, perhaps simultaneously. Some attack helicopters will almost certainly be allocated to support the close battle in a tactical role with battle groups, but it is the training to operate effectively across the whole spectrum of operations that presents the greatest challenge. . . . Apache may well discharge its missiles from up to eight kilometres behind forward troops, and these troops will rarely see the aircraft once battle is joined. Moreover, the pace of attack helicopter operations will be faster than armour, for instance.[11]

To generations of soldiers schooled in the supremacy of the tank and mechanized infantry supported by artillery, these are challenging notions. Today, army aviators around the world share a view of conflict that recognizes that air war permits simultaneous theater-wide parallel operations. Such strategies are rarely available to a traditional army focused on a sequential vision of conflict.

Though long-standing, the advent of "air mobility" thinking—the trend of changing focus from traditional surface forces (infantry and tanks) to aerospace forces—has dramatically increased over the last two decades. In the United States, the advent of the Army's AirLand Battle doctrine of the early 1980s signalled a shift in surface-oriented doctrinal thought that had implications both at home and abroad.

For example, European armies have been dramatically restructured for airpower projection in the last decade. Britain, Belgium, Sweden, and Spain have reduced army manpower and armor while increasing aviation assets. Even Germany, France, and Italy—which have downsized forces across the board—have reduced aviation to a lesser extent. Leading navies also exhibit similar trends with the United States and Britain reducing manpower, surface combatants, and submarines by margins that outweigh slight reductions (or increases) in aircraft.[12]

Aircraft and aerospace weapons constitute a large proportion of U.S. procurement dollars. For example, the Army spent $1.36 billion during FY96 on aircraft (18 percent), $839 million on missiles (11 percent), and $1.6 billion on tracked weapons (21 percent). Thus missiles and aircraft accounted for 29 percent of Army procurement. In the same year the Navy devoted $4.44 billion to aircraft procurement (28 percent) and $6.5 billion to shipbuilding and conversion (41 percent).

H–13 joining mechanized forces, 1952.

U.S. Army

F4F taking off from *USS Enterprise* in Coral Sea, 1942.
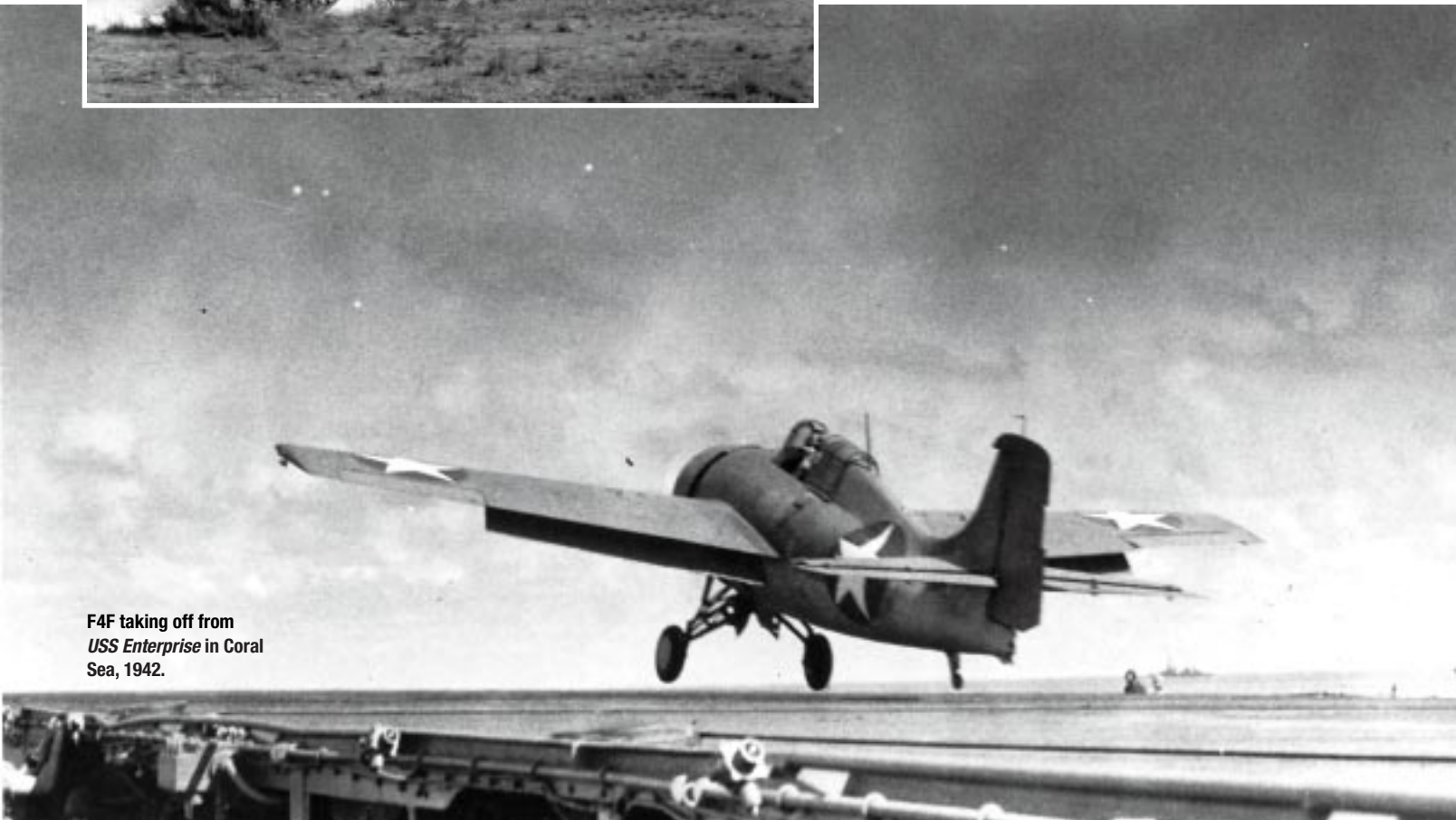
U.S. Navy

European Army Force Modernization
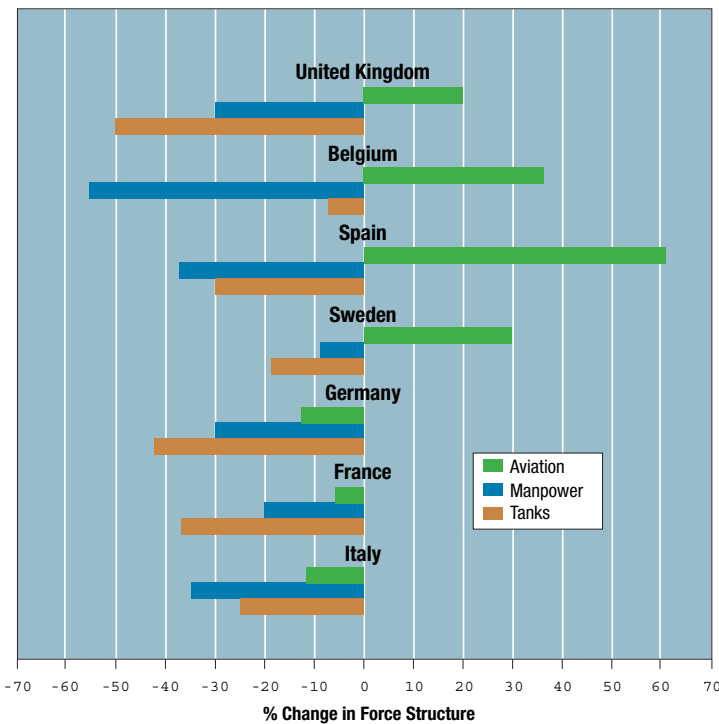
Source: International Institute for Strategic Studies, *The Military Balance, 1985–1986,* and *The Military Balance, 1995–1996.*

Again, the investment in surface ships is potentially misleading since much of this funding went to aircraft carriers, guided missile destroyers, and supply vessels—all critical to maritime airpower projection. By contrast, Air Force purchases of aircraft in FY96 amounted to more than $7 billion (43 percent) and missiles $334 million (2 percent). Overall direct aerospace weapons expenditures (aircraft and missiles) accounted for over 32 percent ($14.1 billion) of a total procurement budget of $43.4 billion for active and Reserve components of the Army, Navy, and Air Force in FY96.[13]

growing interest in airpower projection acknowledges the diminution of the battlefield as the arbiter of victory

Cultural Conflict versus Reality

This growing interest in airpower projection by surface forces acknowledges a new reality in warfare: the diminution of the battlefield as the arbiter of victory. Not surprisingly this is an unpopular notion. Armies have built on traditions dating across millennia emphasizing that victory can only come on the battlefield. The Army posture statement in 1995 unequivocally stated:

Wars are won on the ground. Success or failure of the land battle typically equates to national success or failure. The culminating or decisive action of a war is most often conducted by land forces. . . . The application of military force on land is an action an adversary cannot ignore; it forces a decision.[14]

The view that only land combat can be decisive leads to a belief that the most legitimate role for airpower is in support of land warfare. But as Air Commodore Andrew Vallance of the Royal Air Force has indicated:

There is no factual basis to the belief that, in land/air campaigns, the purpose of aviation forces must always be to support the land forces. Airpower can and often has acted as lead element in land/air as well as maritime/air operations, and—as capabilities grow—it is likely to do so with increasing frequency.[15]

The most recent examples of that view are the Gulf War—which had no Gettysburg, Stalingrad, or El Alamein where one could erect monuments stating "on this spot Iraq lost the war" nor even a series of battles that together merit recognition for having doomed Saddam Hussein's army; and the Balkans—where the 1995 air campaign was credited with having forced the Bosnian Serbs to the Dayton peace table. As former negotiator Richard Holbrooke stated after the air campaign, precision bombing had "the decisive effect" on forcing the Serbs to negotiate.

Another shibboleth often trotted out at the expense of airpower is the notion that since air cannot "occupy or hold" ground, it cannot be decisive. Yet this line of reasoning increasingly ignores that the most important role of military forces is not in actual physical presence, but rather in using airpower or artillery to dominate and control access to and progress across the ground. In this way airpower is a gatekeeper with many examples, from World War I to the Gulf War, which attest to this role.

In brief, growing investments in air warfare by armies is a clear recognition that the nature of warfare has changed, that armies can no longer be built exclusively—even primarily—around surface-to-surface systems. Unsurprisingly, as this vision drives acquisition of aerospace systems such as helicopters, unmanned aerial vehicles, and ballistic missiles, armies still reflect the rhetoric of the past which prevents them from totally abandoning the "heroic era" of land operations.

Future War

The "one size fits all" approach is neither applicable nor appropriate to the enemies and conflicts the United States and its allies may face. But

UH–1 landing troops
in Vietnam.

U.S. Army

A–20 over English
Channel on D-Day.

A4E firing 3-inch rockets,
Southeast Asia.

U.S. Air Force

U.S. Navy

such enemies may possess some of the following generic characteristics in addition to "traditional" infantry and armor forces:

- weapons of mass destruction programs
- information warfare capabilities
- small conventional submarines with smart torpedoes, together with both simple and sophisticated sea mines
- precision weaponry such as laser-guided bombs, antishipping missiles, and even longer-range cruise and ballistic missiles
- global positioning system technology
- satellite reconnaissance through third party vendors
- small unmanned air vehicles for intelligence, surveillance, and reconnaissance
- an integrated air defense network tied to advanced surface-to-air missiles, advanced fighters (at least MiG–29 equivalent), and antiaircraft artillery
- battlefield rocket artillery with advanced antiarmor submunitions
- robust command and control bunkered in underground facilities.

In fact, a study by the Defense Science Board looked at a similar 21st century enemy. Soberingly, such capabilities are within the budgetary range of many Third World nations, some of which have decidedly militaristic intentions and could not be defeated by traditional surface warfare.

Throughout the late 1970s and 1980s, American planners proposed a series of imaginative defenses (such as the assault breaker study) to counter armor-heavy scenarios of a NATO-Warsaw Pact exchange in Central Europe. From this came enlightened approaches that used sophisticated air warfare-based means to defeat an enemy, typified by AirLand Battle.

Meanwhile, at the heart of American defense was an attempt to combine emerging stealth technology, newer generations of precision munitions, and increasingly sophisticated intelligence and reconnaissance systems into an offset strategy to wreak havoc on an enemy force. That work, validated in the Gulf War, forms a point of departure for future regional conflicts of the post-Cold War variety. As former Secretary of Defense William Perry commented:

What we had done in the offset strategy—the applications of the reconnaissance strike force, the application of proceed and strike—had a second policy objective, an alternative policy objective when used in a major regional conflict like Desert Storm. When used against an opponent with equal numbers, [it] *did not simply offset the other side, it gave us the ability to win quickly, decisively, and with remarkably few casualties. And when we . . . studied that result, we looked at the kind of policy problems and military operational issues we're going to be facing in the years ahead, we said the very same technology that was developed to deal with superior numbers of Soviets would become the key to our new systems.*[16]

That statement enumerates what have become the characteristic goals of modern post-Gulf, post-Somalia military operations: "to win quickly, decisively, and with remarkably few casualties." Simply put, the American people do not have a willingness, desire, or mind-set to accept long, ambiguous, and costly conflicts. To some leaders, this poses a serious problem. As the Chief of Staff of the U.S. Army has warned:

The world has witnessed our infatuation with precision strike, apparent unwillingness to commit forces for a long period, aversion to casualties, fear of collateral damage, and sensitivity to domestic and world opinion. Those who don't wish us well understand where our strengths and weaknesses lie and may act accordingly. Therefore, it is even more important to maintain balance between dominant maneuver, particularly on the ground, and precision engagement. Ground forces employing dominant maneuver in a show of force or demonstration may be able to resolve many issues without employing lethal means. More important, employment of maneuver forces sends an unequivocal message of U.S. resolve.[17]

But is such fear on one hand and promise on the other well founded? Sequential models of surface warfare stress punishing contact between robust opposing forces, with horrendous levels of casualties and mutual destruction even under the best of circumstances. For instance, prior to the Gulf War, General Edward Meyer, a former Chief of Staff of the U.S. Army, estimated that up to 30,000 American casualties would be sustained in dislodging Iraq from Kuwait.[18] This mindset readily accepts casualties as "necessary to get the job done." But wars in this century have shown that when airpower—an inherently maneuver-oriented force—is applied, the land effort is not only increasingly reduced in cost and complexity but often deflated in importance.

Inserting ground forces in a region today may create more problems than it resolves. For example, in Bosnia U.N. peacekeepers became hostages to hostile forces who used them as cheap air defense systems to guard against NATO airpower. Further, peacekeeping forces served as easy targets for snipers and land mines. In addition, moving vehicle-heavy surface forces into a crisis region created problems. Before the fighting ended in Bosnia after a swift air campaign, a

wars in this century have shown that when airpower is applied, the land effort is often deflated in importance

Wreckage on highway outside Kuwait City.

Pointing out air defenses during Desert Storm.

Remains of North Korean formation along Naktong River.

major concern of both American and European staffs was what to do if it became necessary to extract the large numbers of ground forces who were supporting the U.N. effort. What if they were attacked? What if the local population attempted to prevent them from leaving? What would happen to their vehicles? How could they be extracted?

In short, strategists must realize that if land forces are deployed, the "unequivocal message" sent may not be one of "U.S. resolve," but rather one of how the U.S. military is trapped in an operational morass. The penalty, as in Somalia, may be an embarrassing withdrawal.

Joint Vision 2010 provided a common vector for achieving "full spectrum dominance" over an enemy via four concepts: *dominant maneuver, precision engagement, focused logistics,* and *full dimensional protection.* What modern airpower offers—and what the Air Force has staked out in *Global Engagement* as its key contribution to joint force—is a series of mutually supportive core competencies that, linked by space-based global awareness and command and control, provide the critical airpower and spacepower that the Armed Forces will need to preserve the advantage gained both in the Gulf War and in Bosnia.

Those nations that are potentially hostile to U.S. interests are unlikely to ignore the lessons of recent history as they reshape air and surface forces for the next century. They will evaluate the value of advanced weaponry demonstrated repeatedly in Yom-Kippur, Falklands, Bekaa, and

German tanks hit by fighter-bombers in Tunisia.

Iran-Iraq and observe that warfare has increasingly seen the smarter, more technologically sophisticated protagonist seek to strike at enemies from a distance. When that advantage was lost, unnecessary casualties or defeat followed. In the wars of tomorrow, a new airpower and artillery paradigm for military force will predominate, not the old infantry-armor team. Except for a few scenarios, the need (as opposed to the ability or the desire) to commit friendly ground forces to close combat with an enemy simply will not exist. Air weaponry—such as battlefield missiles, attack helicopters, fixed-wing aerial attackers, and remotely launched cruise missiles—will not only suffice but will be the most desirable means of confronting an enemy. If the Armed Forces do not transform their thinking on future war, the Nation will expose its men and women in uniform to unnecessary and foolish risks. And that is an alternative that is no longer acceptable. **JFQ**

NOTES

[1] B.H. Liddell Hart, editor, *The Rommel Papers* (New York: Harcourt, Brace, 1953), pp. 284–86.

[2] Ibid., p. 491.

[3] Friedrich Ruge, *Rommel in Normandy: Reminiscences by Friedrich Ruge* (San Rafael, Calif.: Presidio Press, 1979), p. 187.

[4] Frido von Senger und Etterlin, *Neither Fear Nor Hope* (New York: Dutton, 1964), p. 224.

[5] Joint Army-Navy Assessment Committee, *Japanese Naval and Merchant Shipping Losses During World War II by All Causes* (Washington: Government Printing Office, 1947), table II, p. vii.

[6] "The Air War in Korea: A Statistical Portrait of the USAF in the First Hot Conflict of the Cold War," *Air Force Magazine*, vol. 79, no. 4 (April 1996), p. 66.

[7] Barcus Board Report, book 2, vol. 1, pp. 227–28. The commander of Fifth Air Force controlled all tactical air support provided to Eighth Army and liaised directly with Walker.

[8] Transcript of testimony of Colin L. Powell before the Senate Armed Service Committee, January 21, 1991.

[9] A.P.N. Lambert, "Synergistic Operations," in Royal Air Force, *Chief of the Air Staff's Air Power Seminar*, papers presented at the Church House Conference Centre, London, March 24, 1995, p. 8. See also J.M. Marcum and D.W. Cline, "Combat Stress Reaction in Iraqi Prisoners of War," *Bulletin of the Menninger Clinic*, vol. 57, no. 4 (Fall 1993), p. 479.

[10] *Global Engagement: A Vision for the 21st Century Air Force* (Washington: Department of the Air Force, 1996).

[11] R.A. James, editorial, *Army Air Corps Newsletter*, October–December 1996, p. 3.

[12] See *The Military Balance, 1985–1986*, and *The Military Balance, 1995–1996*, published by the International Institute for Strategic Studies.

[13] "Procurement Dollars," *Sea Power*, vol. 40, no. 1 (January 1997), p. 88.

[14] *A Statement on the Posture of the United States Army—Fiscal Year 1996* (Washington: Department of the Army, 1995), pp. 26–27.

[15] Andrew G.B. Vallance, *The Air Weapon: Doctrines of Air Power Strategy and Operational Art* (London: Macmillan, 1996), p. 91.

[16] Statement by William J. Perry to the Precision Strike Association in Arlington, Virginia, on January 15, 1997, and quoted in "For the Record," *The Washington Post*, January 16, 1997.

[17] Dennis J. Reimer, "Balancing Dominant Maneuver and Precision Engagement: A Strategy for the 21st Century," draft manuscript (1997).

[18] John J. Fialka and Andy Pasztor, "Grim Calculus: If Mideast War Erupts, Air Power Will Hold Key to U.S. Casualties," *The New York Times*, November 15, 1990.

Joint readiness
training, Fort Polk

Joint Vision 2010:
A Red Team Assessment

By CHARLES J. DUNLAP, JR.

How will the Armed Forces fight future wars? *Joint Vision 2010* professes to offer some answers by furnishing a template to "channel the vitality and innovation of our people and leverage technological opportunities to achieve new levels of effectiveness in joint warfighting." The vision has generated considerable interest and praise. A quintessentially American document, it relies on technological preeminence and an uncompromising faith in the superiority of the individual soldier. *JV 2010* suggests that the United States plans to approach warfare in the future by embracing the fundamentals that have marked its warfighting strategy for most of the 20th century.

Potential enemies, however, may approach warfare differently. Some experts contend conflicts in the future are likely to occur between disparate civilizations whose peoples may not share Western values or democratic ideals. Similarly, it is asserted that the post-Cold War world is experiencing a reemergence of warrior societies which are psychologically distinct from the West.

Colonel Charles J. Dunlap, Jr., USAF, serves as staff judge advocate at U.S. Strategic Command and is the author of "The Origins of American Military Coup of 2012."

However well *JV 2010* fits the future American way of war, it must be evaluated from the perspective of potential enemies. Given our template, how might such enemies prepare to fight us? In short, what is the red team analysis of *JV 2010*?

Organized, Trained, and Equipped

A red team may conclude that there is no future in force-on-force symmetrical warfighting. Defeating U.S. forces on the battlefield has been very difficult in the modern era and those nations who have attempted it, such as Iraq, have often suffered crushing defeats. In fact, the awesome U.S. conventional capability in the Gulf War prompted the chief of staff of the Indian armed forces to assert that the only way to fight the United States is with nuclear weapons.

So long as America maintains its nuclear deterrent, it is unlikely that an enemy will resort to weapons of mass destruction. During Desert Shield/Desert Storm the ambiguities of possible U.S. responses dissuaded Saddam Hussein from using such weapons and would likely affect all but the most irrational actors in a similar way. With defeat of the U.S. military seemingly beyond reach, how might an enemy confront America in the future?

out of joint

Many might conclude that it is not necessary to overcome U.S. forces. Instead, they might focus on another leg of Clausewitz's trinity, the people. Taking a cue from North Vietnam, which vanquished the United States without subduing its forces, future enemies might see public opinion as America's center of gravity. A likely red team strategy thus could aim to weaken that support.

One way to achieve this objective would be to exploit the phenomenon of casualty aversion that is so influential in U.S. political and military thinking. *JV 2010* recognizes this and notes that the "American people will . . . expect us to be more efficient in protecting lives and resources while accomplishing our mission successfully."

The response to the deaths of 18 U.S. Rangers in Somalia may lead an enemy to conclude that this is an effective way to blunt American power. Those casualties were seemingly enough to erode support at home and instigate a withdrawal. Thus an enemy may focus on causing casualties regardless of their own losses or whether they achieve a tactical win.

Moreover, depending on the success of full dimensional protection as depicted in *JV 2010*, an enemy may seek to produce casualties among the expanding ranks of civilians who accompany forces rather than among military personnel per se. The high-tech military envisioned in *JV 2010* will likely require support technicians who are less capable of defending themselves. Assaults on civilians could cause them to abandon their jobs at critical moments.

an enemy may seek to produce casualties among the expanding ranks of civilians who accompany forces

An especially Machiavellian and populous enemy might deliberately induce U.S. forces to kill large numbers of its own people to create a reaction that undermines public support. To many in the United States, even the deaths of brutal enemy combatants is somehow offensive to notions of fair play. During the Gulf War, for example, television images of wrecked Iraqi vehicles along the so-called "highway of death" contributed to the early termination of hostilities, thereby allowing elite Iraqi forces to escape destruction.

In short, the red team may take a completely opposite view from *JV 2010* by considering the physical defeat of U.S. forces as a secondary objective or non-objective.

Values and People

Success depends on the moral strength of individual soldiers, sailors, marines, and airmen, according to *JV 2010*. Yet ironically American values may be seen as a weakness to be exploited. A red team might conclude that such exploitation is an effective means of diminishing a high-tech advantage. For example, *JV 2010* asserts that "long-range precision capability . . . is emerging as a key factor." The Libyans reportedly threatened to counter such high-tech weapons by using their own people as human shields around key facilities. The precedent? The Serbs resisted NATO's precision munitions by the simple expedient of chaining U.N. hostages to potential targets.

The lesson is that the United States must find ways to deal with streetfighters who refuse to play by the rules. Their viciousness has the potential to create corrosive moral dilemmas for U.S. troops and even traumatize them into inaction. Advocates of *JV 2010* must insist that enemies who engage in such actions are held accountable to discourage barbarism in countering high tech.

JV 2010 states that U.S. forces are the best trained in the world. But a red team analysis reveals that this may not be as advantageous as some believe. First, we may need more training than our future enemies. Relative to the emerging warrior societies, those in the West make poor soldiers and can achieve parity in fighting spirit only through intensive training of selectively recruited forces.

Where we have excelled is in *technical* training. Yet red team analysis reveals that low-cost technology substantially narrows that advantage. Computerized instruction and simulation already furnish a cheap way of teaching technical skills. Moreover, a $49 computer simulation program can provide instruction in tactical combat skills.

More fundamentally, forces may not require as much technical skill as *JV 2010* expects. Sophisticated, user-friendly software may so simplify the operation of otherwise complex weapons systems that advanced training is unnecessary. Many systems will also have computerized self-diagnosis and repair capabilities.

As implied by *JV 2010*, technology is becoming available to provide individual soldiers with unprecedented access to all kinds of information on the battlefield. If its cost declines as radically as that of other information devices, enemies could deploy masses of technically untutored soldiers in the belief that their forces could obtain the necessary expertise anywhere on the battlefield. Technology-created "virtual" noncommissioned officers, for example, could obviate an advantage long enjoyed by the United States.

The training which the Armed Forces will most need in the future is not in technical skills per se, but in the warrior spirit, unit cohesion, and other intangibles unique to warfighting.

Technological Superiority?

JV 2010 places heavy emphasis on high-tech weaponry. This focus reflects much of the debate over the so-called revolution in military affairs occasioned by computer and communications technologies. But a variety of factors conspire to deny U.S. forces the technological advantage that *JV 2010* seems to demand.

a variety of factors conspire to deny the technological advantage that *JV 2010* seems to demand

Most important is the plain fact that high-tech, information-based weapons increasingly rely on technology that has commercial applications. An enemy could leverage the global research and development base for the latest systems. In many instances, especially in less-developed parts of the world, international aid and other incentives may be available to build a dual-use information systems manufacturing base with great military potential. Because it also fosters economic development, the usual guns or butter debate need not arise.

In sum, an enemy will be able to purchase on the open market the same capability that the United States employs—and perhaps more quickly and efficiently. Consequently, it would be wise to urge a radical reform of the procurement process to ensure that America has the most advanced weaponry available.

According to *JV 2010*, "We must have information superiority." Few aspects of *JV 2010* are more vexing than its unwarranted confidence in the capability to achieve information superiority on tomorrow's battlefields. All indications point to a future where an avalanche of details on current operations is open to anyone for a modest investment. Commercial satellites will provide high-resolution images that were previously the exclusive domain of intelligence services in developed nations. The Internet is a simple, cheap, risk-free way of collecting intelligence data. Another innovation, individual telephones linked by satellite for soldiers on the battlefield, will be extremely vulnerable to monitoring by unfriendly forces. Perhaps the greatest source of red team information will be the media. Equipped with the latest technology and free from reliance on or control by any government, the media will be able to report on every aspect of U.S. military operations nearly instantaneously.

In truth, the proliferation of information sources will defy attempts by any one party to gain genuine superiority; there will simply be too many information sources, many of which cannot be degraded because of legal or political constraints. Therefore it is troubling that *JV 2010* appears to be so dependent upon information supremacy. What if that capability is not achieved? We should prepare to fight in the more realistic environment of information parity, which would also have the benefit of even greater dominance should information superiority somehow be achieved.

One should not conclude that *JV 2010* is fundamentally flawed. To the contrary, in broad terms its genius is that it is built on what can be viewed as a postmodern American way of war. However, like any template its ultimate effectiveness will be determined by the quality of the ideas that fill it.

It is critical, however, to consider a red team analysis in implementing *JV 2010*. Such an examination might reveal a phenomenon that parallels thinking on the unintended consequences of technology. For example, *JV 2010* touts precision engagement as a means to reduce the "risk to forces and minimize collateral damage." To many Americans the advent of smart weapons heralds a more humane era of warfare; indeed, some find precision strikes against purely military targets to reflect favorably on the moral character of precise weaponry.

Do others accept this view of the benevolence of precision weapons? Apparently not the Russians. As David Markow reported in the February 1997 issue of *Air Force*:

Many Russian military theorists believe nuclear weapons provide the best answer to the challenge posed by conventionally armed precision guided munitions . . . Russian generals fear that, in a general war, Western nations could employ such "smart munitions" to degrade Russian strategic forces, without ever having to go nuclear themselves. Consequently, said General Volkov, Russia "should enjoy the right to consider the first [enemy] use of precision weapons as the beginning of unrestricted nuclear war against it."

As this passage illustrates, the high tech which underpins so much of the template found in *JV 2010* might have wholly unintended effects. Accordingly, decisionmakers should insist that its tenets be continually tested not only against U.S. perspectives, but also against those of potential enemies.

If *JV 2010* assumes a mantle of infallibility whereby merely challenging its assumptions is regarded as blasphemous, it could be a catastrophic failure. Unless leaders demand a rigorous and continuous red team analysis, the Nation may find itself vulnerable to enemies whose 21st century vision is profoundly at odds with all that we hold dear. **JFQ**

RMAs and the Dimensions of Strategy

By COLIN S. GRAY

Guadalcanal, December 1942.

U.S. Marine Corps
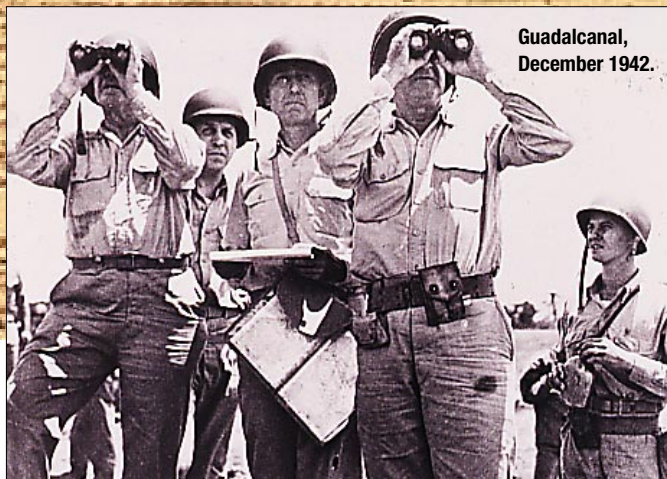
On the offensive in Kuwait.

U.S. Army (Robert L. Reeve)

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

Strategy and war are holistic enterprises. U.S. strategic culture is wont to function taking one thing at a time on its own merits. Monochronic defense performance leads to a focus on only one or two dimensions of what is almost always a more complex challenge. Strategy has a variety of dimensions, each of which matters though differently from one historical case to another. Each has the potential to undo a strategic venture. The generic dimensions of strategy are ubiquitous and fixed, but their details often change. The grammar of strategy can altar radically, even to the point where one can argue that a revolution in military affairs (RMA) has occurred. Presently I identify 17 working dimensions of strategy: ethics; society; geography; politics; people; culture; theory; command (political and military); economics and logistics; organization (including defense policy and force planning); military preparation (administration, research and development, procurement, recruitment, training, and numbers or mass); operations; technology; information and intelligence; adversary; friction, chance, and uncertainty; and time. Some (like technology or command) figure more prominently than others, but none can be taken for

granted. Having so many interdependent dimensions means that advantages derived from improving one are seriously limited.

Two Schools

Cultural anthropologists note that America is a preponderantly monochronic culture, which means that it considers challenges one at a time, in isolation, pragmatically.[1] As a result national strategy in the United States reflects this one-thing-at-a-time, each-on-its-merits approach. Defense intellectuals have a way of validating the Watergate investigatory tactic of "following the money." The trail of dollars for studies leads from one "big idea" to another—monochronically. Although there is essential unity, indeed a polychronicity, to strategic experience, defense issues rapidly fall into and out of fashion. There has been controversy over détente, nuclear strategy, ICBM basing, SDI and more SDI, competitive strategies, and so forth. The tide of issues comes in regularly with new or new-sounding ideas, and then inexorably it goes out. Today it is RMA and information warfare. To point out the fluctuating nature of these issues is not to dismiss them; but it is to admit that only historical perspective can reveal just how useful they are.[2]

the historical school argued that strategy and war are unchanging in their essentials

Herman Kahn was a defense intellectual whose primary instinct was to put things together rather than disassemble them for monochronic, piece-by-piece analysis.[3] One cannot emulate his genius, but one can follow his methodology. This article presents strategy and war holistically with emphasis on the totality of the subject no matter how formidable it may appear. Indeed, the more a strategic phenomenon is examined, the more complex it seems. Readers may have noticed that the more professional historians scrutinize military experience, the more RMAs appear. It is not unlike probing the universe with more powerful telescopes. When additional historians join in the debate, they are apt to attest to the plausible existence of one or more RMAs in their century no matter what their periods of expertise may be.[4]

A hard core of interconnected ideas forms the thread of this argument, specifically:

■ Strategy and war have many dimensions (while 17 is my preference, the list is open).
■ Every dimension matters though interaction among them varies from case to case.
■ All dimensions of strategy matter so much that a severe national or coalition disadvantage in any one can have a lethal strategic effect overall.

■ Dimensions of strategy and war are generically as eternal and ubiquitous as their details, and like details of their interconnections change from one context to another. The nature and structure of strategy are effectively immortal.[5]
■ But the character and conduct of war (or to misquote Clausewitz, who wrote of its "grammar"), the grammar of strategy, how strategy is achieved by tactics,[6] must change—possibly radically—along with political, social, economic, and technological conditions.
■ Although the nature and structure of strategy and war remain constant, changes in the character and conduct of war can arguably be described as revolutions in military affairs. The term *revolution*, however, does risk devaluing those variables that change more slowly.
■ It follows that we know a great deal about strategy and war; and, *ipso facto*, we know quite a lot about what we do not and cannot comprehend.

While this argument is profoundly conservative, it allows for the certainty of change. Early in the 20th century the rapid pace of technical and thus tactical developments in Britain provoked bitter debate in the Royal Navy between "material" and "historical" schools of thought.[7] Advocates of the former asserted that great—even not so great—technical change meant that the entire subject of war, at all levels and in all dimensions, was effectively changed or revolutionized. The rival historical school argued that strategy and war are as unchanging in their essentials as technology and tactics are permanently in flux. The terms of this debate in the 1900s between materialists like Admiral Jackie Fisher and historical thinkers like Admiral Reginald Custance still persist to this day with evolving levels of detail. To the material school the world may be made over whenever a new technology comes along.

Everything Matters

Michael Howard provided the most direct stimulus to thought on the dimensions of strategy by identifying the logistical, operational, social, and technological.[8] Writing within the context of an active debate about SALT II and nuclear strategy, Howard was concerned that the United States appeared to be focusing unduly on the technological at the expense of the social and operational.

When considering strategy vis-à-vis the debate over RMA and information warfare, I prefer to use no fewer than the 17 dimensions already mentioned. These work with, on, and around each other simultaneously. Anyone who argues that strategy really has only one or two dimensions will oppose this approach. One should be reluctant to rank-order the dimensions of strategy; hence the order in which they are cited above is largely random. By analogy, the model range for auto makers typically emphasizes engine type and size as leading edge or dominant

**Briefing Secretary
Cohen, Bosnia.**

DOD (Helene C. Stikkel)

for each vehicle in its range. Nonetheless, cars cannot operate without drive trains, electrical systems (including batteries), or tires. Furthermore, there are restrictions on what improvements to automotive dimensions can achieve unless balancing refinements are made in others. Twin turbos are nice to have, but not without better brakes and tires and—returning to the question of strategy—a better driver.

An excellent military may, even with faulty political guidance, fight the wrong war well. Conversely, a wretched force may fight the right war badly. The primary point is the stupefyingly obvious one that everything matters. The secondary point is that even wonderful improvements in military effectiveness—as might be delivered by U.S. forces multiplied by the so-called "system of systems"[9]—are likely to disappoint if political leadership is poor. After all, Germany was second to none in fighting during two world wars, but it was awesomely incompetent in waging war.

Beyond Geography

There is no correct answer to the question: How many dimensions are there to strategy? The exact numbers or labels of the dimensions do not matter, but it is important that everything of

significance about strategy has been included somewhere among them. A country or coalition need not be outstanding or even excellent in all dimensions of strategy. Wars can be won—which is to say, enough strategic effect can be generated—despite unsound plans, uninspired political leaders, undistinguished generalship, bad luck, or inconvenient geography. Three points require prompt registration. First, each dimension is a player. It is part of national strategy—in every conflict, in every historical era.

Second, some substitution is feasible among, between, and even within the dimensions of strategy.[10] It is rare for a nation to be equally competent on land, at sea, in the air, and in space (or cyberspace). Or, in the case of Germany's *Östheer* (its army in the East), the quality and quantity of one side's technology may be degraded during the course of war, but some useful compensation may be found in the realm of motivation (fighting spirit, morale, and ideology). Or information on an enemy may be in short supply, but some mix of luck, better logistics, superior organization, and higher morale may enable a nation to survive unpleasant surprises. Yet specific circumstances always differ. Because of inadequate operational information, Anglo-French forces were taken by surprise in both World War I and II, recovering from their ignorance in 1914 but not in 1940.

Third, there is, or should be, a level of competitive performance in each dimension which, if one falls below it, has the inexorable consequence of adversely deciding the conflict. You lose.

The argument advanced is that a whole range of strategic dimensions influences conflict, not just those either preferred or designated. Which among them does not matter? It has been debated whether geography matters much in the age of cyberspace.[11] If cyberspace rules, and cyberpower is everywhere and nowhere (placelessly "beyond geography"), perhaps we are witnessing a radical departure from previous strategic experience. Yet perhaps there are grounds for skepticism.

no general theory of strategy can truly be proof against folly or bad luck on a heroic scale

The argument that the holistic nature of strategy and war can be ignored only at one's peril is considered by one analyst who advises that "Human limitations, informational uncertainties, and nonlinearity are not pesky difficulties better technology and engineering can eliminate, but built-in or structural features of the violent interaction between opposing groups we call war."[12] To take just one of these features, the limits in the human (and command) dimension of strategy can easily restrict or offset any gains of a technological edge. (And the human dimension plays at every level of conflict from tactics to statecraft.)

If one accepts the promise of immaculate performance by technology-rich, information-led warriors, what can one assume about U.S. competitiveness in other dimensions of strategy? Is it reasonable to anticipate excellence in political leadership, enthusiasm on the part of the public, and superiority in making, executing, and monitoring the means of strategic performance?[13]

Cookbook Strategy

Whether or not one thinks appropriately about an RMA or implements one competently in all its requisite aspects (technology, weaponization, doctrine, training, organization, acquisition of critical mass of numbers) may have little actual bearing on future U.S. strategic performance. This is because the friction that degrades national performance most insistently may well lie between the government and the Armed Forces, or between the government and society. This is not a rebuke of military modernization or hostility toward the concept of RMA, nor by implication a critique of information warfare in its several guises. Instead, it is simply an argument that countries conduct conflict, wage wars, and make and execute strategy as a whole. Clausewitz made

this point clearly when he referred to the trinity of passion, uncertainty, and reason, which are associated primarily with the people, the army and its commanders, and the government respectively.[14] Unfortunately, there is little analysis in *On War* about the vital subject of the difficulties that can and do arise when policy and military instruments are not both excellent and operating in harmony.

There is no need to belabor the blindingly obvious point that the dimensions of strategy are interdependent. However, it may be worth offering the caveat that to every robust-looking theory there is apt to be the odd exception. One should recall that Clausewitz, unlike Jomini, declined to offer a cookbook of rules for strategy.[15] Hence the argument here has a Clausewitzian rather than a Jominian message. No general theory of strategy or architecture of understanding can truly be proof against folly or bad luck on a heroic scale. Although it is true that each dimension of strategy is important and poor performance in any one could decide the ultimate outcome of a conflict, and that no degree of superiority in any one or two can deliver victory if performance elsewhere is too low, an exception is always possible in practice. Military genius (or folly) on a heroic scale writes or rewrites the principles of strategy.

Again, the nature, purpose, and structure of strategy are eternal and ubiquitous. Any war, in any period, between any adversaries (like or unlike), can be understood with reference to these particular dimensions. What must vary, however—sometimes quite radically—is the detail of the complex interplay among and within them. But when advocates of the historical school claim that strategy is strategy and war is war regardless of the time, place, adversaries, and technology, this is what is meant. Clausewitz, Jomini, Mahan, and Liddell Hart were right in stating that the nature of strategy and war does not, indeed cannot change. The components and structure of the subject remain constant—only the details change. Each dimension of strategy considered above played a part in the Peloponnesian War, the Punic Wars, and the Crusades.

The complexity of war and the diversity of the instruments of strategy with which we wage it have increased over the past century. Technology, tactics, doctrine, and organization have been adjusting to experience and in anticipation of the advantages to be gained or the disadvantages to be avoided. Novel though each additional environment for war certainly is, however, we find that as we have proceeded to fight in the air, to consider combat in and for space and in cyberspace—as well as on land and at sea—the same rules govern strategic performance everywhere. Whether or not forces specialized for combat in

various geographies (or perhaps anti-geography in cyberspace) can win wars by independent action, each must follow the guiding rule of classical strategy. That rule mandates securing military control in each geography as a prerequisite for strategic exploitation. The same logic applies for land, sea, air, space, and cyberspace. If sea, air, or cyberspace forces are to exercise their roles as team players, each must first succeed in its distinctive environment. To understand why one must be ready to fight at sea is to grasp why one must be ready to fight in the air, in space, or in cyberspace. The logic of strategy and war is the same.[16] If an environment is militarily important, we must be ready to fight for the right to use it.

Overall, we know almost everything that we need to know, and probably all we can know, about the future of strategy and war. Indeed, if one is willing to engage in reductionism, it can be claimed that Thucydides recorded almost everything worth considering about the causes of war and the political need for strategy by emphasizing just three impulses: fear, honor, and interest.[17] It is not obvious that modern scholarship on the motives for empire or the causes of war has produced conclusions superior to that trinitarian hypothesis.[18]

What is not known about the future of strategy and war is almost all of detail, significant and insignificant. Many pundits have a weakness for invoking the phrase "the foreseeable future." But the future has not happened and cannot be foreseen in detail. Under political guidance that is certain to be unsatisfactory, likely to contain contradictions, and almost bound to bear the stamp of some unsound assumptions, defense planners are obliged to decide what is a good enough defense establishment when one cannot know precisely whether, when, where, or for what ends war will be waged. But if it is any consolation, at least they know what strategy and war are made of—the 17 dimensions—and should be rendered immune by education, including the education provided by experience, to persuasion by unsound theories of miracle cures for strategic ills.   **JFQ**

N O T E S

[1] Edward T. Hall, *Beyond Culture* (Garden City, N.Y.: Doubleday, 1976).

[2] See the discussion in Colin S. Gray, *The American Revolution in Military Affairs: An Interim Assessment*, Occasional Paper 28 (Camberley: Strategic and Combat Studies Institute, Joint Services Command and Staff College, 1997).

[3] Kahn's instinct for synthesis is represented in *On Escalation: Metaphors and Scenarios* (New York: Praeger, 1965).

[4] For example, see Clifford J. Rogers, ed., *The Military Revolution Debate: Readings on the Military Transformation of Early Modern Europe* (Boulder, Colo.: Westview, 1995).

[5] This argument is a central theme in Colin S. Gray, *Understanding Modern Strategy* (Oxford: Oxford University Press, forthcoming).

[6] Carl von Clausewitz, *On War*, edited and translated by Michael Howard and Peter Paret (Princeton: Princeton University Press, 1976), p. 605.

[7] Battlelines for debate were drawn most clearly in Reginald Custance, "Introduction" to "Barfleur," *Naval Policy: A Plea for the Study of War* (Edinburgh: William Blackwood and Sons, 1907), pp. vii–ix.

[8] Michael Howard, "The Forgotten Dimensions of Strategy," *Foreign Affairs*, vol. 57, no. 5 (Summer 1979), pp. 975–86.

[9] James R. Blaker, *Understanding the Revolution in Military Affairs: A Guide to America's 21st Century Defense*, Defense Working Paper 3 (Washington: Progressive Policy Institute, January 1997).

[10] See Andrew G.B. Vallance, *The Air Weapon: Doctrines of Air Power Strategy and Operational Art* (London: Macmillan, 1996), chapter 2.

[11] See both Colin S. Gray, "The Continued Primacy of Geography" (and "A Rejoinder"), and Martin Libicki, "The Emerging Primacy of Information," *Orbis*, vol. 40, no. 2 (Spring 1996), pp. 247–59, 261–76.

[12] Barry D. Watts, *Clausewitzian Friction and Future War*, McNair Paper 52 (Washington: National Defense University Press, October 1996), p. 122.

[13] On strategy as process, see Williamson Murray and Mark Grimsley, "Introduction: On Strategy," in Williamson Murray, Macgregor Knox, and Alvin Bernstein, eds., *The Making of Strategy: Rulers, States, and War* (Cambridge: Cambridge University Press, 1994), chapter 1.

[14] Clausewitz, *On War*, p. 89.

[15] Contrast Clausewitz, *On War*, p. 141, with Antoine Henri de Jomini, *The Art of War* (Novato, Calif.: Presidio, 1992), pp. 16–17, 70, 114. Michael I. Handel, *Masters of War: Classical Strategic Thought,* 2d ed. (London: Frank Cass, 1996), offers a comparative treatment.

[16] This proposition pervades Edward N. Luttwak, *Strategy: The Logic of War and Peace* (Cambridge, Mass.: Harvard University Press, 1987).

[17] Robert B. Strassler, ed., *The Landmark Thucydides: A Comprehensive Guide to the Peloponnesian War* (New York: Free Press, 1996), p. 43.

[18] See Donald Kagan, *On the Origins of War and the Preservation of Peace* (New York: Doubleday, 1995), which is influenced by Thucydides; and Hidemi Suganami, *On the Causes of War* (Oxford: Clarendon Press, 1996).

USS Nimitz and
USS Independence
off Japan.

U.S. Navy (Chris Ware)

Shaping Our Future in the Asia-Pacific

By JOSEPH W. PRUEHER

Admiral Joseph W. Prueher, USN, is commander in chief, Pacific Command, and formerly served as vice chief of naval operations.

Today, U.S. Pacific Command (PACOM) forces are ready and work closely with our allies to prevent conflict in the Asia-Pacific region. This has not always been the case. America largely withdrew its military presence following the defeat of Japan in 1945. Then on July 5, 1950, a hastily deployed Sergeant First Class Loren Chambers, a World War II combat veteran with five Purple Hearts, became engaged in a new Asian conflict. His unit had only rifles and light artillery to fire at the Inmun Gun's T–34 tanks when it was overrun near Osan in South Korea. Chambers and the 1st Battalion, 21st Infantry, put Kim Il Sung on notice that the United States would fight aggression in Asia; but our unreadiness cost the lives of thousands of Americans and millions of Koreans.

Containing aggressors who doubted our commitment has exacted a dreadful price in Asia. Since 1950 more members of the U.S. military

have died in this region than in the rest of the world combined. Yet the steadfastness of America and its allies has succeeded in laying the foundation for the greatest economic growth in history. The sharp contrast between prosperous democracy in South Korea and impoverished repression in the North illustrates the value of our investment.

PACOM is ready and engaged for the long haul, advancing U.S. interests in Asia-Pacific security and stability into the 21st century. It is pursuing positive security relations with all nations to prevent conflict and respond to crises. The forward presence of our forces will remain essential to regional security, stability, and opportunities for prosperity far into the future. Improvements in joint warfighting will also be necessary to sustain our military successes into the future.

The PACOM area of responsibility (AOR) stretches from California to India and the eastern shore of Africa, encompassing 43 nations. The region includes over half the world's surface, half its population, and—when combined with the United States—half its economy.

Economic, political, and military interests converge in the region. Economically, America and the other Asia-Pacific nations have become interdependent over the last generation. The region accounted for only 4 percent of world economic output in 1960. By 1995 it exceeded 34 percent. By 2020 it is estimated the region will account for 50 percent of the world's economic output. American consumers benefit from trade in the region. Imports to the United States amounted to more than $312 billion in 1996. Exports to the region were over $200 billion and accounted for 3 million U.S. manufacturing jobs. This represents 36 percent of our two-way merchandise trade, matching that with Canada and Latin America combined and almost double that with the countries of the European Union. In addition, the United States exports another $81 billion in services to the region and has invested over $140 billion. Instability in Asia is thus a threat to our economy.

U.S. and Thai soldiers during Cobra Gold '96.

DOD (Christopher G. Hess)

Though the current financial crisis is causing turmoil with Asian currencies and stock markets, the affected economies will likely recover to sustainable growth rates as long as regional stability and the market system endure. America's economic future is linked to continuing commercial access and freedom of navigation throughout the region.

Our cultural and political interests are also increasingly tied to Asia. According to the 1990 census, Asian-Americans are the fastest growing segment within the American middle class and are no longer confined largely to the west coast but are numerous in New Jersey, Texas, Georgia, and elsewhere. By 2020 the U.S. population is likely to include over 20 million Asian-Americans.

Internationally, successful management of challenges such as pollution and the proliferation of weapons of mass destruction depends on cooperation in the Asia-Pacific region, which includes over a fifth of U.N. membership. Its 3 billion people present the world's largest opportunity for advancing democracy, and democra-

cies are more likely to work together and less likely to fight.

Militarily, the major enduring U.S. regional interest is to ensure that no hegemon or hostile coalition arises in the Asia-Pacific. Such a challenge could provoke a costly hot war or a protracted cold war. The United States shares sufficient security interests in the region that five of our seven mutual defense treaties bind us to allies there and sustain our presence—with Japan, Republic of Korea, Republic of the Philippines, Australia, and Thailand.   **JFQ**

JFQ *What do you see as the major concerns for security in the Asia-Pacific?*

PRUEHER There are four. The most immediate threat is the situation on the Korean peninsula. Only a thin demilitarized zone separates North Korea's million-man military from the combined forces of the United States and South Korea. At some point this standoff will end. Our readiness ensures peace until that occurs.

Then there is potential instability resulting from the Asian financial crisis. We are working closely with our allies and friends in the region to alleviate the pressure. The size, shape, and timing of U.S. military contacts have been adjusted to maintain our engagement with them. Next is the China-Taiwan dispute. Although this is potentially the most contentious issue between the United States and China, we are building mutual understanding to resolve differences.

The third challenge is the peaceful resolution of territorial disputes over small island groups in the South China Sea which sit astride shipping lanes linking the Persian Gulf and Southeast and East Asia. They contain exploitable deposits of both oil and natural gas. Eight nations—including China, the Philippines, Malaysia, and Vietnam—assert sovereignty over various island groups in the South China Sea. The United States takes no position on the legal merits of these competing claims but encourages the claimants to exercise restraint and avoid destabilizing actions.

JFQ *How is U.S. involvement important to the stability of the Asia-Pacific region?*

PRUEHER The region is generally at peace but is not free from the possibility of major conflict. As Henry Kissinger recently noted, "Wars, while not likely, are not inconceivable. . . . Peace will require deliberate efforts." There is no status quo to which every regional power adheres. There is no integrating organization such as the European Union or NATO to reconcile conflicting goals.

While expanding commercial ties generally tend to promote peace, they can also produce new pressures. Continued growth will increase tension over access to scarce resources such as oil. Conversely, if economic growth rates continue to decline, dashed expectations among expanding populations could trigger instability.

America is unusually well positioned among Asia-Pacific military powers. Our economic, diplomatic, and military capabilities can help maintain stability and prevent major conflict. Thus the United States is particularly suited to join with other nations as a partner to broker regional security, cushion tensions, and defuse crises.

JFQ *What are America's strategic alternatives in the region?*

PRUEHER For the immediate future our best choice is what Joseph Nye, the former Assistant Secretary of Defense for International Security Affairs, called "deep engagement"—active presence and partnership with other states there. By aiding the security of others we further our interests.

While the notion of engaging only in great emergencies and then with commanding force is seductive, in practice it could be disastrous. As in 1950, our resolve and capability would likely be doubted. Some nations could be pressured to pursue far more independent policies and to maintain much higher levels of military capability. Absent a forward basing structure, crises could provoke conflict faster than we could mobilize and overcome the vast distances of the Pacific.

A cooperative security system might eventually reduce the requirements for U.S. military presence. But until such a system includes every regional power the need for American forward deployed forces will persist, even if stable peace is established on the Korean peninsula. We can expect such a system to emerge gradually, matching the rates at which Asia-Pacific states advance trust and consensus among themselves.

JFQ *What are the premises of PACOM military strategy?*

PRUEHER Our first premise is a notion of confluence: political, economic, and military aspects of security are interdependent and cannot be advanced separately. Because of this confluence the command works closely under the interagency process which includes the Departments of Defense and State, National Security Council, and U.S. embassy country teams in the region to ensure that our military activities reinforce other national efforts. The military alone cannot resolve disputes among governments but it can help set the conditions and provide time for other elements to work.

Our second premise is that security (especially military) establishes stable conditions that are a prerequisite for economic growth and prosperity. This stability does not mean maintaining the status quo. Change will continue—mostly for the better—in economics, government, and the ways states relate to each other. What is important is that adjustments take place within the overall context of political processes rather than violence.

PACOM abilities to anticipate, avert, and react to challenges are enhanced by military-to-military relations with regional countries.

JFQ *What is the PACOM military strategy?*

PRUEHER Preventive defense. Just as preventive medicine promotes conditions that support good health, preventive defense supports security and stability. Our strategy puts into practice the concepts of national military strategy that shape the international environment, respond to crises, and prepare for an uncertain future. U.S. strategy involves peacetime activities, crisis response, and the capability to fight and win in major regional conflict.

U. S. Pacific Command

C–130 taking off from Elmendorf AFB, Alaska.

DOD (T. Coaxum)
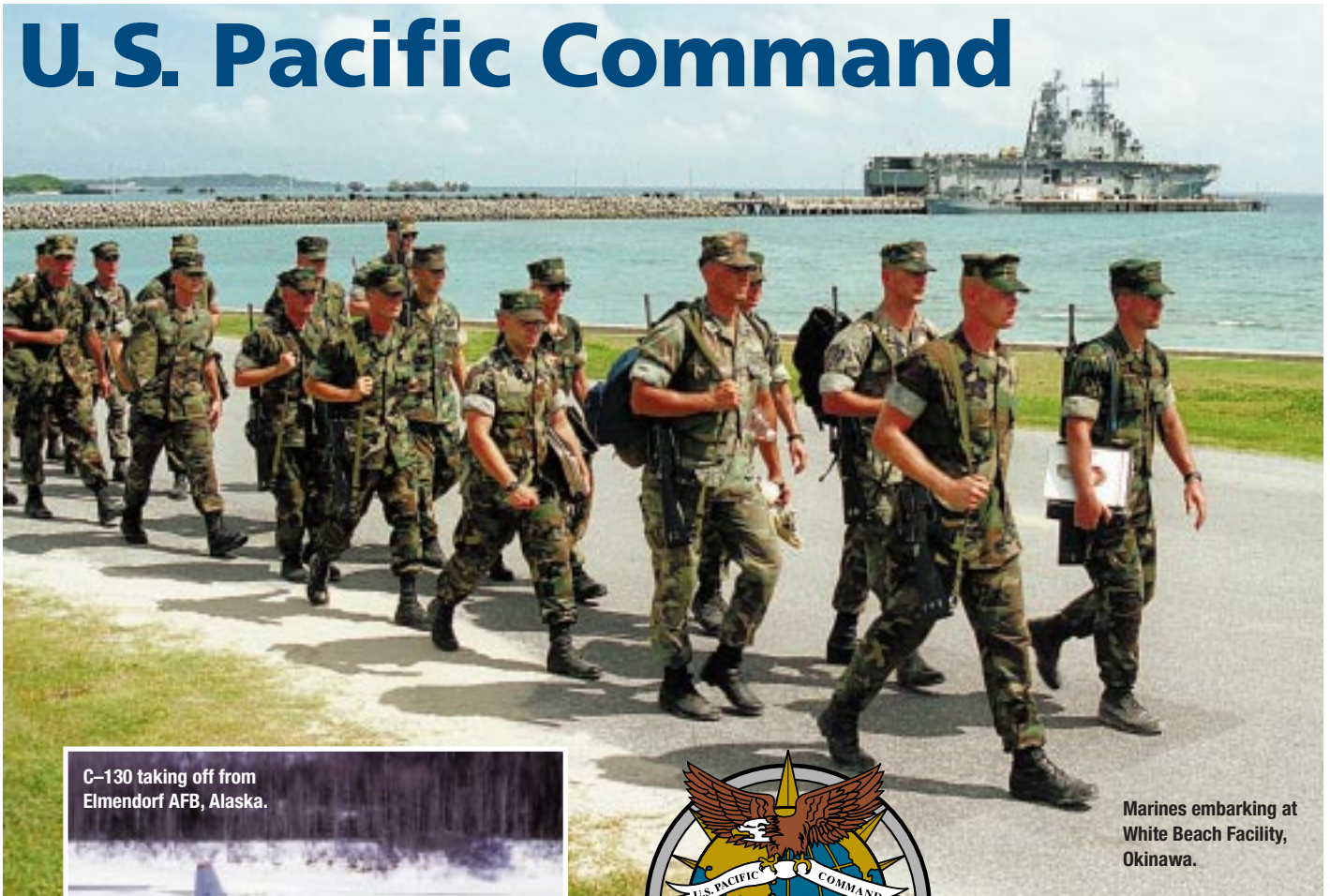
Marines embarking at White Beach Facility, Okinawa.

DOD (Angela Engle)

Army troops boarding C–130 for Cobra Gold '96.

U.S. Air Force

Fifty years ago, U.S. Pacific Command (PACOM) became America's first unified command. Today the PACOM area of responsibility, stretching from the West Coast of the United States to the East Coast of Africa, has enormous geographic and strategic value. It contains over half of the surface of the globe, 56 percent of the world's population, 43 countries, and the two most populous nations (China and India). In addition, five of our seven mutual defense treaties safeguard the region while the six largest militaries operate in the Asia-Pacific.

USS Peleliu arriving in
Apra Harbor, Guam.

PACOM

A/OA–10 at Osan
Air Base, Korea.

Peacetime activities include engagement and preparedness which reassure the region of our commitment and deter conflict. Peacetime engagement embraces combined exercises, port calls, meetings, and exchanges of information and people. Successful engagement develops trust and confidence among states and establishes mechanisms for working together. Preparedness works unilaterally and with others to position our forces and ready them to respond to crises across the full spectrum of conflict.

Nothing can prevent all crises. When specific events threaten to bring one about, PACOM is prepared to respond with military forces. The goals of these efforts are to deter larger conflict, reinforce diplomacy, and position critical capabilities for action should deterrence fail.

Underwriting our objective of preventing major international conflict is the ability to fight and win. PACOM trains to do that quickly and decisively with minimum loss of life, preferably with the support of allies and coalition partners but unilaterally if necessary. For the foreseeable future, every aspect of strategy will depend on a network of forward forces and cooperation with other nations for bases and logistical support.

JFQ *Can you offer some examples to illustrate the strategy in practice?*

PRUEHER Our peacetime activities are akin to an investment, building up tangible assets that can be drawn on in crisis. For example, the United States works closely with Thailand. When factional fighting broke out in Cambodia in July 1997, Americans and other foreign nationals there were at risk. U.S. leaders wanted to position special operations forces nearby in case evacuations proved necessary. Following a telephone conversation with the Thai supreme military commander, PACOM secured permission to deploy these forces to Utapau.

When China fired missiles near Taiwan in March 1996, the United States deployed two carrier battle groups near the Taiwan Strait. This reaction was carefully tailored to contain the crisis. Simultaneously, we conveyed diplomatic messages to each side, affirming a "one-China" policy and commitment to peaceful resolution of differences across the Taiwan Strait. While Chinese-Taiwan relations remain contentious today, all parties generally recognize that it is in no nation's interest to precipitate another crisis.

JFQ *What forces are available to PACOM?*

PRUEHER The command has over 300,000 military personnel from all services. Our forward presence alone consists of approximately 100,000. This number is widely perceived throughout the region as a metric of America's commitment and represents capabilities of U.S. Eighth Army and Seventh Air Force in Korea, III Marine Expeditionary Force and Fifth Air Force in Japan, and Seventh Fleet. Adjustments focus on capabilities of the units rather than the numbers themselves.

The other 200,000 assigned personnel are forward based in Alaska or Hawaii or are located along the U.S. west coast. Many spend time in the region executing peacetime engagement tasks. In crisis or war, PACOM can call on the other resources of the U.S. military, including strategic lift, national response forces, and strategic reserves.

JFQ *Does the defense guidelines review change our relationship with Japan?*

PRUEHER Not fundamentally. Close relations between the United States and Japan remain the cornerstone of East Asian security. The U.S.-Japanese defense guidelines review concluded in September 1997 will enable us to work together more closely in crises that affect Japan's security. They provide for better interoperability and more mutual support. They are not directed against any particular country or intended to give the Japanese military a new role in the region.

JFQ *What is the state of our relations with China?*

PRUEHER China is modernizing its military. As "paid pessimists," the PACOM staff is watching carefully. But China will not possess a power projection capability that could threaten U.S. interests for at least a decade and a half. We are pursuing a long-haul, balanced national policy of constructive engagement with China to encourage its emergence as a secure, prosperous, and nonthreatening member of the international community. Increased Chinese transparency on security objectives and military modernization would help reassure the region.

Contacts between the U.S. military and the People's Liberation Army have expanded significantly in the last year. These exchanges are important. As President Jiang Zemin said to me during his recent visit to Hawaii, "Before we can build trust, we need to build understanding." Expanding relations among officers who will lead the next generation is especially important.

The trend of U.S.-Chinese relations is steadily upward, although perturbations can be expected. Common interests in regional peace and security outweigh our differences. Successful management of relations among the United States, Japan, and China is likely to be the principal determinant of regional peace and security in the decades ahead.

JFQ *What are your expectations for relations between North and South Korea?*

PRUEHER We avoid attempting to predict the future of the Korean peninsula and instead, with U.S. Forces Korea, prepare for a range of possibilities. We can envision three: a lashout by the North, a collapse of the North Korean regime, or a process leading to peaceful reconciliation and eventual reunification.

The peninsula is a volatile flashpoint. North Korea's economic conditions are dire, but it retains a serious military capability. Although the likelihood of war is not high, the consequences would be severe. Our forces in Korea, under the command of General John Tilelli, work in close concert with our ally South Korea to prevent this possibility.

Averting the total collapse of North Korea's economy is in the humanitarian and strategic interest of

everyone. But success depends on the willingness of North Korea to accept assistance, reform its economic policies, and reduce its military posture. Today the North is so focused on maintaining tight control that they are reluctant to accept outside help.

Clearly, we would prefer to see the third scenario resulting in peaceful reconciliation. It is likely to proceed slowly due to the costs and the cultural and economic differences that have arisen over the past fifty years. Pursuing a peaceful and secure reconciliation is an opportunity for states in Northeast Asia to work together, especially the United States, China, and Japan.

JFQ *What about other nations of the region?*

PRUEHER Southeast Asia is increasingly important to U.S. interests. We are pursuing closer partnership with the nations in that area. As part of this engagement, the United States endorses further development of the Association of Southeast Asian Nations (ASEAN) Regional Forum. Though limited in scope, this assembly is a promising venue for discussing security issues.

The United States also has a special interest in improving relations with Indonesia, a vast country of over 200 million people, the world's fourth largest population. So far its security forces are coping with a tough situation—arising from the financial crisis—in generally responsible ways, maintaining stability among 5 major cultures and more than 300 subcultures spread across 17,000 islands. Regional stability will be enhanced through the broadest possible U.S.-Indonesian military-to-military relations.

U.S. engagement with other nations in the area is just about where it should be. As indicated earlier, we have adjusted our engagement programs, where necessary, to help lessen the strains of the financial crisis. We also work closely with Singapore, Thailand, and Australia. Looking to the future, India will have increasing regional importance and our

military-to-military relationship is gradually improving.

While it does not enjoy great prosperity, Russia remains an important Pacific power. The forces of the Russian Far East Military District are significantly smaller and less active than during the Cold War but its Pacific Fleet maintains very capable submarines and ships.

JFQ *What are the implications of the so-called revolution in military affairs?*

PRUEHER There are three. First, the tools of war are changing. Weapons are getting much more accurate. We have sensors which detect battlefield activity that provide far more information, and friendly forces now have better ways of passing it back and forth. If we plan properly, RMA will also provide new tools for conducting "low-end" operations such as peacekeeping, counter-terrorism, and humanitarian assistance.

Second, asymmetric forms of warfare may challenge us. Weapons of mass destruction, information warfare, and terrorism are becoming means by which nations with less traditional military power might try to wage war.

Third, more advanced weaponry, sensors, business practices, and decisionmaking tools offer possibilities for achieving greater efficiency which can sustain security capabilities at reduced costs or with fewer personnel.

The U.S. military is investing in new technology as well as experimenting to develop the doctrine, organization, and experience that can exploit emerging capabilities and respond to new challenges. However, RMA is no panacea. It will not yield substitutes for forward presence of ready forces, high quality personnel, or close international partnerships.

JFQ *How can joint operations be made more effective?*

PRUEHER Broadening joint concepts beyond the command and control of service components promises to increase the effectiveness of joint warfare. Three concepts that we are now pursuing are greater interagency and coalition cooperation, a concept of tac-

tical air (TACAIR), and more efficient flow of forces between AORs.

While the importance of effective interagency and coalition integration in crisis and war is recognized, this doctrine is infrequently exercised, and joint commanders devote inordinate energy at the outset of an operation to ensure interagency and coalition team building. Practice develops procedures and trust. We must expand training opportunities for interagency coordination.

Joint task force commanders are concerned about the responsiveness and effectiveness of TACAIR support, not the color of a pilot's uniform. Considering TACAIR as a whole is a useful way of leveraging the complementary natures of airpower. For example, Navy carrier air wings, Air Force air expeditionary forces, and long range bombers have differing deployability, operating tempos, and aircraft characteristics, but this mix of complementary capabilities offers opportunities for synergistic employment.

Finally, the demand to share or dual earmark forces among CINCs will increase. Defining new AOR boundaries is less important than operating smoothly across them. The willingness of CINCs to work together informally, assume prudent risk, and avoid inflating requirements pays dividends. For example, PACOM and U.S. Forces Korea are accepting prudent risk by providing forces to stand ready with U.S. Central Command in the Arabian Gulf. These forces include our only forward-based carrier battle group. Opportunities also exist to reduce OPTEMPO and conduct more efficient training by accepting each other's training standards. **JFQ**

Preparing the
Army in the Pacific
for the 21st Century

U.S. Army Signal Corps (Wayne H. Weidner)

**Uirson, Korea,
August 1950.**

By WILLIAM M. STEELE

I n August 1898 Admiral George Dewey had to wait 90 days after defeating the Spanish at Manila Bay for a 15,000-strong Army force from California to put boots on the ground and secure his victory in the Philippines. As U.S. Army Pacific (US-ARPAC) celebrates 100 years of service in the Asia-Pacific region, it can account for two-thirds of the Army campaign streamers awarded for action outside North America. It also reflects the changing role of America as a Pacific power. Today, U.S. Pacific Command (PACOM) relies upon trained and ready forces to support military operations and peacetime engagement. As we near the 21st century, USARPAC has the vision and direction to keep the Army component of PACOM relevant, responsive, and ready.

Tyranny of Distance

The American commitment to the Pacific over the last century can be divided into two major periods: Japanese expansionism and confrontation with

Lieutenant General William M. Steele, USA, is commanding general of the U.S. Army, Pacific.

the Soviet Union. These two experiences challenged the Army to assume various roles—expeditionary, occupation, counterinsurgency, and deterrent—in a theater where vast ocean spaces and faraway land masses presented another passive but significant force, the tyranny of distance.

The central strategic issue for our military in the Pacific during the first half of this century was maintaining a credible presence in the Philippines and countering the growing power of Japan. The United States could not defend the Philippine Islands because the American people would not commit the needed assets until the eve of war. Consequently Hawaii became the center of gravity for our strategic position in the Pacific. It was home to Army and Navy commands as well as the industrial facilities which supported operating forces that would be projected into the Pacific.

With the Japanese surrender on August 15, 1945, the free world soon faced an even greater danger than that formerly posed by the Axis powers. The central strategic threat was thought to be prevention of nuclear war. The Cold War and lines of confrontation in the Pacific area, however, were clearly drawn in another way in East Asia as Task Force Smith jumped, poorly equipped and manned, from occupation duty to combat on the Korean peninsula. Both Korea and Vietnam were major conflicts—proxy wars in a bipolar Cold War world centered in Europe. PACOM forces and the defense establishment as a whole struggled with new strategic and operational concepts before and after those two Asian wars. Finally, we adopted a deterrent strategy that has achieved 22 years of regional security and stability and established a forward presence that we maintain to this day. We are experiencing the longest period of peaceful engagement in the Asia-Pacific for a century.

Nevertheless the shadow of the Cold War still extends over the Army in this region. Today USARPAC has three major combat formations: 25th Infantry Division in Hawaii with one brigade located at Fort Lewis, Washington; 1st Brigade, 6th Infantry Division in Alaska; and 1st Battalion, 1st Special

Javelin anti-tank weapons system.

DOD (Randy Pullen)

The Tyranny of Distance

Seattle to Thailand
15 Hours
19 Days

Hawaii to Korea
9 Hours
10 Days

Alaska to Australia
14 Hours
18 Days

Forces Group on Okinawa. Support forces include U.S. Army Japan and U.S. Army Hawaii. USARPAC headquartered in Hawaii and I Corps at Fort Lewis provide operational and tactical command and control (C^2) respectively. This current force mix is the result of the situation in Korea, the recent drawdown, and our Cold War posture. Ultimately, the situation in Korea will resolve itself through a treaty, reconciliation, or reunification, with resultant changes in the size and function of Army forces in theater. The history of the region, our security relationship with Japan, and the strategic position of Japan near force projection requirements suggest continued presence of Army support forces in northeast Asia.

U.S. soldiers jumping
from Australian
DHC–4.

DOD (Efrain Gonzalez)

The Pacific, the largest ocean in the world, dominates this region and presents a tyranny of distance of over 5,000 miles from the west coast of the United States to the Pacific Rim countries of Japan and the Philippines. In 1898 it took IX Corps 90 days to sail from California to Manila. By World War II that was cut to 30 days steaming time. It still requires 21 days to move troops, equipment, and supplies by sea from Oakland to Manila and 16

there is no Asia-Pacific equivalent of the North Atlantic Treaty Organization

more to reach the western limits of the PACOM and USARPAC area of responsibility (AOR) in the Indian Ocean. We have reduced but not eliminated the tyranny of distance with airlift and faster ships. Control and security of the sea, sea and air lines of communication, and theater power projection platforms remain an essential task for military forces in the Asia-Pacific.

The 21st Century

The end of the Cold War has led to another transitional period for the military in the Pacific. Few signs of confrontation remain. Korea is in the throes of political and military contention under a 44-year-old armistice.

The world is increasingly multipolar. The predictability and stability that sprang from the bipolar alignments of the Cold War have eroded. Stability is the result of regional security and economic prosperity. This is certainly true in the Pacific where emerging economies and developing nations are divided by enduring tensions along their borders. The relative stability enjoyed across the area results from the presence of U.S. forces together with military contacts and economic prosperity. PACOM and its components reflect this presence and afford the security for continued growth in the region. They also maintain military overmatch to prevail in any conflict.

While there is no Asia-Pacific equivalent of the North Atlantic Treaty Organization, five of the seven mutual defense treaties signed by the United States involve the PACOM AOR. Relations with countries in the region tend to be bilateral and limited in scope. Yet there is growing interest in both multilateral dialogue and partnership in the face of challenge. The Association of Southeast Asian Nations (ASEAN) is the foremost multinational partnership, but it has no military charter.

This region will become central to the global economy in the next century, replacing Europe in many regards. It contains 56 percent of the world population. China's total is 1.2 billion people while India's is 950 million and is expected to surpass China early in the next century. Indonesia, the most populous Muslim nation, has 206 million and is the fourth largest in the world. By 2020 there may be 25 cities in Asia with populations over 10 million. Such huge markets are impressive but are only partially developed today.

U.S. ties to Asia are growing as the percentage of Asian-Americans increases. Trade with Asia in 1996 was $920.8 billion, 37 percent of the U.S. total, more than with Europe, Canada, or Latin America. Some 60 percent of global economic growth in the next decade will occur in East Asia. As a result, the Asia-Pacific region will develop a powerful new middle class of 500 million. It will create market-driven economies and shift from labor-oriented production to both industrial and information age technology. The effect on area culture and societies will be equally profound. New wealth and a powerful middle class will transform traditional social structures to complement economic well-being and meet rising expectations. This prosperity will lead to development that is commensurate with political, informational, and military potential. To maintain regional stability in this dynamic future it is vital to shape the security environment to facilitate economic growth.

While we often think of the Asia-Pacific region as primarily maritime because of the Pacific and Indian Oceans, armies rather than navies dominate military organizations. Asia claims eight of the ten largest militaries in the world, and substantial modernization programs reflect new wealth and diverse security concerns in the region. Spending on modernization has increased 35 percent over the last six years. This contrasts with the general decline in military spending elsewhere since the end of the Cold War. While these forces are likely to shrink, they will undergo modernization in the interim. Short- and mid-range ballistic missiles, weapons of mass destruction (WMD), and limited power projection

City of Pará with soldiers leaving for the Philippines, 1898.

maintain the ability to respond worldwide across a full crisis spectrum.

PACOM theater engagement strategy supports our national military objectives. So long as the region remains devoid of a substantial multilateral security mechanism, most nations will desire the continued presence of the U.S. military and its Pacific Army. In January 1997 Japanese Prime Minister Hashimoto cited "the presence of the United States in Asia" as the most important factor in assuring stability.

USARPAC helps to shape the region through forward basing and deployments. Combined training and engagement activities such as engineering, medical, and civic projects also contribute to forward presence by sending our soldiers abroad. The Pacific Army of the 21st century must maintain forward presence to provide access to army-dominated military organizations. Exercises such as Cobra Gold in Thailand and Balikatan in the Philippines are examples. Forward presence demonstrates our commitment and negates some of the tyranny of distance.

As USARPAC presence and engagement shape the security environment they also serve as a preventive defense. Forward basing and engagement activities signal the readiness of our forces to more than friends and allies. Exercises also demonstrate readiness in support of PACOM and contribution to joint and combined warfighting.

Shaping enables the Nation to maintain an objective role as a regional power. The benefits of mutual training and increased interoperability among countries helps set the stage for conducting combined operations with allies or coalition partners. Although we will be ready to act unilaterally, combined operations are the preferred method. Our ability to conduct successful operations is well known by states that might consider destabilizing the region. The PACOM strategy of engagement and presence is the right way to shape regional stability and U.S. interests into the next century.

Since shaping efforts alone cannot guarantee peace and stability, our forces must be capable of responding

will be common and increase the scope and lethality of regional conflict. Moreover, the demands of natural/humanitarian disasters will expand the role of regional militaries.

forward basing and engagement signal readiness to more than friends and allies

The proliferation of nuclear, biological, and chemical weapons risks placing them in the hands of rogue states or terrorists. Countering proliferation requires multinational and multiagency efforts as will combating the drug trade, terrorism, maritime piracy, and insurgency.

Foreign policy will continue to dictate that the United States accept a mantle of international leadership and build alliances and institutions. In a July 23, 1997 address to the Pacific Council on International Policy, Secretary of State Madeleine Albright said that the objective of U.S. strategy must be to "work with our many friends in this region of rising powers to ensure stability, build prosperity, and promote democracy." The Nation should "fortify core alliances" while remaining forward deployed and supporting multinational security dialogues. The United States must focus on peacefully resolving disputes and avoid "misunderstandings that could lead to armed conflict." Forward basing and engagement enables this strategy by means of USARPAC involvement with regional militaries. Maintaining strong army-to-army relations is a principal role of USARPAC in peacetime to support our preventive defense strategy.

Shape, Respond, Prepare

National military strategy uses the three concepts of shape, respond, and prepare to provide an integrated approach to promoting peace and stability and defeating adversaries when necessary. PACOM and its components will continue to pursue these objectives through regional engagement to shape the Asia-Pacific and create conditions favorable to U.S. interests. USARPAC forces will support PACOM and

to a full spectrum of crises. On an average day USARPAC has 3,000 soldiers in 20 countries. Just 3 percent of the U.S. Army, the Pacific Army, conducts 10 percent of total Army deployments. That is a high payoff.

The Army has fought four wars in the Asia-Pacific over the last century. In World War II and Korea, it was unprepared and paid the price. Tomorrow's Pacific Army, like its predecessors, will not have forces in theater to prosecute a major war, so it must be able to project USARPAC forces from CONUS.

PACOM needs a ground detachment with a limited forced entry capability that can respond quickly and decisively. It can evolve from the current force and address regional crises. It also requires access to CONUS land forces for either theater engagement or strategic power projection to protect American citizens and interests or prevent conflict. Speed argues for a response force in a central location and the ability to project forces by air and sea with prepositioned stocks.

The Army in the Pacific must be a theater engagement force and a strategic projection force. Theater engagement serves as a deterrent to aggression by demonstrating the capability to fight and decisively win smaller scale contingencies. Its secondary mission is engaging regional militaries as previously discussed. The strategic projection force, like the engagement force, must be forward based and quickly augmented by CONUS-based forces which deploy worldwide to reinforce either in-place theater forces or use air and sea lines of communication through the theater in support of a major theater war.

Strategic mobility is critical when projecting power into or through the Asia-Pacific region. It largely resides in sealift and airlift, though infrastructure plays a significant role. Prepositioned equipment together with strategic lift enables us to react with the appropriate speed for strategically decisive maneuver.

The Future

The Army of the 21st century must be built on a sound foundation and supporting pillars. That foundation is comprised of quality people; command, control, communications, computers, and intelligence (C4I); and a theater infrastructure to support power projection. The four pillars are a trained and ready force, forward presence, an expeditionary force, and modern equipment. Our training today and tomorrow should range from the lowest tactical echelon to operational exercises to improve interoperability with other armies. Additional efforts to enhance and sustain readiness include establishing multicomponent units as well as other forms of active and Reserve integration in training and operations. We participate in joint and combined exercises to maintain warfighting capabilities just as we must continue to expand relations with the armies in the region.

The cost of current training programs is too high because of the tyranny of distance. Army forces must travel to the Joint Readiness Training Center or National Training Center to take part in priority tactical training. Moving equipment to either center, even with prepositioned brigade sets for training, is costly and time consuming. We need joint training areas in the Asia-Pacific located within proximity of our bases and along air and sea lines of communication in the theater.

The chief means of achieving full spectrum dominance for the Pacific Army in a peacetime environment is realized by the second pillar, forward based forces. Even though I Corps is located on the west coast at Fort Lewis and USARPAC is headquartered in Hawaii, the latter remains five time zones from the eastern edge of the Asian mainland and fourteen from the western edge of the Indian Ocean. Positioning forces and Army C2 headquarters farther in the AOR enhances regional presence and tangibly improves the ability to conduct crisis response, forward presence, and C2.

The third pillar is creating an expeditionary force capability from Army divisions, brigades, and battalions. These force packages would be capable of rapid deployment to crisis spots within the Asia-Pacific from power projection platforms and the prepositioned stocks placed in the theater infrastructure force. Much of this capability already exists.

The last pillar is modern equipment to sustain the first to engage operations and keep pace with regional powers. Forward presence, regardless of its other advantages, also demonstrates the quality of U.S. equipment to area militaries. The requirement for continual C4I modernization is obvious given the tyranny of distance in the AOR. We also need improved strategic mobility from more fast sealift ships, just in time logistics, Crusader, Javelin, Apache Long Bow, and other new weapons and equipment to conduct preventive defense well forward.

The future is certain. The prominence of the Asia-Pacific region is growing and so are both the importance and the contributions of USARPAC to national security. We can and must achieve a trained and ready force, one with expeditionary capabilities postured and positioned well forward in the area with the training, infrastructure, C2, and quality people to perform its missions. It must be a modern, tailorable theater engagement force based to provide effective initial entry forces that contribute to full spectrum dominance. It must be expandable to supply sufficient ground forces, theater Army C2, and sustainment to support a joint and combined major theater war. We are able to perform these tasks. Today our challenge in the dynamic Asia-Pacific environment is to remain relevant, responsive, and ready for tomorrow.   **JFQ**

Fire control tracking system aboard *USS Seawolf.*

Information Superiority

in the Pacific Fleet

By ARCHIE R. CLEMINS

Throughout this century the Navy has pioneered the development and use of technology to achieve the impossible. Ideas that once seemed radical—such as carrier aviation, nuclear powered submarines, and amphibious warfare—became realities. As the century draws to a close the Navy must continue to push the envelope to

Admiral Archie R. Clemins, USN, is commander in chief, U.S. Pacific Fleet, and has served at sea in both ballistic missile and attack submarines.

accomplish its mission. Its most effective tools in this effort will be information sharing and technology.

In the last fifty years communications have evolved from flags and flashing lights to secure radios to e-mail. The information revolution has created new technologies and opportunities which alter the way information

is acquired and used to again make the impossible reality. Continuing its role as an innovator, the Navy initiated a program known as "Information Technology for the 21st Century" (IT–21) to shape warfighting capabilities, support systems, and information processing. In fact, information sharing—knowledge sharing—already dominates the relationship of the Navy with the Army, Marines, Air Force, and allies.

Employing IT–21 technology, Pacific Fleet is examining afloat and ashore force structure, capabilities, and methods of operation in anticipation

of reduced force levels and declining budgets. This means we must place greater importance on joint operations with the other services and allies. We must seek a capability greater than the sum of the parts. In fact, we must find efficiencies and force-multiplyers to remain engaged with nations in the Asia-Pacific. IT–21 technology achieves

staying common with industry is the best way to remain on the cutting edge of technology

all this by offering an efficient, effective, and easily integrated system.

Unlike ground forces which measure force levels by the number of people in uniform, the Navy evaluates its force level by the capability of ships, submarines, and aircraft and how many of those platforms can be operated by its people. In the future fewer sailors will operate more capable systems that perform more missions.

The Armed Forces are pursuing initiatives that will increase our capabilities tremendously. Revolutionary ideas are being examined, including new systems like the smart ship and joint strike fighter and concepts such

as outsourcing, Reserve contributory support, and acquisition reform.

The engine that propels these concepts is sharing information through the best technology. IT–21 ensures that and follows seven precepts to achieve its goals.

■ If the boss doesn't use it don't buy it! IT systems must be used by those in command; otherwise they won't be used at all. Bosses must lead implementation of new technology lest they hold their organizations back. Likewise, designers and purchasers must ensure that leadership is completely sold on plans for information management before precious dollars are spent.

■ Integrate tactical and tactical support areas. With IT–21 one system allows units to merge tactical business (sharing operational pictures, browsing intelligence products, and collaborative planning) with tactical support (logistics, personnel, training, medical, and supply). We must fight and run ships from a single PC-based system. That technology exists. Separate workstations and networks for tactical and non-tactical uses are unreliable, burdensome, unnecessary, and costly.

■ Stay common with industry when acquiring new technology because of time, money, and ease. Industry standards are developed at a pace the military can't match. And by capitalizing on commercially produced hardware and software, considerable R&D costs can be avoided. Staying common

with industry also saves greatly on training and troubleshooting. With "help" buttons, vendor web sites, books, and training videos, industry products come with extensive support. And our people are more familiar with it. While it may take an expert weeks to learn a complex operating system, the youngest sailor can understand and navigate Windows systems. In short, staying common with industry is the best way to remain on the cutting edge of technology while providing a user friendly system.

■ Drive everything to a single PC. All our applications must be connected to a Windows NT-based PC in a client-server environment using off-the-shelf software. The one exception is when it is necessary to use a higher level operating system and workstation. Such instances are becoming rare. Going to a single PC doesn't mean abandoning established information systems. On the contrary, efforts toward one command and control system are needed to force integration. But driving users of these systems to PCs empowers the warfighter as never before with an array of detection, targeting, operational, and logistics information from joint sources and satellites delivered to a single point.

■ Use commercial off-the-shelf (COTS) products for almost everything. With commercial technology, there is little that can't be done with a good office suite and e-mail package running in a client-server environment. Additionally, COTS guarantees interoperability with the commercial sector, which will be increasingly critical as we outsource some support functions. Not only must we use COTS; we must change the way it is purchased. Antiquated acquisition procedures—with long lag times, reams of paperwork, and needless life cycle management—must go. We must not look at computers as physical property but as consumables.

■ Have seamless transition from shore to sea. A ship in San Diego, connected via fiber-optics on a pier to the metropolitan area network, must get underway and switch to satellite so that it is completely transparent to the user. The process must be as seamless as switching from shore to ship power and as easy as roaming on a cellular telephone as the ship moves around the world. Likewise, marines embarked on Navy amphibious ships must be able to plug and play with laptops in a ship's "green" spaces when they come aboard and continue communicating seamlessly ashore. The Marine Corps concept, *Operational Maneuver from the Sea*, states that the capability exists to make the concept truly operational.

■ We cannot allow stovepipes to develop within C⁴I architecture. We must buy icons, not hardware. Money is wasted by

Transmitting report, Kernel Blitz '97.

1st Marine Division, Combat Camera (Charles Grow)

Network Decision Processes in Action

Location of forces when Typhoon Justin struck during Tandem Thrust '97.

Pacific Fleet is developing new ways to acquire and use information to accomplish missions efficiently and effectively at each level of command. IT–21 gives it that ability.

IT–21 is not just a theory; it works. Commander, Third Fleet, in San Diego implemented it in his role as director for the Navy's battle lab, developing systems and field testing them to prove capabilities. With its relative proximity to other Navy labs, universities, and industry, Third Fleet can test almost any system and quickly provide feedback. One test area, Fleet Battle Experiment ALFA (FBE–A), first implemented and tested many experimental systems in March 1997.

FBE–A explored the potential of littoral warfare, including the ring of fire concept designed at the Johns Hopkins Applied Physics Lab. In the past specific units have been tasked to provide fire support to ground units. Using laptop computers and satellite links during the ring of fire test, marines ashore sent information right to the battle group commander, who then directed shipboard missiles or ordnance from the most effective unit. Shipboard weapons were dedicated to targets rather than the entire ship, giving the commander more capability to employ his forces. Web pages and e-mail were used to rapidly and routinely transmit information and knowledge—classified and unclassified, tactical and tactical support. This dramatically increased the speed of command and compressed the time required for coordinating events.

Also during FBE–A, an Air Force joint surveillance target attack radar system (JSTARS) aircraft transmitted real-time pictures of hostile land forces to the command ship, *USS Coronado*. In this test of transmitting such data directly to a ship, the joint operations center onboard quickly relayed information to ground troops, aircraft, and ships for appropriate action. This proved that littoral command posts of the future can use this method to direct campaigns.

Proving the viability of IT–21 in operations, FBE–A quickly revealed
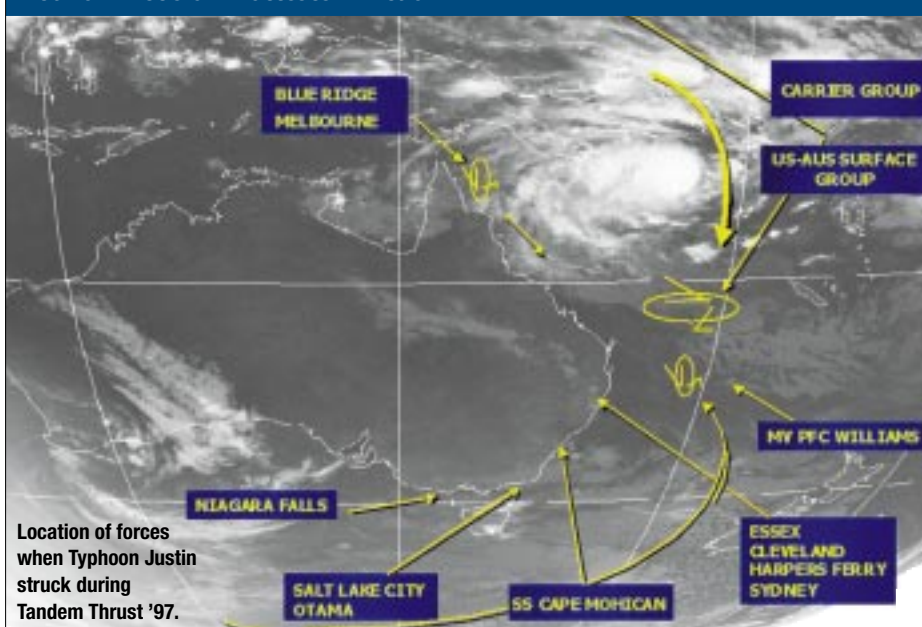
developing stovepipe communications for one segment or another of the military to talk to itself. Though well-intentioned, this has created a labyrinth of protocols, software, and hardware that fills ship spaces, burdens users and technicians, and prevents us from staying on the cutting edge of emerging technologies.

The object of IT–21 is to link U.S. forces and eventually allies in an asynchronous transfer mode network to

enable voice, video, and data transmissions from a single desktop PC. Without this ability the Navy will waste precious resources, time, and effort.

Pacific Fleet maintains a strong, capable forward deployed force in the western Pacific and provides two-thirds of the battle groups in the Arabian Gulf. With 194 ships, 1,600 aircraft, and skilled sailors, marines, and civilians operating them, the challenge for

both the strengths and weaknesses of the technology and its application. Such on-scene evaluations permit instantaneous refinement and reconsideration depending on the level of suc-

Tandem Thrust architecture enabled horizontal dissemination of information while allowing hierarchical decisionmaking

cess. The challenge remains to ensure that these capabilities are disseminated to Pacific Fleet forces that deploy to the western Pacific and Arabian Gulf. The ultimate goal is to have such capabilities in all units regardless of fleet.

The Forward Deployed Naval Force (FDNF), which is based in Japan and centered around *USS Independence* battle group and *USS Belleau Wood* amphibious readiness group, contributes to stability in Asia and serves as a quick response "911" team in a crisis. Always present and often used, these forces were available on short notice during recent tensions in Korea and the Taiwan Straits. A week closer to Asia than ships steaming from the west coast, the Seventh Fleet FDNF immediately projected naval capability in both situations.

Aside from crises, the commander of Seventh Fleet is a joint task force commander and the primary Navy implementor of cooperative engagement with regional allies. With responsibility for introducing proven IT–21 technology and concepts to FDNF, he demonstrates the capabilities with bilateral partners in the region.

In March 1997 Seventh Fleet employed IT–21 operationally during Tandem Thrust '97 in Australia. Conducted immediately after FBE–A, the exercise included a combined U.S.-Australian force in a mock invasion of northeast Australia. Web technology and satellites allowed seamless communications among all forces. Tandem Thrust architecture enabled horizontal dissemination of information while allowing the commander to preserve hierarchical decisionmaking. The extensive information exchange between units was increased enormously by using web technology.

For example, meteorologists posted daily or even hourly updates on the Tandem Thrust '97 web page gathered from a range of U.S. and Australian military and commercial sources to keep all the participants informed about Typhoon Justin. Rather than sending e-mail or reams of message traffic, the web provided the latest weather. With this information, exercise planners were able to adjust schedules to work around the typhoon and complete all events on time.

Subordinate commands and specialty areas followed this model and posted information on the Tandem Thrust home page. This resulted in a virtual command center, with critical information available at the touch of a key which enhanced the scope of the exercise.

Putting such an exercise on line encouraged leaders to utilize IT–21 technology to its fullest. Lessons learned from the daily use of network technology enabled Tandem Thrust '97 participants to develop and then refine processes on the strategic, operational, and tactical levels.

Throughout FBE–A, Tandem Thrust '97, and the recent Pacific Joint Forces Exercise 97–2, Pacific Fleet operationally tested information technology and its applications. IT–21 empowers us to redesign the processes used by warfighters which makes them better informed and enables them to operate jointly and be more responsive when needed. This technology permits Pacific Fleet and the entire Navy to work more closely with the Army, Marines, Air Force, and allied forces.

IT–21 is not an end in itself; it is a means of changing processes. Once a critical mass is achieved it saves resources that more than pay for the technology. More importantly, it provides more capability. By leveraging information technology to reengineer the way we do business, we avoid significant costs as we meet new challenges. These efforts will increase our capabilities and the opportunities for

Pacific Fleet to improve joint operations while fulfilling the Pacific Command strategy of cooperative engagement with the nations of the Asia-Pacific region.

To foster stability in this critical region, Pacific Fleet must lead in technology, and precious resources must not be squandered. Information sharing is changing rapidly, and we have seen the Navy completely alter its outlook on information technology over the last two decades. We have moved from link-11 teletypes and rudimentary weapons control computers to website information management on commercially available Pentium processors.

Some may say that using IT–21 capability is the realm of the impossible, but it is clearly the way ahead. The Chairman has articulated a warfighting vision for the future in *Joint Vision 2010*. The bases of battlefield dominance are dominant maneuver, precision engagement, full dimensional protection, and focused logistics. But they assume that we will have information superiority. IT–21 is the Navy plan for obtaining that information superiority and Pacific Fleet is employing it to lead the way into the next century. **JFQ**

Air Component
Support to Joint Exercises

By EUGENE D. SANTARELLI

The use of computer simulations to create the environment for joint exercises has increased dramatically over the last decade. Since the Gulf War it has become apparent that a change in the dynamics of warfare is underway. In what some describe as a revolution in military affairs, joint warfighting is characterized by compressed planning cycles, precision weapons, and vastly greater battlefield awareness. This highly active, technology-driven atmosphere creates unique challenges for exercise planners. Unlike the scripted, paper-driven exercises of the past, computer simulation has become a must. In fact, it may be the only way to represent the complexities of future warfare. This article describes the development of simulation-driven exercises and offers some insights on the integral role of air component involvement in joint training.

Ulchi Focus Lens

The largest, most complex computer simulation-driven exercise in the world is known as Ulchi Focus Lens (UFL). With the temporary cessation of the Team Spirit field training exercise, UFL has become the major opportunity for the commander in chief, Combined Forces Command (CINC CFC) and component staffs to exercise critical warfighting procedures and decision-making tasks. In this exercise, the training audience—CINC CFC and his staff; the ground, maritime, air, and unconventional warfare component staffs; and a field Army and corps headquarters—requires a complex infrastructure of computer simulations, temporary gaming centers, and communications equipment and links to create a realistic, reasonably detailed wartime environment. Given training objectives and the scale of the exercise, this infrastructure poses a significant challenge to the state of the art in simulations and joint

Lieutenant General Eugene D. Santarelli, USAF, is vice commander, Pacific Air Forces.

exercise planning. Currently, the joint training confederation (see figure below), a collection of service- and

air component training and contributions to joint exercises reached a low point in UFL '95

agency-provided simulations, is the only means of creating a suitable exercise environment for UFL.

Often overlooked in the world of simulations are the contributions of service components to database development, pre-exercise plans, response cell augmentees, controllers, and pre-exercise tests which are critical to creating an effective exercise environment for the joint force commander and other service components in his command.

In UFL '95, the air component commander in Korea—the commander of the Combined Air Component Command (CACC) who is dual-hatted as commander, Seventh Air Force—discovered that a greater level of effort would be required to fully realize simulation-driven joint exercises.

UFL '95

Air component training and contributions to joint exercises reached a low point in UFL '95. Primarily because of failures in the exercise simulation system, major air component

training goals were not met, and the air component contribution to training was diluted. In UFL '95, intelligence reporting and the flow of information critical to the battle damage assessment process did not take place. In this case CACC had difficulty assessing the effectiveness of support for CFC strategic priorities. After thousands of sorties, CACC simply was not getting feedback on the effectiveness of air forces in supporting the joint campaign.

Other anomalies caused added difficulties. Combat results were implausible and disjointed. In some cases weapons performed brilliantly. In others significant capabilities were unreasonably diminished. Rather than creating a realistic wartime environment, simulations gave CACC, CFC, and maritime and ground component commanders fragmented, uneven views of combat in general and—where the air component was concerned—an inaccurate portrayal of employing air forces. From the air component standpoint, the result was that neither JFC nor any service component had the opportunity to fully integrate air forces into the execution of the exercise scenario.
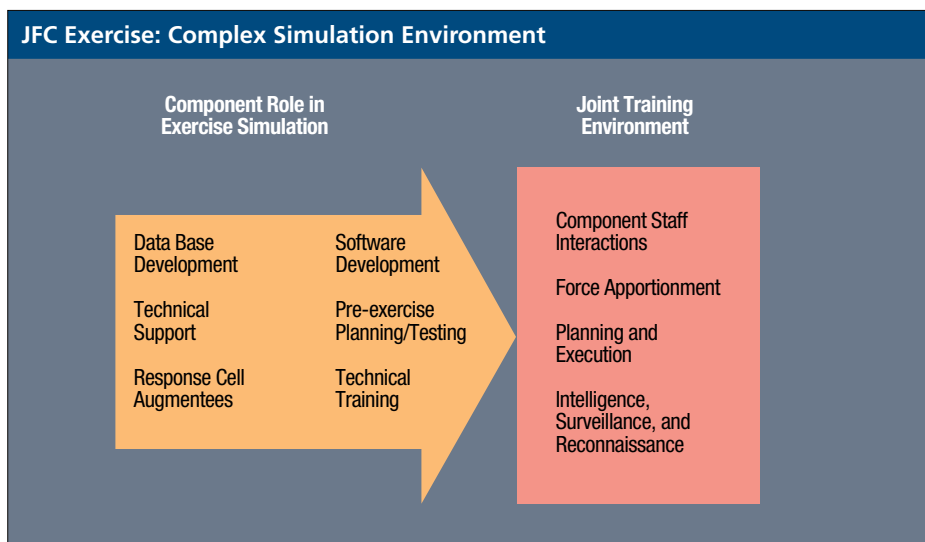
All participants were short changed by the partial representation of air component combat processes, intelligence assessment processes, and staff-to-staff interactions, all of which depended upon a balanced representation of the warfighting environment.

With all the promise of advanced simulation technology, what led to this situation? As usual the devil was in the details.

The air component difficulties in UFL '95 stemmed from a lack of resources for sufficient integration of simulation support into exercise planning and execution. Unlike commands in both Europe and CONUS, little in the way of manpower and funding has been available for simulation-based training for air components in the Asia-Pacific. Consequently, in UFL '95 the temporary air component simulation center established for the exercise at Osan Air Base, Korea, was ill equipped and staffed. The equipment on loan arrived late and was insufficient. Qualified simulation center augmentees were in short supply. The outcome was ineffective control of the simulations, lack of training realism, and lost training opportunity. Pre-exercise planning was one culprit.

Development of simulation databases was not coordinated with corresponding command, control, computer, communication, and intelligence (C⁴I) systems databases. This was telling for the air component since target databases are essential to battle damage assessment, and intelligence combat assessment was insufficiently coordinated with simulation databases. Accordingly, targets struck in simulations did not conform to those in the air component training audience warfighting plan. Expected damage did not occur or was not reported, and rational adjustments to warfighting plans and intelligence estimates were made difficult if not impossible. Unstructured development and testing of databases led to similar incongruities in other areas. This resulted in further losses in effectiveness of air component interaction with the other components.

CACC; commander, Pacific Air Forces (PACAF); and the Chief of Staff of the Air Force turned that situation around, thereby signalling a commitment to joint training. The Chief of Staff instructed the director of Modeling, Simulation, and Analysis at Headquarters, U.S. Air Force to gather a team and implement a $10 million effort to remedy the shortfall. Their task was to design, man, equip, test, and

JFC Exercise: Complex Simulation Environment

Component Role in Exercise Simulation

Data Base Development

Technical Support

Response Cell Augmentees

Software Development

Pre-exercise Planning/Testing

Technical Training

Joint Training Environment

Component Staff Interactions

Force Apportionment

Planning and Execution

Intelligence, Surveillance, and Reconnaissance

U.S. and Japanese officers monitoring simulation, Keen Edge '96.

U.S. Air Force (C.M. Ricardo)

operate a new simulation center located at Osan Air Base in less than a year with a virtual program management office which included organizations from around the world.

Integration

The Air Staff program office led the overall effort, hired contractors to permanently operate a simulation center at Osan, and developed a program to select and train Air Reserve Component personnel to augment the center for UFL '96. The Warrior Preparation Center (WPC) contributed expertise from Einsiedlerhof, Germany, and the Electronic Systems Center (ESC) at Hanscom Air Force Base tested reengineered systems. PACAF developed technical options, coordinated real-world and simulation databases, designed and installed the simulation local area network, and with the guidance of the CACC staff acted as focal point for integrating technical plans and pre-exercise milestones. Planners and specialists tied efforts together in

Korea by developing physical facilities and doing hands-on work to create technical infrastructure at Osan. Finally, contractors analyzed the UFL '96 exercise information flow and came up with a design to support technical systems in the new facility. Attaining this goal in under a year was difficult. Headquarters, U.S. Air Force, PACAF, and CACC worked together with the Korea Battle Simulation Center (KBSC), the CFC activity responsible for simulation-driven exercises in the theater.

Through video teleconferencing, planning conferences, in-process reviews, and thousands of e-mail messages, an implementable plan took shape. Simulation systems and communications networking equipment were delivered to Korea in record time. A building at Osan Air Base was remodeled and the local infrastructure was expanded to include more than a hundred simulation workstations. Communications links between the simulation

center and actual air component C^4I system were established. One spin-off was improvement of the joint simulation infrastructure in Korea. For the new Air Force simulation center to interoperate with the joint simulation system, aging communications network components were upgraded. The result was a much more capable, robust exercise communication infrastructure for all participants.

With the installation of the simulation infrastructure in Korea, the Air Force team planned and implemented a pre-exercise test of simulations and databases. One month before UFL '96, as the technical infrastructure was being established, exercise simulations and actual databases were installed on WPC computer systems. In addition, PACAF collaborated with the CACC staff and WPC to install a contingency automated planning system—the air component C^4I system—on the WPC simulation network. Subsequent testing of simulation systems was effective and represented the first pre-test of

Walker Battle Simulation Center.

DOD (Helene Stikkel)

UFL simulation systems, databases, and C⁴I systems prior to the exercise.

The result of this effort was the establishment of the Korea Air Simulation Center (KASC), a small, permanent site at Osan. Its staff was selected to cover the spectrum of expertise needed to plan complex, simulation-driven events. Experts in operations, logistics, intelligence, databases, communications technology, and computer systems were identified in time for UFL '96. Although Murphy's Law haunted the exercise, CACC declared it

the Korea Air Simulation Center contributed to exercise objectives and laid the basis for success in UFL '97

the best air component simulation to date. More importantly, KASC contributed significantly to achieving CINC CFC exercise objectives and laid the basis for greater success in UFL '97.

Proof of Concept

KASC contributed greatly to "flawless simulation support" of UFL. With the Directorate of Command and Control at Headquarters, U.S. Air Force; PACAF; the Air Force Agency for Modeling and Simulation (AFAMS); ESC; and WPC, KASC fielded a greatly improved version of the air warfare simulation

(AWSIM), used a newly developed interface between C⁴I and simulation systems, and implemented an ESC software solution that allowed simulations to feed the exercise air picture to the global command and control system.

The performance of KASC during UFL '97 set a new standard for training in the exercise and was the proof of concept for the effort to establish a simulation site in Korea. The KASC role in a pre-exercise load test eliminated many technical problems plaguing previous exercises. More importantly, the KASC effort improved the quality of training for all participants. The quality and realism of theater missile defense play was vastly enhanced. The responsiveness of air forces to JFC requirements was demonstrated more clearly than in previous exercises in which simulation anomalies interfered. The training audience executed air operations in support of CINC goals in an environment unmatched in exercises in terms of realism and employment of actual C⁴I systems. While challenges remain in providing simulation support to exercise intelligence processes, UFL was a solid success. Beyond establishing a simulation site to

support joint and air component training in Korea, this effort led the Air Force to reassess its support of simulation in the Pacific theater and to review the way it organizes for major joint exercises worldwide. The outcome of this reassessment was the PACAF modeling and simulation program and key lessons about Air Force exercise support.

Lessons

As the Air Force implemented better support of UFL and established the air component simulation facility in Korea, a number of valuable lessons emerged about Air Force support of its air components in joint exercises.

Simulation planners and technicians must be stationed in theater to be thoroughly involved in the JFC exercise planning process on a daily basis as needed. Unless the subject area experts (on simulation planning, database development, simulation control, communications planning, pre-exercise training, and technical testing) are present and accountable to the air component for routine involvement in exercise planning, simulation-driven exercises are unlikely to accurately represent air component capabilities for the JFC training audience. KASC success supports this assertion.

KASC has simulation experts in various areas who have vastly improved the quality of air component play in exercises by being directly engaged with KBSC, the CFC exercise simulation organization charged with overall planning responsibility for simulation-driven exercises in Korea. This engagement has run the gamut from simulation control and communications architectures to database coordination. This level of cooperation cannot be achieved by long distance and requires a minimum presence of air simulation experts in-theater to work with exercise simulation planners who, unlike single service training events, are members of the JFC staff. KASC is a good model for describing the minimum presence needed in-theater to support this interaction.

Another issue is interaction among members of the air simulation cadre and air component commander's staff. Daily interaction between KASC and CACC staff at Osan Air Base has been extremely effective in supporting training goals, developing simulation interfaces to C⁴I systems, and integrating simulations into real-world warfighting processes. The presence of KASC at Osan allowed more effective coordination than in earlier events. The PACAF modeling and simulation program is patterned on the KASC formula of presence in the theater and routine engagement of air simulation cadres in joint exercise simulation planning.

PACAF established a modeling and simulation program to support exercise requirements throughout the theater

Key joint exercises should be supported by an integrated Air Force cross-functional team. Because major exercise goals include testing joint doctrine and emerging technology in addition to battlestaff training, air components need more expertise than is commonly found on air component staffs. For example, Air Force specialists on employing unmanned aerial vehicles or other systems not yet fielded may provide key insights into capabilities, limitations, and employment procedures during the exercise. Having the best technical expertise on scene is essential to correct assessment of employment procedures and combat performance of new weapon systems.

Essential elements of the Air Force simulation infrastructure are likely to function properly if established permanently at the exercise site. For example, simulation communications links are far more likely to function well during an exercise if used and tested often. The same logic applies to automated interface between simulations and air component C⁴I systems. In-place systems will be far more reliable if technical components and interfaces are used only as an exercise approaches.

Air component play can be improved with trained exercise simulation support and response cell augmentees. In UFL '96, 80 Reserve component augmentees were trained for the Korea Air Simulation Center; during UFL '97, 100 augmentees were involved. Trained in AWSIM and C⁴I, the Reservists enhanced the quality of air play. If continued, air component representation will be improved as augmentees gain experience.

Finally, exercises such as UFL merit dedicated support by Headquarters, U.S. Air Force, major commands, and agencies responsible for developing Air Force training simulations. During UFL '97, ESC (the AWSIM developer) played a critical role in simulations. Having the software developer present was invaluable in resolving technical problems. Similarly, assistance from both AFAMS and the Directorate of Command and Control at Headquarters, U.S. Air Force, brought expertise from across the service to bear on an exercise critical to the readiness of JFC in Korea.

Based on the UFL experience, PACAF established a modeling and simulation program to support joint and air component exercise requirements throughout the Pacific theater.

Modeling and Simulation

PACAF modeling and simulation is designed to address the void in training experienced by Pacific air components. PACAF air components face simulation shortfalls identical to those encountered in Korea. Key exercises in Japan such as Keen Edge and bilateral training by the Japan Air Self Defense Force and U.S. Air Force lack support for robust air component play. Eleventh Air Force, the Alaskan air component, faces a similar need for better simulation supported training and supplemental assistance with the simulation component of joint exercises. Thirteenth Air Force, the PACOM deployable air component staff for JTFs, lacks the simulation capability to train on the operational level. In wartime air component staffs con-

tribute augmentees to JFC staffs or form the core of air component staffs. Lack of adequate simulation capabilities makes it difficult for PACAF air components to produce realistic command and control training for wartime roles.

PACAF modeling and simulation will include support facilities at both Osan and Hickam Air Force Base. This program is designed to provide theater air component staffs with the means of conducting in-place computer-assisted exercises and training on real-world C⁴I systems. It will supply training events as small stand-alone air component exercises to reinforce core competencies or a strengthened part of existing joint exercises in Korea and throughout PACOM.

While separate organizations, these sites will be mutually supportive in terms of personnel, equipment, and expertise. For example, PACAF modeling and simulation resources will be placed against requirements generated by peak events such as UFL. Key to the success of relatively small simulation sites will be assistance from the new AFAMS and the Air Force ESC, the developer of exercise simulation system software.

Air Force support for joint exercises in the Asia-Pacific region has come a long way since UFL '95. Following that exercise, a corporate Air Force approach to simulation support of joint training events emerged to the benefit of all participants. Considerable progress has been made in areas such as presentation of a common operational picture driven by simulations. Theater missile defense procedures are exercised more realistically based upon improved simulations. Promising long-term benefit, lessons from establishment of the air component simulation capability in Korea are being applied to principal exercises across the joint exercise program. The outcome is certain to increase readiness for JFC and air component staffs.   **JFQ**

Ulchi-Focus Lens '97:

UFL '97 briefing.

DOD

Putting *JV 2010* into Practice

By J O H N   H .   T I L E L L I ,   J R .

The concepts articulated in *Joint Vision 2010* and expanded in *Concept for Future Joint Operations* are essential if the U.S. military is to remain the dominant fighting force in the world. In Korea, Combined Forces Command (CFC) put the concepts into practice during a theater wide joint and combined command post exercise (CPX), Ulchi Focus Lens '97 (UFL '97).

The mission of United Nations Command/Combined Forces Command/U.S. Forces Korea is to maintain the armistice, deter war, and if deterrence fails defeat a North Korean attack. Some 700,000 Korean and 37,000 American soldiers, sailors, marines, and airmen are able to accomplish the CFC mission through a commitment to training readiness and force modernization. The basis of readiness is a combined and joint exercise program that includes events designed to train

joint and combined commanders and staffs on warfighting skills, exercise campaign plans, and practice various contingencies in case of renewed hostilities. It also enables complex staff organizations to practice new processes, coordinate with each other, and refine CFC standard operating procedures. Moreover, exercises permit us to share new concepts, practice tactics, techniques, and procedures, and experiment with emerging technologies.

The keystone exercise for CFC is UFL, the largest simulation supported, theater wide joint and combined command post exercise. In 1997 this exercise involved the governments of both

General John H. Tilelli, Jr., USA, is currently commander in chief, Combined Forces Command, and also has served as Vice Chief of Staff, U.S. Army.

the Republic of Korea (ROK) and the United States, including some 16,000 service members, DOD civilians, and contractor personnel. It was conducted August 18–29, 1997, with participants connected by simulations and a real-world C⁴I architecture from sites in South Korea, at Fort Hood, Texas, and afloat. UFL '97 was the 22ᵈ annual CPX in this series which began in 1975.

Practicing Concepts

There are several reasons for sustaining UFL at its current level. The most obvious is the North Korean threat to freedom and stability on the peninsula and throughout northeast Asia. That threat is real, unpredictable, and dangerous. The situation in the

an underlying theme of UFL '97 was the CFC goal to put *JV 2010* concepts into practice

North is uncertain because of its economic dilemma. Yet the Kim Jong-Il regime appears firmly in control and the North Korean military, the world's fourth largest, continues to modernize despite a bleak economic outlook.

As the economy of North Korea deteriorates it is certain that the regime and its military will look for signs of weakness or waning in our commitment to South Korea. Forward positioning of Pyongyang's forces just 26 miles from Seoul is another cause for concern.

UFL is an exercises that helps us remain strong and vigilant. It has the additional benefit of reminding the North and other potential adversaries of a firm allied resolve to protect freedom and stability on the peninsula and in the region. It strengthens the teamwork between the governments and militaries of the Republic of Korea and the United States. It is a forum for exchanging ideas on doctrine, organization, and technology. Most of all, it is the backbone of training readiness.

While we are confident that Washington and Seoul will resolve regional tensions through diplomacy and peacetime engagement, it remains the prime responsibility of our combined defense team to deter conflict and, should that fail, to fight and win. UFL '97, like our

other exercises, is a significant part of this deterrence package.

An underlying theme for UFL '97 was the CFC goal to put *JV 2010* concepts into practice. On reflection it was concluded that battlefield situational awareness, partly enabled by a common relevant picture, is a prerequisite for full spectrum dominance. Thus it was decided from the outset to configure simulations, C⁴I systems, and experimental technologies in order to better understand the enemy and battlespace to make effective decisions and take action before the enemy could react.

The ultimate outcome sought was to maximize joint and combined relative combat power to fight and win decisively. We looked for ways to achieve synergy with combined capabilities in an asymmetric manner to offset the enemy's numerical advantage and sustain operational initiative.

One goal was to use our decision support tools to focus on when to decide rather than labor over what to decide. This is a key distinction. The concepts in *JV 2010*, enabled by information warfare capabilities, allow us to focus on future decisions and outcomes instead of on present or past operational situations.

To practice dominant maneuver, precision strike, full dimensional protection, and focused logistics we built and tested a C⁴I system that allowed joint and combined commanders and staffs to climb the cognitive ladder. We employed UFL '97 to gauge how well members of the command understood a particular battlefield situation and visualized a future outcome.

The C⁴I concept was ambitious. Because of the daily theater wide operations tempo and an influx of new commanders and staff members, we maximized opportunities during the exercise. In simple terms we adopted the framework for *JV 2010* experimentation using a common operating picture. The first step was integrating the

joint confederation of models under the aggregate level simulation protocol so that each service component model could feed data to others linked to the confederation. The joint models included the Army corps battle simulation system at Yongsan and Camp Casey, Korea; the Navy research, evaluation, and systems analysis model at Suwon; and the Air Force air warfare simulation model at Osan.

Next an interface was established between many real world C⁴I systems, including several experimental technologies so each system could exchange data and information. The third step was to build an electronic link, with redundant pathways, between the simulation models and C⁴I systems to replicate realistic national and theater level sensor feeds to the C⁴I systems.

The final step was creating a theater wide classified internet, complete with CFC home page and web browser so command posts could access pertinent common operating picture information, send recurring status reports, and communicate via e-mail.

Assessment and Evaluation

While transitioning to the global command and control system (GCCS)-common operating picture, the nerve center of this system is the theater automated command and control information management system (TACCIMS) designed exclusively for the theater of operations. TACCIMS is the classified, U.S./ROK tactical English/Hangul means of moving digital information.

CFC tested this system of systems before the exercise. Once some refinements were made the common operating picture was broadcast over command and control personal computer (C²PC) terminals at command posts throughout Korea. It was also broadcast over several joint force air component command (JFACC) joint situational awareness system (JSAS) workstations located at component command headquarters and on a three dimensional screen at the CFC theater air, naval, ground operations command center, Command Post Tango.

It took many subject matter experts to build the CFC common operating picture including members of the

Korea Battle Simulation Center, command staffs, 1st Signal Brigade (operational control to Eighth U.S. Army), and military and civilian agencies off the peninsula.

To help evaluate the effectiveness of theater wide situational awareness during UFL '97, CFC used the Army Vision 21 information management system to compare the battlefield situation from the simulation models with the common operating picture displayed by CFC. The exercise director and senior observers used Vision 21 to develop C² and *JV 2010* lessons learned

creative counter-fire was one of several warfighting improvements over previous UFL exercises

for after action reviews. Vision 21 aided discovery learning by members of the combined defense team.

Another important CFC assessment and evaluation method was the decision to solicit help from research and evaluation consultants who looked at CFC battlefield visualization and common operating picture systems used in the exercise, evaluated them, and recommended improvements. This firm provided the command with an extensive post-exercise report. CFC was pleased to learn that its own observations and internal assessment closely matched those in the report.

Considering the many objectives CFC established for its CPX, UFL '97 was a tremendous success. We made great strides in practicing *JV 2010* concepts and achieving a common relevant picture. During the exercise we immersed commanders and staffs in the warfighting plan, trained essential warfighting skills, and strengthened teamwork between both governments and militaries.

Many new warfighting methods worked well in UFL '97. A highlight of the exercise was the improvement in the CFC ability to plan and direct a lethal counter-fire battle that took advantage of experimenting with several concepts from a newly created counter-fire primer for Korea.

With one U.S. field artillery brigade from III Corps acting as the

counter-fire headquarters, CFC used an improved common operating picture and the synergism of air component close air support with the ground component counter-fire systems for unparalleled success in reducing the significant fire support capability of the enemy. The CFC creative counter-fire program was just one of several warfighting improvements over previous UFL exercises.

The improvements in common operating picture enabled by C⁴I architecture also allowed experimentation with tactics, techniques, and procedures. Two examples were the combined naval component command maritime interdiction operations campaign and CFC simultaneous command and control of air interdiction sorties, close air support sorties, and attack helicopter operations for decisive, synergistic effects throughout the depth of the theater.

For the first time, largely because of improved situational awareness, creative thinking, and enhanced communications, the naval component controlled Army attack helicopter squadrons, in coordination with 6th Cavalry Brigade from the ground component command, to interdict enemy amphibious unconventional warfare penetrations. The naval component headquarters aboard *USS Blue Ridge* vectored AH–64s to enemy landing sites before it could disembark from submarines or landing craft thereby offering a new level of littoral, maritime interdiction versatility. Allied sensor technologies and communications between the naval component command and 6th Cavalry Brigade enhanced the ability to rapidly respond to the infiltration.

While events unfolded offshore, CFC aggressively pursued enemy operational formations, artillery groups, logistics nodes, and surface to surface missile units from skies over the theater of operations. Using the common operating picture, enhanced by effective C⁴I, CFC combined the effects of strike capabilities by the air component command with those of attack helicopters by the combined aviation component.

The combined air component quickly achieved air superiority in the campaign. Capitalizing on early air campaign successes, the CFC Combined Targeting Board, Air Space Management Center, and component commands worked together to blanket enemy formations with the lethal fires of the combined Air Force and combined aviation component.

While air interdiction sorties went deep to target enemy second operational echelons and reserves, close air support and attack aviation squadrons worked together in the main battle area to attack leading enemy formations and artillery groups.

The net effect of these simultaneous, around the clock operations was to upset enemy attack plans. The enemy sustained heavy losses and also found it extremely difficult to move attacking mechanized and armored units, support infantry with effective artillery, or reposition reserves.

Man and Machine

CFC successfully exploited the synergism of its air platforms by visualizing the sky over the Korean theater and the enemy on the ground in real time. That battlefield visualization enabled the orchestration of precision strike and dominant maneuver.

Another first for UFL '97 was deploying a joint space support team (JSST) to the theater, complete with a supporting space based campaign plan and joint tactical ground station (JTAGS). JSST was tied into the theater common operating picture for real time warning of a Scud surface to surface missile launch against CFC. Locating it in Korea with JTAGS strengthened overall theater missile defenses. It gave new meaning to full dimensional protection.

Success in implementing *JV 2010* concepts began with the common operating picture that was based upon an extensive C⁴I architecture involving man and machine. Many C⁴I systems and automated technologies worked well, although some were more capable than others. UFL '97 was the best on record for the joint simulation confederation. The simulations came together smoothly and yielded a stressful, real time exercise scenario for combined and joint staffs. The mastery

UFL '97 situation update at Korean command post.

USS Blue Ridge.

of national and theater intelligence sensors and provides a three dimensional view of the battlespace including radar, artillery, terrain, and communications networks. It has also taken the peninsula into the first steps of an interactive wargaming process that will greatly assist planners' course-of-action development.

This system has notable implications for our ability to analyze reconnaissance information, perform real time battle damage assessment, direct artillery fire, and determine enemy and friendly dispositions anywhere within the theater. Focused intelligence is not a common operating picture, but it is a major input device to a combined picture.

Another system—used by the Theater Deep Operations Coordination Center at Command Center Seoul—was the automated deep operations coordination system. It is an effective aid to fire support and deep operations. Yet it is a temporary replacement for the common targeting system until the Army fields its field artillery target data system in Korea.

CFC evaluated the utility of several other systems during UFL '97. We encouraged staffs to experiment with systems such as the joint operational visualization environment, which portrays a three dimensional view of the battlespace, blue and red forces, terrain, and Scud attacks on an 18 by 20 foot screen. Each system had unique capabilities and limitations. The CFC experience with them is similar to that of other theaters where emerging technologies are brought together to support a theater level warfighting exercise.

The command found it had much to learn about combining current and future information technologies to provide a seamless common operating picture that ultimately will enable us to make decisions more quickly and effectively than an enemy. With the advent of this technology on the peninsula,

of simulation technology by the Korea Battle Simulation Center enabled players to direct their energy on warfighting and experimenting with *JV 2010* concepts and to attain a common relevant picture.

All C⁴I systems used during UFL '97 gave CFC staffs the potential to build a common operating picture, which is the vital first step toward full spectrum dominance.

Of the systems available to CFC in UFL '97, JSAS offers tremendous utility. It provides real time U.S. multi-source intelligence data and models a range of U.S. sensor capabilities. It is a useful analytical planning tool, has three dimensional display capability, and incorporates its own communications suite. The ability to fuse data rapidly and disseminate the information theater wide is the real strength of the system. It is an interim step toward achieving situational awareness until the potential of the GCCS-common operating picture is maximized and visualization requirements are met. Meantime, JSAS provides an important first step among the many steps we will take to provide the theater a fully capable situational awareness tool.

C²PC is worth pursuing. It is a relatively inexpensive, user friendly, NT-based server with access to GCCS. Sixty-four TACCIMS workstations throughout the command had access to a PC-based common operating picture, releasable to ROK.

the automated deep operations coordination system is an effective aid to fire support and deep operations

The focused intelligence system of systems offers significant capabilities and will continue development and refinement. Focused intelligence integrates and fuses information from ground, sea, and air components into a common view of the battlespace. Focused intelligence is an automated way to portray the battlespace to all components and allies and is the result of analysis and synthesis of collected data. It accepts data feeds from a host

we are on the verge of full spectrum dominance which will save lives and resources.

CFC determined that the combined effectiveness of various systems used during UFL '97 is proportional to compatibility with each other, training proficiency of the operators, connectivity to theater communication and automation systems, and ease of use by allied personnel.

The Relevant and Irrelevant

Several conclusions were drawn from the exercise. CFC experience suggests that the joint community is right on target in its method of building a C^{4}I system of systems from the bottom up. It is more compatible, user friendly, and functional and less redundant than the stovepiped systems that proliferated after the Gulf War. By utilizing a systems engineering approach to C^{4}I structure, we can achieve a common relevant picture with the potential to achieve full spectrum dominance. We are merging joint and combined systems with a cogent C^{4}I concept, including a demanding training regimen and evaluation of factors affecting our ability to attain a common relevant picture.

The information operations challenge was approached like any other tactical or operational problem. In this case we began with a mission analysis that concerned a unique information age enemy which was neither another person nor an opposing weapons system but rather was possible incompatibility between joint and combined C^{4}I subsystems and English/Hangul.

Part of the solution to problems of the information age involves organizational structures as well as hardware and software. We are studying those structures and related roles and missions commensurate with the degree of future uncertainties, the task or function each must perform, and the minimum information each needs to complete its mission.

The layout of command posts is also being investigated. As we continue to add enhanced information systems, the physical design of these facilities

must maximize information exchanges. They must also filter a burgeoning volume of information. We must assist by pursuing the right information and enabling subordinate components to pull what they need.

The CPX demonstrated that ample information can be generated. As in other commands, the concern is differentiating between the relevant and irrelevant. Using the critical requirements of the commander as a filter, C^{4}I architecture can be manipulated to deselect information irrelevant to effective and timely decisionmaking.

A sustainment training program for C^{4}I systems must be established. We cannot wait for periodic exercises to train operators on systems. CFC is finding ways to employ the same systems daily. Both our C/J-3 and C/J-6 are considering how to make TACCIMS into a theater wide internet system for all everyday peacetime business.

Another lesson is that informal communications and decisionmaking channels will remain as valid in the 21st century as in the past. In an age when our command posts manage and analyze increasing amounts of information, commanders need an informal way to balance the demands of the C^{4}I system of systems through their own intuition and that of their subordinates.

Korea has bilingual, bicultural, and security considerations that magnify the C^{4}I challenge for the alliance. Both parties have cultures that are unique and rich in tradition. The differences are what make our alliance strong. Even though each side brings complimentary strengths to the table, cultural and linguistic distinctions may be the most important consideration for joint and combined theater wide C^{4}I architecture. Consequently Americans and Koreans are collaborating every day to determine the best methods of enabling a common relevant picture.

There is another UFL '97 lesson: more is not always better. After assessing the results of our varied experiments, training, and demonstrations, we must decide the minimum effect that C^{4}I architecture must achieve at each level and what system or system of systems to employ. Also, since we did not exercise the potential effects of an enemy attack on our C^2 systems, we

must put them to the test of simulated combat. The enemy will always have a vote; we must be prepared.

We must develop a simulation tool that accurately portrays an enemy capable of attacking or deceiving our C^{4}I structure. How well we understood the battlefield situation during UFL '97 is far less important than how well we might understand it during a conflict.

UFL '97 was enormously successful. CFC took a major step in moving *JV 2010* concepts from theory into application. Advances in information age technologies have ushered in a new era in the evolution of warfare. While technology will never provide perfect information or certainty, innovations over the last ten to fifteen years place us on the verge of providing timely and accurate enough information to give commanders sufficient certainty to make quicker and better decisions than our enemies. With better decisions commanders can seize and retain the initiative.

CFC is searching for combined situational awareness and battlefield visualization each day. It is obvious that attaining a common relevant picture is absolutely fundamental to moving *JV 2010* concepts from theory to practice. Our C^{4}I system is the nerve center that connects the muscles of the command to its brain. Situational awareness rests in the brain and from there concepts emerge to ensure full spectrum dominance. We are moving even closer to turning the concepts contained in *Joint Vision 2010* into an operational way of life within the Korean theater. **JFQ**

COUNTERDRUG
Operations in U.S. Pacific Command

By J A M E S   C.   K R A S K A

Lieutenant James C. Kraska, USNR, is legal advisor for Joint Interagency Task Force West.

The first duty of government is to protect its citizens against all threats, both foreign and domestic. The President's national drug control strategy identifies one such danger as illegal drugs because they attack and subvert the social and economic fabric of the Nation. The volume of drugs which enter the country and the demand for them continue to be a cause of great alarm. While cocaine use has dropped, consumption of marijuana and other illegal drugs is increasing among young people. Perhaps most troubling is that the rate of heroin and methamphetamine use is also growing.

The social and health impact of illegal drug use amounts to $70 billion in illness, death, and crime each year in the United States.[1] Drugs destroy families and overwhelm the criminal justice, health, and social service systems. Most Americans identify it as one of our most acute problems.[2] Moreover, in the source nations of Asia and South America, crime and profits related to trafficking in drugs erode emerging democratic institutions and legitimate economic activity. These worldwide effects make drug trafficking a major international security issue.

DOD Counterdrug Support

At the height of the cocaine epidemic of the late 1980s both President Bush and Congress recognized that assets unique to the military could bolster counterdrug efforts. Legislation enacted in 1989 tasked DOD to serve as lead agency in detecting and monitoring illegal drugs entering this country. The Armed Forces were also authorized to provide counterdrug-related training and other support to domestic and foreign law enforcement agencies. The National Defense Authorization Act of 1990 broadened that basic mandate to include intelligence analysis and linguistic expertise, the establishment of dedicated counterdrug C^3I centers, and air and sea transportation.

The President has outlined five comprehensive strategic goals for reducing illegal drug use in the United States and assisting friendly nations in combatting both consumption and trafficking. Each is underpinned by supporting goals; the first three focus on demand reduction, drug-related crime, and health and social costs. Studies indicate that demand reduction policies are among the most effective means of reducing drug use among Americans. Success depends primarily on law enforcement, schools, and social institutions. In cooperation with other agencies on the Federal, state, and local levels, the military plays a principal role in supporting the fourth goal, shielding our land, sea, and air frontiers from the drug threat, and the fifth goal, disrupting foreign and domestic sources. By creating several geographically-focused joint task forces, DOD exercises a lead role in the detection and monitoring of international drug traffic and supports law enforcement efforts.

Counterdrug Task Force

U.S. Pacific Command (PACOM) relies on Joint Interagency Task Force (JIATF) West for support of national counterdrug objectives in the Asia-Pacific region. Both Joint Task Force (JTF) Six and JIATFs South and East complement such efforts in their respective areas of responsibility. Located in

Ground base radar site, Peru.

1st Combat Camera Squadron (Richard T. Kaminski)

Alameda, California, JIATF West is a standing organization with participation by all the services and the Federal law enforcement and intelligence communities. It brings resources to bear in support of law enforcement agencies and country teams to disrupt international drug traffic.

Because PACOM includes or borders on the primary production and transshipment centers for both heroin

heroin and cocaine have entirely different production and transshipment characteristics

and cocaine, JIATF West divides counterdrug efforts between heroin flowing from Southeast Asia and cocaine shipments across the eastern Pacific. Heroin and cocaine have entirely different production and transshipment characteristics, complicating counterdrug activities. Grown domestically in Hawaii and other states and also imported from Mexico, marijuana is prevalent in the Pacific as are various synthetic methamphetamines. To identify illegal drugs coming into the United States through international waters and airspace, JIATF West maintains a vigilant detection and monitoring force comprised of aircraft and ships in the eastern Pacific. Operations

conducted by this flexible force are cued by information collected by task force assets and others.

In Asia the command has developed an operations and intelligence program that enhances efforts by American embassies and country teams working with host nations to combat heroin and other drugs. Such activity complements the President's emphasis on fostering peace, democracy, and stability abroad and makes the task force a relevant instrument in the counterdrug community. This support is directed at reducing the flow of contraband into the United States while preventing the profits of traffickers from contaminating emerging democracies and market economies.

The Eastern Pacific

Much of the attention on illegal drugs in the last decade has focused on interdicting cocaine from South America. While cocaine use has declined 74 percent since its high in 1985, there are still 1.5 million U.S. users. Disrupting trafficking is the chief international drug control priority.[3] Despite a dramatic fall in the number of occasional users, frequent users have remained constant at more than

550,000. Since this category accounts for two-thirds of demand, the amount of cocaine consumed has not gone down measurably in recent years.[4]

Although the U.S. Government seizes 100 metric tons of cocaine per year, this interdiction has little impact on price or availability.[5] It is estimated that up to two-thirds of the cocaine which enters this country passes either on or over the eastern Pacific en route to Mexico and ultimately the United States.[6] All international waters and airspace off Mexico west of 92 degrees west longitude are within the PACOM area of responsibility, and JIATF West is charged with patrolling this busy south-north smuggling corridor. The challenge for interdiction is difficult for the same reasons that bedevil operations in PACOM—dealing with time and distance. It is twice as far from Panama to San Diego as from Panama to Miami, and a lack of chokepoints in the eastern Pacific contrasts with narrow passages in the Caribbean and Gulf of Mexico. Yet despite these obstacles, JIATF West has had considerable success, including recent operations that have led to several multi-ton seizures of cocaine or marijuana by law enforcement authorities.

The Golden Triangle

Although widespread cocaine use has generated national concern, heroin—processed from opium grown primarily in Asia—is attracting increased attention. Heroin production has grown 60 percent in the past eight years to 360 metric tons. The number of addicts in the United States grew throughout the 1970s and 1980s and is now estimated to exceed 600,000.[7] Though just as deadly and addictive as cocaine, the special opiate properties of heroin permit addicts to develop long-term tolerances, thus ensuring a steady demand. It is especially dangerous because it has hooked many addicts and is viewed as a partner to cocaine, capable of moderating that drug's stimulating effects. Once regarded as the drug of dead-end derelicts, heroin is surfacing in the rock music and fashion industries and may be acquiring a chic glamour and respectability.

E–2C patrolling the Caribbean.

U.S. Navy (Michael Rinaldi)

High-purity Southeast Asian heroin dominates the American market. The PACOM area of responsibility includes the world's predominant source and transit countries for shipments entering the United States. Opium and its derivative heroin are

the vast Pacific Ocean has dictated a strong maritime component to PACOM strategy and planning

produced in or transshipped via every nation of Southeast and Southwest Asia. The Golden Triangle, the point along the Mekong River where Burma, Laos, and Thailand meet, produces the greatest amount of opium and refined heroin. The largest single producer of heroin is Burma, which accounts for nearly 65 percent of the estimated world opium poppy cultivation and 60 percent of potential opium gum production, enough to make 250 metric tons of refined heroin.[8] Production and trafficking in Burma are controlled by groups of armed ethnic bands, including the United Wa State Army and the Myanmar National Democratic Alliance Army. Laos produces about 200 metric tons of opium gum, enough for 20 tons of refined heroin. Because of a

long and successful anti-drug campaign, Thailand produces very little heroin; but its excellent transport, financial, and communication systems are used by drug traffickers.

China, Vietnam, and Cambodia do not produce large amounts of heroin for international markets, but they include centrally located transit routes from the Golden Triangle. China, which had once all but eliminated heroin, is again experiencing a rise in consumption. Southern China is a key route for Southeast Asian heroin destined for ports along its east coast, where the drug trade encounters shipping bound for the United States and other markets in the West. Eliminating drugs featured prominently in China's tough "Strike Hard" anti-crime crackdown of 1996, but economic growth is expected to increase heroin and opium consumption. Vietnam produces 25 metric tons of heroin per year, much for domestic use.

The vast expanse of the Pacific Ocean has dictated a strong maritime component to PACOM strategy and planning, and this focus is reflected in

Golden Triangle along the Mekong River.

U.S. Navy (James C. Kraska)

counterdrug operations. Some 70–80 percent of drugs shipped to this country arrive on board every manner of commercial and noncommercial vessel from container ships to fishing boats. Burgeoning economic growth in Asia and a dramatic growth in international trade across the Pacific have provided new routes and means for heroin and opium trafficking among Asian nations and to the United States. Varied modes of shipping, ocean distances, and a lack of chokepoints pose a unique challenge for the United States and its allies in Asia and make interdiction far more difficult than in the relatively confined area of the Caribbean. Large heroin caches travel through busy, sophisticated ports such as Singapore, Hong Kong, and Kaohsiung in containerized shipping bound for America. The scarcity

of real-time intelligence and impracticality of examining the 4.2 million containers that enter the United States from Asia yearly make containers one of the most secure and effective ways of transporting contraband.[9]

Unlike cocaine traffickers, who generally operate within hierarchical, linear organizations, many separate heroin trafficking groups forge ad hoc arrangements to move drugs via Asia to their Western markets. This linked approach is especially difficult to target because traffickers rely upon ethnic or family ties. Elimination of one link is unlikely to stop the overall enterprise. Intelligence analysts at JIATF West apply analytical tools to help law enforcement agencies decipher complex criminal organizations and identify front companies and their international accomplices who import drugs into the United States. Such analysis promotes effective cooperation between U.S. and host nation law enforcement, leading to joint investigations and the extradition of heroin traffickers.

In recent decades a number of Asian cities have become banking centers and have attracted millions of dollars in drug profits and have engaged in money laundering. Intelligence analysts are able to assist law enforcement agencies in dissecting complicated financial transactions to separate natural and lawful economic activity from criminal profits.

The Golden Crescent

Three drug producing and trafficking countries in Southwest Asia—Afghanistan, Pakistan, and Iran—make up the Golden Crescent, the second largest area of opium cultivation in the world according to the Department of State. Afghanistan, second only to Burma as an opium producer, grows 30 percent of the global supply, or 1,230 metric tons each year. Many heroin and morphine base laboratories are operated along the Afghanistan-Pakistan frontier. Because of porous borders

**High speed boats off
San Diego.**

U.S. Navy (Jeffrey S. Viano)

making a difference by developing intelligence on heroin and other illegal drugs which originate in Asia, planning and executing intelligence-cued detection and monitoring operations, and targeting drug traffickers in the eastern Pacific. Analysts at JIATF West who track heroin from Southwest and Southeast Asia have perhaps the most comprehensive expertise on this subject in the U.S. Government and represent a valuable resource for law enforcement agencies. Their analysis provides a clearer picture of trafficking schemes and organizations and also aids in the identification and arrest of smugglers.

Drug traffickers are resourceful, and detecting and monitoring their activities for hand-off to law enforcement requires a constant vigil. JIATF West deploys Navy and Coast Guard air and sea force packages that are proving crucial to efforts to seize illegal drugs and arrest international traffickers. They operate in close coordination with U.S. Customs Service aircraft and other law enforcement forces to ensure a seamless hand-off of suspect targets. The payoff is that drugs are taken out of the supply stream, benefitting the United States and the community of nations. **JFQ**

NOTES

[1] *The National Drug Control Strategy* (Washington: The White House, February 1997), pp. 10–15.

[2] *Consult with America: A Look at How Americans View the Country's Drug Problem*, summary report (Rockville, Md.: Gallup Organization, 1996).

[3] *The National Drug Control Strategy*, p. 10, and *International Narcotics Control Strategy Report* (Washington: Department of State, 1997), p. 9.

[4] *Modeling the Demand for Cocaine* (Santa Monica, Calif.: RAND Corporation, 1994).

[5] *International Narcotics Control Strategy Report*, p. 9.

[6] Molly Moore, "Latin Drugs Flow North Via Pacific," *The Washington Post*, January 30, 1997, p. A1.

[7] *The National Drug Control Strategy*, p. 55.

[8] *International Narcotics Control Strategy Report*, p. 261.

[9] *Worldwide Maritime Challenges 1997* (Washington: Office of Naval Intelligence, 1997), p. 10.

among Pakistan, Iran, and the central Asian region, heroin from the Golden Crescent often winds its way through Turkey and the Middle East to markets in Europe. Although Western Europe has been a major market in the past, the economic revival of Eastern Europe has bred new consumers. Because the commander in chief, U.S. Central Command, does not receive counterdrug support, JIATF West also supports his counterdrug initiatives when approached via PACOM.

Drug trafficking, terrorism, and international crime promise to become dominant forces that will threaten both democratic order and international stability in the next few years. The PACOM counterdrug strategy is

The author during Tandem Thrust '97.

DOD (Gary A. Bryant)

ANZUS:
A View from the Trenches

By PETER LEAHY

Brigadier Peter Leahy, Australian Army, who commands 3d Brigade, served as the commander of Combined Army Force during Tandem Thrust '97.

The significance of the Australia, New Zealand, and United States (ANZUS) alliance is not what it promises but what it allows. It has great value to the soldiers, sailors, marines, and airmen of each nation. Its advantage from the trenches is that it imposes few rules and regulations on like-minded people who share common hopes, aspirations, and professional approaches to the defense of their respective countries.

Though this article is focused on land forces, it should be noted that naval and air forces are equally if not better supported within the alliance because of the extensive integration of naval and air equipment, intelligence, doctrine, and training. Before turning to the tactical level, however, it is useful to look at ANZUS from the strategic and operational levels.

Common Interests

On the strategic level war is the province of Parliament and the Chief

Australian gunners arriving for Tandem Thrust '97.

DOD (Robert Shanks)

of the Defence Force. Here things have been remarkably constant. But it is the level on which little is actually promised. Nevertheless, Australia and the United States have worked together to maintain the ANZUS treaty with a clear view of the advantages

Australia is seeking to invigorate the alliance by enhancing its own capability for self-reliant defense

that accrue to each. The treaty has proven remarkably durable. It has been supported by two governments of different persuasions over four and a half decades of peace and conflict.

Like many international agreements the wording of the ANZUS document is ambivalent: no promises are made and both countries are only obliged to act in accordance with their constitutions. This is no bad thing for a treaty between sovereign states whose interests can change over time and diverge under particular circumstances. In this respect ANZUS differs markedly

from agreements such as the North Atlantic Treaty in which member states are committed to certain actions.

The lack of compulsory action in ANZUS does not seem to be a drawback in the relations between Australia and the United States, whose association is based on common values and shared security interests. Both countries have held similar world views for many years. Their values and interests nurtured and sustained a relationship long before the ANZUS treaty was signed in 1951. One early example occurred at the battle of Hamel during World War I when U.S. soldiers fought under Australian command.

Common national objectives were also apparent in the close relations that developed during World War II and the Korean War. Since signing the ANZUS treaty this bond has been enhanced through the common experience of the Vietnam and Persian Gulf Wars and through a shared hope for a better world by cooperation in Somalia and other humanitarian crises.

Both the United States and Australia are intent on sustaining the relationship. In addressing the Australian

Parliament, the President of the United States said, "The alliance is not just for this time. It is for all time." Australia is seeking to invigorate the alliance by maintaining its relevance, by reinforcing its importance in making a substantial contribution to regional peace and security, and by enhancing its own capability for self-reliant defense.

Standardization

On the operational level battles and campaigns are conducted to achieve strategic objectives. Military doctrine holds that it is essential to maintain a direct link between the strategic through the operational to the tactical level. Battles must be fought and campaigns must be waged for strategic ends. There must be a direct relationship between the deliberations by Parliament or Congress and the weapon pit or foxhole.

The political and diplomatic aspects of the alliance should support and be directly supported by operations in the field and fleet. In practical terms this begins on the operational level. It is here that a soldier gets the

F–15 in Australia during Tandem Thrust '97.

U.S. Air Force (Efrain Gonzalez)

first real view of ANZUS in action. He begins to realize that the strength of the alliance is in what is allowed, not what is promised.

The treaty is more symbolic than promissory. It is on the operational level that one finds practical cooperation in intelligence, technology, and logistics and in substantive efforts to achieve interoperability and standardization. None of these actions are formally mandated under the treaty.

The American, British, Canadian, Australian (ABCA) Armies' Standardization Program is an example of strong linkages at ground level. Although not strictly a product of ANZUS it came about and is largely sustained as a result of the cooperation epitomized by the treaty. Its strategy is to ensure that militaries achieve agreed levels of standardization necessary for two or more ABCA armies to cooperate effectively in a coalition. ABCA has the following minimum requirements:

■ compatible doctrine, tactics, techniques, and procedures (TTP), training, electronic systems, and platforms

■ interoperable communications and information systems (including functions of maneuver, fire control, air defense, intelligence, and combat service support), critical weapon systems, and critical training simulation systems

■ interchangeable combat supplies, combat support and combat service, and formations and units

■ common critical TTP and engineering quality standards.

Two important aspects of ABCA that further consolidate these linkages are that the program acknowledges the primacy of U.S. doctrine on the operational level and addresses army issues and those joint issues which impinge on the land battle primarily on the tactical level.

The program contributes to army coalition operations by being responsive and focusing on standardization across functional areas of the battlefield. It allows both armies to share resources by exercising coalition operations and exchanging information, matériel, and ideas among military staffs, scientists, and developers and by matching army requirement documents.

Agreements and advisory publications help to achieve standardization under business type arrangements that ensure that effective and tangible returns are provided efficiently from the resources invested by the participants.

Ground Level

Down in the trenches one talks about how to make things work rather than about alliances. ANZUS is constant, something that we accept and work within because it makes sense.

Thus we talk about standardization and interoperability, personnel and equipment exchanges, and resolving problems that will enable us to operate more effectively. The treaty does not limit us to certain actions but instead provides the room for like-minded people to function together. ANZUS works on the tactical level because it feels right. Parliament and Congress agree on a strategic view that helps to maintain an important security and defense relationship based on common values and interests.

ANZUS is a constant for Australia just as cooperation with America has been in peace and conflict over many decades. It is about people in and out of uniform and common aspirations. As the deputy commander of Combined Army Force for Tandem Thrust '97 observed in an interview published in the June 1997 issue of *Army* magazine:

People are what really make joint operations work. . . . I think fundamentally operations between militaries and success in military operations are a function of how well you get along culturally, how you see the values of your society playing out in a world landscape. Interoperability is a lot of talk about electrons, radio sets, weapons, and equipment but at its core in its most fundamental aspect, to ensure success, it's people bonding together in a common cause. From what I've seen of our two nations during Tandem Thrust, I'd say we're doing OK.

Combined Exercises

Tandem Thrust '97 was a U.S.-led and Australian-supported joint and combined exercise that involved some 27,000 personnel. Its object was to further develop procedures for combined crisis response operations as outlined in the ANZUS planning manual. It tested a combined task force based on U.S. Seventh Fleet in a short-warning power projection scenario.

The commander of Australian Deployable Joint Force Headquarters (Land) was the deputy commander of the combined task force under the commander of Seventh Fleet. A large element of that headquarters was fully integrated into the command ship *USS Blue Ridge*.

**National Guardsmen,
Tandem Thrust '97.**

[EDITOR'S NOTE: *3ᵈ Brigade (Australian)—with a battalion (Task Force 2–35) from the 25ᵗʰ Infantry Division (U.S.) under its operational control—comprised the Combined Army Force (CARFOR), which was commanded by the author with the commander of 3ᵈ Brigade (U.S.) as his deputy. The Americans supplemented CARFOR headquarters with nearly 900 personnel.*]

Tandem Thrust was really two exercises. One was a combined force planning exercise that 3ᵈ Brigade played in Townsville. In this phase the headquarters was deployed on *USS Blue Ridge* and became involved in crisis action planning. Australian personnel assimilated into the combined task force and offered valuable planning assistance. The American presence in Townsville meant that many lessons were learned

Tandem Thrust allowed both national headquarters to conduct familiarization and cross leveling

for the next phase. Moreover, deployed U.S. forces conducted in-theater training, became familiar with command and control arrangements, and grew acclimatized. The exercise also allowed

both national headquarters elements to conduct familiarization and cross leveling, which meant that communications officers could conduct interoperability checks and that staffs could establish standing operating procedures. Many combat and combat support functions in the brigade were integrated at company, platoon, and section level.

The field deployment phase commenced after 10 days during which CARFOR deployed to Shoalwater Bay by road, sea, and air. CARFOR was allocated an area of operations (AO) adjacent to a force of U.S. Marines. This phase was marked by high intensity operations using a range of joint and combined assets.

Many lessons learned during both phases fell within the framework of the ABCA program objectives and the stated minimum requirements of compatible, interoperable, interchangeable, and common critical procedures. But people make Tandem Thrust and ANZUS work. The soldiers of the two countries get on with one another. Nationality makes no difference. Cultural commonality and shared hopes

extend from the soldiers in the field to the politicians in the cabinet room.

Firstly, consider doctrine, TTP, training, electronic systems, and platforms.

■ Our doctrine and TTP are largely compatible and the differences are surmountable. The ABCA framework for U.S. corps-level doctrine provides a solid basis for compatibility, and few difficulties arose during Tandem Thrust, even in the detailed tasking and direction of TF 2–35 by headquarters CARFOR.

■ Australian training methods are similar. One major success was the training value gained by TF 2–35. During reconnaissance for the exercise the task force commander was able to state his training needs, which easily translated into requirements for training areas and resources as well as safety and environmental considerations.

■ Electronic systems are generally compatible though uneven areas existed, mostly related to the nature and scale of equipment distribution. Examples are tactical satellite systems and night vision gear. Australian forces are not as well equipped and in some cases were not able to operate on the scale and with the intensity of the U.S. military. At times U.S. forces had to degrade their capabilities (such as radios and satellite communications) to operate with Australian forces.

Secondly, consider inoperable communications and information systems (which include the functions of maneuver, fire control, air defense, intelligence, and combat service support), critical weapon systems, and critical training simulation systems.

■ Our command and control systems are not entirely compatible, and as the United States pursues digitization and satellite communications Australia is being left behind (as are other allies). Moreover, various U.S. services are developing different equipment and disparate procedures.

■ There was trouble with information systems during Tandem Thrust. A system is needed that filters information and provides a commander with only what is timely, accurate, and relevant. Much can be done with improved staff procedures and staff discipline, but we also should employ technological solutions (which is not particularly a problem within ANZUS).

■ Tandem Thrust provided access to myriad intelligence systems and sources which were largely compatible and vastly improved. Recently our brigade capabilities have been extended to include access to the joint intelligence support environment (JISE) through a dedicated terminal.

Thirdly, there is the issue of interchangeable combat supplies, combat support, combat service support, and formations and units.

■ The experience at Tandem Thrust and other exercises and exchanges suggests that we can interchange formations and units. While it is easier to swap companies or platoons, exchanges can be done at battalion or brigade level. Command and control remains a problem. Both nations must define their operational parameters and exercise control over certain functions and responsibilities, and appropriate procedures should be developed to overcome any difficulties. (I was privileged to command a U.S. Army task force during Tandem Thrust '97. Teaming arrangements developed by the deputy commander and myself were crucial to mission accomplishment and were generated without external guidance.)

■ There were no critical problems with combat support and combat service support, though national differences still exist.

Finally, consider the following common critical TTP and engineering quality standards:

■ Australian notice to move (NTM) and battle procedures were not as responsive as those used by Seventh Fleet and embarked Marine elements, which compelled us to truncate our NTM and accelerate theoretical preparations. In a crisis Australian forces must be capable of responding in parallel with the U.S. forces they are tasked to deploy.

■ The procedures followed during crisis action planning and Australian battle procedures are dissimilar. Moreover, U.S. Army procedures are dissimilar from those of the other services, which caused some difficulty in rationalizing Seventh Fleet procedures with current joint doctrine. The Navy and embarked marines followed a planning process of embark, plan, rehearse, execute while the Australian planning process is plan, rehearse, embark, execute.

■ Rules of engagement (ROE) are critical and reflect national differences in the ratification of protocols and interpretation of their impact. There has been an initial proposal for Asia-Pacific ROE which requires further development. Such rules are critical for developing and maintaining coalitions. Tandem Thrust did not provide adequate lessons in this area because the issue could not be fully played. ROE and orders for opening fire were not developed early enough.

The Future

ANZUS is well supported on the strategic level. Although no promises have been made, remarks by our political leaders in both Washington and Canberra as well as the Sydney Statement provide a framework for its continued robust health and growth.

if the U.S. Marines are to be the 911 force, then the Australian army must be interoperable with them

The alliance also remains vital on the tactical level, where like-minded soldiers are given the latitude to put a basically sound concept into practice—what is allowed makes the alliance viable.

Fundamentals on the operational level are also solid, but more could be done.

■ Maintaining ABCA objectives enables the continuance of basic levels of interoperability and should be considered as the minimum requirement.

■ Ongoing training and exercise opportunities such as Tandem Thrust are of considerable benefit for an Australian unit as they are for an American.

■ More comprehensive participation in wargames and CPX activities is helpful as this is the level on which commanders can be trained at comparatively little cost.

■ Continued exchange of technology is beneficial, especially when associated with communications and command and control.

■ If Australia, as a self-reliant nation, wants to take advantage of the so-called revolution in military affairs it must actively engage with the United States; full participation is also important in order to maintain interoperability.

■ If the U.S. Marines are to be the American 911 force of response in the Pacific, then the Australian army must be interoperable with them. Interoperability is good with the U.S. Army (particularly with the 25th Division) and has been built up over a long period, but it is not as good with the Marines. Further development will be achieved through more exercises and exchanges.

ANZUS remains relevant to those of us in the trenches. To preserve it, however, a number of challenges must be acknowledged. An increased commitment to engagement in the region could draw Australia away from ANZUS. Maintaining the alliance may be seen as Australia siding with America or not being fully committed to the Asia-Pacific. Finally, though the focus of ANZUS for Australian soldiers is the U.S. Army, it may be necessary to readjust that perspective more toward the U.S. Marine Corps.

The alliance remains an untroubled and rewarding relationship. It works because those of us in the trenches are given a solid basis and left to make it work. There are no needless rules and regulations. ANZUS provides access to technology, equipment, and training. Moreover, it allows like-minded professional soldiers to work together. In this way the Australian army becomes more capable both as a self-reliant force and as an equal partner in coalition arrangements during any contribution to regional or world peace and security.   **JFQ**

Russian IL–76.

Evaluating Chinese Military Procurement from Russia

By D E N N I S   J.   B L A S K O

Su–27 fighter on cover of *Chinese Air Force* magazine.

Colonel Dennis J. Blasko, USA (Ret.), served as Army attaché in Beijing and Hong Kong, and in assignments at Headquarters, Department of the Army, and with the Defense Intelligence Agency.

The Chinese military is in the process of a long-term modernization program. Uniformed and civilian leaders have studied recent conflicts, analyzed shortfalls, and identified improvements to be made in doctrine, force structure, and equipment. They are aware of the gap in capabilities between the People's Liberation Army (PLA) and other militaries, notably the U.S. Armed Forces.

Most foreign analysis of the current and potential Chinese military threat emphasizes recent equipment purchases from Russia and what they portend. This article evaluates these acquisitions and compares them to a previous regional threat and arrives at conclusions about the modernization of the Chinese military which differ from those usually found in the media.

Some characterize the Chinese as buyers at a fire sale in their purchase of Russian military equipment.[1] Russian arms merchants have introduced PLA leaders to hardware that could greatly improve Chinese capabilities. Elements of the defense industries in both countries have established relationships with their counterparts. Over the last five years reports on negotiations for advanced technologies have been common if vague and sometimes exaggerated. Many reported deals are never consummated.[2] Purchases and technology transfers have been limited because of Chinese financial constraints and Russian strategic suspicions.

Notwithstanding a need for hard currency, Moscow has not sold Beijing complete weapons systems that could strike the Russian heartland. Kremlin planners keep a watchful eye on Chinese military modernization and tell civilian leaders to be cautious about arms sales to China. However, some transfer of strategic technology has

Figure 1. Russian Hardware Transferred to China	
Mi–17 helicopters	over 40
Su–27 fighters	about 50 (includes AA–10 and AA–11 missiles) †
SA–10 surface-to-air missiles	at least 220 missiles in six launch battalions (each with 4 launchers)
IL–76 transport aircraft	14
KILO submarines	3 (with 1 more to be delivered; additional transfers possible)
RD–33 aircraft engine	100 (for Super-7 and F8–3 fighters)

† Another 25 or so Su–27s will probably be transferred as part of an agreement to assemble-from-kits or coproduce 200 more aircraft.

likely occurred whether it was sanctioned by the Russian leadership or not. Moreover, the danger persists for rogue traders not only from Russia but from other former Soviet states to traffic in strategic systems and technology in pursuit of personal gain. Similarly, Russian scientists and technicians who are no longer gainfully employed may see China as a lucrative market for their expertise.

Even though Beijing has accumulated vast foreign exchange reserves, the senior leadership has yet to divert sufficient resources from economic development to large-scale military purchases. For example, expenditures on

Beijing has authorized the purchase of modest amounts of conventional Russian equipment

culture, health, education, and civilian science and technology have outpaced official figures for defense spending over the past decade.[3] It would take huge sums to buy the modern systems necessary to transform the Chinese military, which is primarily equipped with matériel based on the technology of the 1950s and 1960s, to a force based on that of the 1980s.

To gradually improve PLA technological standards, Beijing has authorized the purchase of modest amounts of conventional Russian equipment. Foreign observers generally agree that these buys have been made with funds provided by the central government or through barter agreements, and are not included in the official announced military budget.[4]

Recent Acquisitions

The amount and type of Russian hardware known to have been transferred to China since the early 1990s are exhibited in figure 1.[5] *The Washington Times* first reported on the transfer of two *Sovremenny* class destroyers with SSN–22 anti-ship cruise missiles.[6] A recent report indicated that these ships which are under construction will be delivered within the next two years. The same source reports that 12 Kamov K–28 anti-submarine warfare helicopters are part of this deal.[7]

The total cost of such purchases is unclear. Prior to the deal for *Sovremenny* destroyers, one estimate put the figure for 1991–94 at \$4.5–6 billion.[8] Another report cited Pentagon sources who said the ships and other systems would cost \$8–10 billion over several years.[9] If either estimate is prorated for a multiyear period, the published Chinese defense budget might be augmented by \$1–2 billion annually. By comparison the United States bought more than \$43 billion worth of military hardware in 1995 alone, with Lockheed Martin accounting for over \$10 billion of that total.[10]

The actual deliveries and potential *Sovremenny* transfer yield insights into the state of both Chinese military modernization and defense industries. First, the classes of equipment purchased indicate trends in force development. Naval and air force capabilities have priority and these new systems will provide some of the combat power required to fight the sort of conflict which planners envision as most likely: short-duration limited wars using high-tech equipment on China's periphery. To fight such conflicts, China must develop the ability

to project and sustain a joint, combined arms force some distance from its borders. At present, China is best suited to fight a defensive war on its own land mass and coastal waters.

Despite a number of allegations, the transfer of strategic long-range bombers and intercontinental ballistic missiles has not been verified. While seeking to improve its strategic capability in cost-effective ways, Beijing appears to believe its nuclear arsenal is an adequate strategic deterrent.[11]

Though sales of ground force weapons systems have been reported (particularly main battle tanks), significant cases of ground force hardware transfers have yet to be confirmed or come to fruition except for Mi–17 helicopters.[12] This may be because China faces no significant land threat and calculates that the amount of equipment necessary to outfit its ground forces would be cost-prohibitive as well as unnecessary. Such reasoning frees funds for weapons more likely to be needed in future conflicts.

The quantity of equipment purchased from Russia indicates selective modernization of PLA forces. Equipment has been acquired for only a few units. Selective modernization is evident in the decision to form a limited number of rapid reaction units rather than upgrading the entire force structure. The Chinese military is simply too big and too bogged down with matériel designed decades ago to be fully equipped with modern hardware. Further reductions in personnel and force structure will be vital for PLA modernization.

Finally, in nearly all purchases of Russian equipment, Chinese industry currently produces a similar class of weaponry, albeit at a lower technological level. Selecting Russian systems reflects lack of confidence in Chinese weapons and the ability of domestic industries to produce modern systems necessary to equip PLA forces to effectively project their capabilities.

Yet most foreign analysts still point to overall numbers as the primary indicator of Chinese military capabilities. Such estimates often ignore many complexities of war such as command and control, training, logistics,

and doctrine that must accompany the acquisition of modern equipment. The ensuing analysis focuses on military hardware in the Chinese inventory which can be considered modern and compares it with portions of the forces of the former Soviet Union. This approach may provide a more realistic perspective on Chinese modernization.

Former Soviet Forces

Most would agree that even in its final years Soviet military power was a significant threat. Conventional forces were divided into Western, Southern, and Far Eastern theaters of operations. Only the Far Eastern Theater and strategic forces are considered herein. Moreover this comparison will address only the types of equipment recently transferred from Russia or those manufactured by Chinese defense industries that approach contemporary standards.

The total amount of modern Russian equipment transferred to China in the 1990s is only a minuscule part of the PLA inventory. The vast majority of deployed equipment does not provide capabilities necessary for action outside Chinese borders. Though such weaponry may be effective to defend the mainland, the

only a limited number of personnel have had routine experience operating modern hardware

tremendous PLA strength on paper—huge manpower reserves and vast amounts of older equipment—will have minimal value in the case of force projection missions envisioned for future limited, local war scenarios.

Modern Chinese forces pale by comparison to that part of the former Soviet force dedicated to the Pacific, not to mention strategic nuclear forces (figure 2). Certainly the international security environment that the Soviet Union faced differs from the current situation in Asia. Moreover, the way in which Soviet forces would have been employed differs from Chinese doctrine. But the order of magnitude of difference represents the gap between a recognized threat and a potential threat that may never mature.

Figure 2. Deployed Modern Systems

Weapons System	Soviet (a)	Chinese (b)
ICBM / SLBM	1,387 / 912	some 17 / 12 (c)
tactical SSM	300	unknown (d)
SA–10 SAM	1000 (e)	at least 200
principal surface combatants	52 (f)	7 (g), plus 2 *Sovremenny* class destroyers to be delivered
ballistic missile submarines	23	1
attack submarines	66	8 (h), plus 1 more KILO class to be delivered
fourth generation fighters	about 670 (i)	about 50
IL–76 strategic lift aircraft	about 300	14
army helicopters	875	about 100

Sources: (a) *Military Forces in Transition* (Washington: Government Printing Office, 1991) and *Soviet Military Power* (Washington: Government Printing Office, 1989, 1990); (b) Bates Gill and Taeho Kim, *Arms Acquisitions*, and *The Military Balance* (London: Brassey's for the International Institute for Strategic Studies, 1996); (c) figures do not include warheads; (d) includes deployed M–9 missiles and potential M–11 missiles which may enter the force; (e) it was estimated 15 percent of 6,700 strategic SAMs were SA–10s; (f) includes frigates, destroyers, cruisers, and aircraft carriers; (g) includes 2 *Luhu* destroyers and 5 *Jiangwei* frigates; (h) includes 3 Russian built KILO class and 5 indigenously produced HAN nuclear attack submarines; (i) over 75 percent are fourth generation fighters.

Numerical Implications

Perhaps the most significant implication of the relatively small scale introduction of modern military equipment to PLA forces is that only a limited number of officers and enlisted personnel have had routine experience operating and maintaining modern hardware. Often the use of this equipment in training is restricted to demonstration and experimentation. But new systems must eventually be integrated into old operational methods as new tactics, techniques, and procedures are developed. Such changes do not occur overnight.

Until enough soldiers, sailors, and airmen use modern equipment to become familiar with its capabilities and complexities, it is unlikely that such weapons will be employed to their designed potential. Fear of the loss or damage of expensive hardware probably will result in a very conservative approach to using it in training.

The task facing the Chinese is complicated by the reality that, except for internal security operations, almost a generation of PLA officers lacks any combat experience.[13] In particular,

they have none in planning for or employing modern weapons in combat. Nor have they experienced the effect of such weaponry.

The relatively low level of education and technical sophistication in the force hampers rapid modernization. Though PLA forces are engaged in a major educational campaign about high-tech capabilities, until such equipment is readily available throughout the force most personnel will have only academic exposure to this weaponry and its application on the modern battlefield. Thus it will be difficult to develop and disseminate doctrine, tactics, techniques, and procedures for employing modern weapons that may enter the force. These software challenges may take longer to overcome than the more readily visible hardware shortfalls.

Defense Industries

Even though China is credited with having a defense base that can produce the entire range of weaponry, with a few exceptions its defense industries do not meet late 20th century standards. Except for pockets of excellence there are tremendous production shortfalls. Success includes limited numbers of indigenously designed, produced, and fielded nuclear weapons, ballistic and cruise missiles,

some world class electronics, and a few frigates and destroyers.

However, most military production is focused on upgrading foreign systems based on pre-1970s technology and manufacturing techniques. For example, the J–7 aircraft, a modified Soviet MiG–21 originally designed in the 1950s, is still the most widely produced fighter.[14] In the 1990s this plane is replacing older J–6 fighters, a Chinese version of the MiG–19.[15] In the Soviet Union the MiG–21 was replaced in the 1980s by a generation of aircraft represented by the Su–27.

For more than a decade there has been talk of Chinese efforts to make an F–16 equivalent. When and if it will be produced, and in what quantity, remains open to speculation. For ten

Manning the rail.

U.S. Navy (Felix Garza)

years they have also attempted to design a main battle tank equal to the Soviet T–72. Cooperative efforts with Pakistan have proven less than satisfactory, and no new tank can be expected any time soon from China's industrial base.

The decision to buy *Sovremenny* destroyers from Russia indicates the problem confronting the Chinese defense industry. The *Luhu* destroyer is one of the few systems even approaching modern standards, yet Beijing has decided to

acquire ships of the same class from Moscow to accomplish the same functions. Similar thinking was reflected in the acquisition of Su–27s after China had attempted for years to develop an aircraft with equivalent technology to perform similar functions. Such decisions demonstrate a lack of confidence on the part of military planners in their own industrial capabilities.

It is unlikely that the Chinese industrial base can surmount these problems without massive resources from the central government and the expense of acquiring considerably more technology and production assistance from foreign sources. Manufacturing equipment and techniques on most lines are inadequate to meet modern standards. Production is too low even at current technological levels to allow for a rapid buildup of modern equipment. It would not be an overstatement to say that even to produce a portion of the range of modern arms, Chinese industry with few exceptions would need a nearly total recapitalization of its production lines.

When production estimates for selected Chinese weapons systems are compared with those for the Soviet defense industrial base in the late 1980s, rates for less sophisticated Chinese equipment are much lower than the Soviet rates (figure 3). These low rates are compounded by the effort to convert defense production and technology to civilian use. For several years official reports stated that 80 percent of the production value of defense industries was civilian goods or services.[16] The majority of the other 20 percent resulted in systems that do not meet modern standards. Nor does the defense industrial base appear to have a workable plan to surge in an emergency.[17]

The decline in Chinese arms sales in the 1990s is another indication of the problem. Given the choice, foreign purchasers have selected Western or Russian arms over Chinese in the last several years.[18] Today the low price of China's weaponry cannot overcome its

lack of sophistication. Many recent purchases were made more for political purposes than for military effectiveness. In the end, most foreign buyers have been dissatisfied with Chinese weapons.

Figure 3. Yearly Production Rates (late 1980s)		
Weapons System	**Soviet**	**Chinese**
principal surface combatants	9	3–4
attack submarines	8	1
fighter aircraft	633 (a)	80 (b)

(a) Soviet figures represent the average production level for 1988–90 as found in *Military Forces Transition*, p. 23. (b) John Frankenstein and Bates Gill, "Current and Future Challenges Facing Chinese Defense Industries," *The China Quarterly*, no. 146 (June 1996), p. 413.

Internal Constraints

Chinese leaders are aware of the shortcomings in their system. Yet they have refrained from making the investments required to significantly alter resource distribution. Beijing analysts justify this decision by pointing to the disproportionate amount Moscow spent on the military as a prime cause of the fall of the Soviet Union.

The Central Intelligence Agency estimates that the Soviet Union dedicated 15 to 17 percent of its gross domestic product (GDP) to defense for much of the 1980s.[19] This is far above most appraisals of present levels of Chinese defense spending even after adjustments for extrabudgetary sources of income.[20] Official Beijing statements place it at about 1.5 percent of GDP. Even if that number is tripled to account for extrabudgetary sources, it would amount to only about 5 percent of GDP.[21] The Soviet figure suggests the magnitude of resources that China would have to divert if it decided to speed up modernization. The result of such a decision would quickly become evident to the world and would not by itself guarantee a modern military.

Modernization thus faces severe constraints. If Beijing tries to surmount its shortcomings too quickly, it could

Russian Mi–17.

Shenyang aircraft factory.

PLA destroyer *Harbin*, Pearl Harbor.

Dennis J. Blasko

bankrupt the nation and cause severe reactions from governments throughout the region and the world. However, if PLA forces do not take signifi-

unlike most other nations, China appears committed to increasing defense spending

cant steps, China cannot be confident of protecting its sovereignty against what it considers real threats. Without a credible military, China will not achieve its goal of eventually becoming a global power.

After analyzing the problem in the context of international and domestic environments, the civilian and military leadership agree that the long-term program for gradual defense modernization is appropriate and will not jeopardize the Chinese economy.

However, unlike most other nations, China appears committed to increasing defense spending. Yet increases in magnitude (three to five times more than adjusted estimates), which would put Beijing on a spending level equivalent to that of Moscow in the mid-1980s, do not appear likely.

At the same time, the military will take advantage of a relatively peaceful regional security atmosphere to continue modernizing doctrine, education, and training levels as the sophistication of its equipment gradually improves. The Chinese military will avoid extended combat, preferring posturing and threats of deadly force. As seen

from exercises held near Taiwan in 1995 and 1996, PLA forces will also stress limited high-tech weapons, ballistic and cruise missiles in particular, to portray themselves in a modern light.

If force is used there will be rapid efforts to maximize surprise. For the foreseeable future, because of its relative weakness, technological and equipment factors indicate that Beijing is more likely to rely on stratagem and bluff than brute force to counter more modern opponents.

In terms of conventional military hardware, PLA forces have about a tenth the capability of Soviet formations deployed in the Far Eastern Theater in the late 1980s. Although there are a few pockets of excellence, China has only begun the long process of equipment modernization. It still must develop doctrine and educate and train its personnel in modern techniques. The integration of high-tech weapons systems on the training field, to include modern communications, intelligence, and logistics systems, is a major endeavor that has been underway for only a brief time and only by a portion of the force.

Without massive foreign assistance, China's industrial base can at best produce equipment which is technologically equivalent to that which Moscow replaced in the 1980s. Most defense industries will have to be retooled and their workers taught new techniques to produce greater amounts of state-of-the-art equipment. Therefore, despite a desire for self-sufficiency, it is probable that most modern hardware introduced into Chinese units in the near and mid term will be foreign in origin.

The cost of modernization and revamping industry would be enormous. The international environment does not require China to reallocate resources between the civilian and military sectors at this time. In any case, over the next few years PLA forces are likely to be reduced in size while their budget is modestly increased. Such a trend will advance the modernization of selected units and improve overall

levels of education and training throughout the military.

While the pace of Chinese military modernization will not pose a significant threat to major powers for some time, Beijing's neighbors are wary of its intentions. No matter what the foreign perception, however, for reasons of prestige and pursuit of national objectives, China will seek a visible standing force able to deter war and intimidate potential opponents.

China recognizes its military weaknesses and thus will seek to avoid a prolonged conflict instead of initiating one. Beijing is more likely to benefit from both economic development and international integration by eschewing the use of force than by arbitrary and risky displays of power. Because no imminent threat exists Beijing need not surmount deficiencies in its conventional capabilities in the near or mid term. Rather, PLA forces are likely to focus on enhancing proven pockets of excellence: ballistic and cruise missiles and nuclear weapons. Although improvements in systems can be expected gradually, great advances are unlikely in the short run.

China will also attempt to exploit the work of its best scientists using advanced computers, electronics, and applied technology to equalize a future battlefield through inexpensive information or electronic warfare. Defense industrial R&D will focus mainly on advanced research as well as dual-use and critical technologies in what can be regarded as economy of force measures when it is not possible to match foreign spending on conventional armaments.[22] These efforts require careful monitoring. However, observers who focus on the purchase of Russian arms or the production of weapons systems with 1980s technology could miss other potentially more dangerous Chinese military achievements in the 21st century. **JFQ**

N O T E S

[1] To a lesser degree, China is also looking toward other foreign sources such as Israel and Pakistan for specific hardware and technology.

[2] For details of reported arms sales, see Kenneth W. Allen, Glenn Krumel, and Jonathan D. Pollack, *China's Air Force Enters the 21st Century* (Santa Monica: RAND Corporation, 1995), pp. 158–60 and Bates Gill and Taeho Kim, *China's Arms Acquisitions from Abroad; A Quest for "Superb and Secret Weapons,"* Stockholm International Peace Research Institute report no. 11 (New York: Oxford University Press, 1995), pp. 56–67.

[3] See Paul Godwin's paper entitled "'PLA Incorporated': Estimating China's Military Expenditures," prepared for a conference on "China's Economic Reform: The Impact on Security Policy" held on July 8–10, 1994 at the Pacific Place Conference Center, Hong Kong, pp. 18–19, for figures on 1978 to 1994. According to Agatha Ngai and Daniel Kwan in "Defense Spending to Rise 12.7%," *South China Morning Post*, March 1, 1997, this trend continues. For example, education was reported to receive over 38 billion yuan more than defense in 1997. Some funds used in civilian development of science and technology goes to the military.

[4] Jasper Becker, "Ban on Pork Imports Upsets Weapons Deal," *South China Morning Post*, March 29, 1997, reports that the Su–27 purchase would be transacted with 70 percent hard currency and 30 percent consumer products. A Russian Ministry of Health ban on Chinese pork caused the latest snag in this arrangement.

[5] Gill and Kim, *Arms Acquisitions,* p. 68; updated with information on transfers in 1996. See Richard D. Fisher, "How America's Friends Are Building China's Military Power" (Washington: The Heritage Foundation, November 5, 1997) for a comprehensive listing of arms sales to China.

[6] Bill Gertz, "China Buying Russian Destroyers, Pentagon Says," *The Washington Times*, January 10–12, 1997. *Jane's Fighting Ships 1995–96* (Coulsdon, Surrey: Jane's Information Group, 1995), p. 119, reported on an offer in late 1994 to transfer these vessels: "If the report is correct and the bid accepted these ships should transfer in 1995." This shows how negotiations can drag on indefinitely, never actually occur, or be delayed for years. In addition, by comparison, *Jane's* lists 17 *Sovremenny* destroyers active in the Russian navy as of 1994, with the first three of the class nonoperational. Six of the active ships were in the Pacific Ocean fleet.

[7] "Russian Kamovs Set to Boost Chinese ASW," *Jane's Defence Weekly*, March 4, 1998, p. 14.

[8] Gill and Kim, *Arms Acquisitions,* p. 55. This included the KILO purchase.

[9] Gertz, "China Buying." It is unclear whether these figures include all Russian weapons to be transferred to China.

[10] *Defense 96 Almanac* (Washington: Department of Defense, 1996), pp. 13–14.

[11] China's nuclear forces provide a minimal deterrent capability.

[12] A small sample of modern ground weapons systems (such as night vision devices) may have been acquired for test purposes. China has expressed interest in both Smerch multiple rocket launcher and ground air defense systems, but transfer of these weapons cannot be confirmed. Even if verified, the transfers probably are on such a small scale that they must be considered experimental rather than a serious effort to equip a significant portion of the ground force.

[13] Ground force officers last saw combat against Vietnam in 1979. Small naval forces engaged in limited combat in the Paracels in 1974 and the Spratlys in 1988. PLA air force pilots have not seen combat since the Taiwan Strait Crisis of 1958.

[14] John Frankenstein and Bates Gill, "Current and Future Challenges Facing Chinese Defense Industries," *The China Quarterly*, no. 146 (June 1996), p. 413.

[15] Allen et al., *China's Air Force*, p. 123.

[16] "China Issues White Paper on Arms," *China Daily*, November 17, 1995, p. 3.

[17] Author's conversations with defense industry officials, Beijing, January 1994.

[18] See Richard F. Grimmett, "Conventional Arms Transfers to Developing Nations, 1987–1994," *The DISAM Journal*, vol. 18, no. 1 (Fall 1995), pp. 59–76.

[19] Central Intelligence Agency, *The World Factbook 1995*, p. 356.

[20] Estimates of actual expenditures vary from official budget figures (just under $10 billion in 1997, and about $11 billion in 1998, some 1.5 percent of GDP) to over $100 billion. Estimates put actual defense spending between $30 and $40 billion; the lower figure seems the more reasonable.

[21] "China: Finance Minister Analyzes Increase in Defense Spending," *Hong Kong Ta Kong Bao* in Chinese, March 3, 1997, in *Foreign Broadcast Information Service Daily Report,* FBIS–CHI–97–043.

[22] Conversation with Mark Stokes, former assistant air attaché in Beijing, April 2, 1997.

Crashed VE–7 on *USS Langley*, 1925.

Military Innovation
and Carrier Aviation—
An Analysis

USS Langley leading task group in the Philippines, 1944.

By J A N   M.   V A N   T O L

The first part of this article, which appeared in the last issue of *JFQ,* charted the historical development of British and American carrier aviation, with particular emphasis on the complex interplay of technological, operational, and organizational factors. The second part treats key questions on how this revolution succeeded in the U.S. Navy and was rather less successful in the Royal Navy and what that implies for military innovation. Among questions considered are:

■ How quickly did those who grasped the vision move from a vague to a clearly-defined vision? How quickly did change take place?
■ Which mattered more to making progress, individuals or groups?
■ What were the barriers to change and how were they overcome?
■ Did change depend on having a particular enemy?
■ How important was competition?
■ How important was a consciousness of the new concept's potential?

Mustin (fourth from right) at Pensacola, 1914.

Then and Now

What was it like to be a junior officer following World War I? An aviator? A senior naval officer vis-à-vis a carrier aviator? Most junior officers who sought naval careers considered which specializations were best for advancement. Many officers wanted to minimize professional risk.

Perceptions of present and future relevance minimized that risk. In the early 1920s, there was ample evidence that aircraft could do militarily interesting things at sea. While proponents of aircraft as independent strike weapons were a minority, aviators were already well accepted by the commanding officers of ships. Flying was not regarded as a bad tour, though it is noteworthy that most aviators continued to do traditional shipboard tours.

legislation requiring commanding officers of carriers to be aviators created career paths

Risk was further reduced by establishing an institutional home for champions and a venue for experimenting with new capabilities and concepts of operation. This led to a viable career path that kept officers employed when their few years of flying ended. (There were inevitably too many pilots for the available senior billets. There was concern over the future of aviators who were not selected to be commanders or executive officers.) The establishment of the Bureau of Aeronautics in 1921 and the legislation passed in 1925 requiring commanding officers of aircraft carriers, seaplane tenders, and naval air stations to be aviators created career paths.

The British case was simpler. If one wished to fly during the interwar period he joined the Royal Air Force where advancement was based on belief in the strategic bomber. Maritime flyers were not usually on a fast track. Even after reestablishment of a Fleet Air Arm, aviation duty was something separate from principal shipboard duties. In short, in the Royal Navy there were better ways to the top than through aviation.

Bureaucratic factors, while perhaps necessary, were not by themselves sufficient to ensure the future of aviation. On personal and intellectual levels in the 1920s, there was great enthusiasm over technology, particularly in the field of aviation. Prominent in the accounts of this period was the sense of adventure among those who wanted to fly. The newspapers were filled with stories of barnstorming and aviation firsts. Together with images of aviators as the only glamorous warriors of World War I, this inevitably made flyers an elite group in the eyes of the public.

There was professional excitement as well. The debate over the role of airpower generated by General Billy Mitchell, the media, and others was prolonged and serious if raucous. Many of the propositions about airpower were *prima facie* not trivial, including questions about the future viability of battleships. Other events such as the mass production of automobiles and expansion of electricity, if not directly relevant to aviation, further stimulated interest in technical solutions and applications. All this suggested in the early 1920s that naval aviation had a future of its own.

Commander Jan M. van Tol, USN, is commanding officer of *USS O'Brien* and formerly served in the Office of Net Assessment within the Office of the Secretary of Defense.

Flying-off platform on turret of *USS Arizona*, 1921.

Whiting (third from left), 1918.

Japanese cruiser *Tsugaru* being bombed in experimental attack (photo obtained by Billy Mitchell during foreign inspection, 1924).

What was it like to be a senior officer then, with responsibility for evaluating new concepts that might supplant or change the paradigm in which he had served? There would appear to be two types of senior officers whose views mattered in different ways. The first were those serving in key billets but who would not reach flag rank.

They knew they would not participate in the next paradigm so they had less incentive to get involved. Moreover, having done well in comparison to their peers, seeing the paradigm under which they served slowly becoming less relevant was hard to accept on a personal level and may have led to a certain skepticism. But though they continued to serve, they still influenced fellow officers and the flags under whom they worked and were a source of resistance to change.

Then there are those who continued to serve as senior captains or flag officers. They had to make decisions on the future of the service and nature of combat. They faced a choice between continuing with proven systems and methods or shifting resources to new concepts which might have been promising but difficult to realize. The latter involved both opportunity cost and risk of failure. Such choices would seem particularly difficult in a time of budgetary constraint. One finds this kind of conundrum facing the General Board in the 1920s and 1930s as it weighed the value of battleships versus carrier aviation. So what enabled senior officers to make the choices they did about naval aviation in the 1920s?

Army "bombing" *USS Alabama* with white phosphorus, 1921.

HMS Furious after conversion from light battlecruiser.

Naval Historical Center

Naval Historical Center

The intellectual tradition of relying on an experimentalist approach to tactics and technology allowed for evaluating evidence in making operational and technical judgments. By implication, the feeling that serious ideas ought to get a hearing undoubtedly encouraged would-be innovators. As the potential of aviation increased, senior officers gave it their support.

The Royal Navy, by contrast, lacked an equivalent intellectual tradition. The British only established a naval staff shortly before the war and then at the insistence of civilian leaders. Staff colleges in Britain did not have the standing of the Naval War College during that period, nor were assignments to them desirable, whereas many future American flag officers attended and served on the staff at Newport. The Royal Navy was more hierarchical, with the putative presumption being that flag officers reached that rank because they knew the answers. In short, young and innovative would-be naval aviators had little reason for optimism regarding receptivity to their ideas.

Ideas for Carriers

Aircraft potential for spotting for battleships was noted very early by Britain and America. It addressed how to shoot accurately when spotting was no longer possible from the shooting ship (using other ships has the drawback of exposing them to enemy fire). The value of scouting from the air was underlined by its absence at Jutland and presence (zeppelins) on subsequent occasions which enabled the German fleet to avoid battle with the Royal Navy.

Vought VE-7 landing on board *USS Langley*.

Naval Historical Center

Naval Historical Center
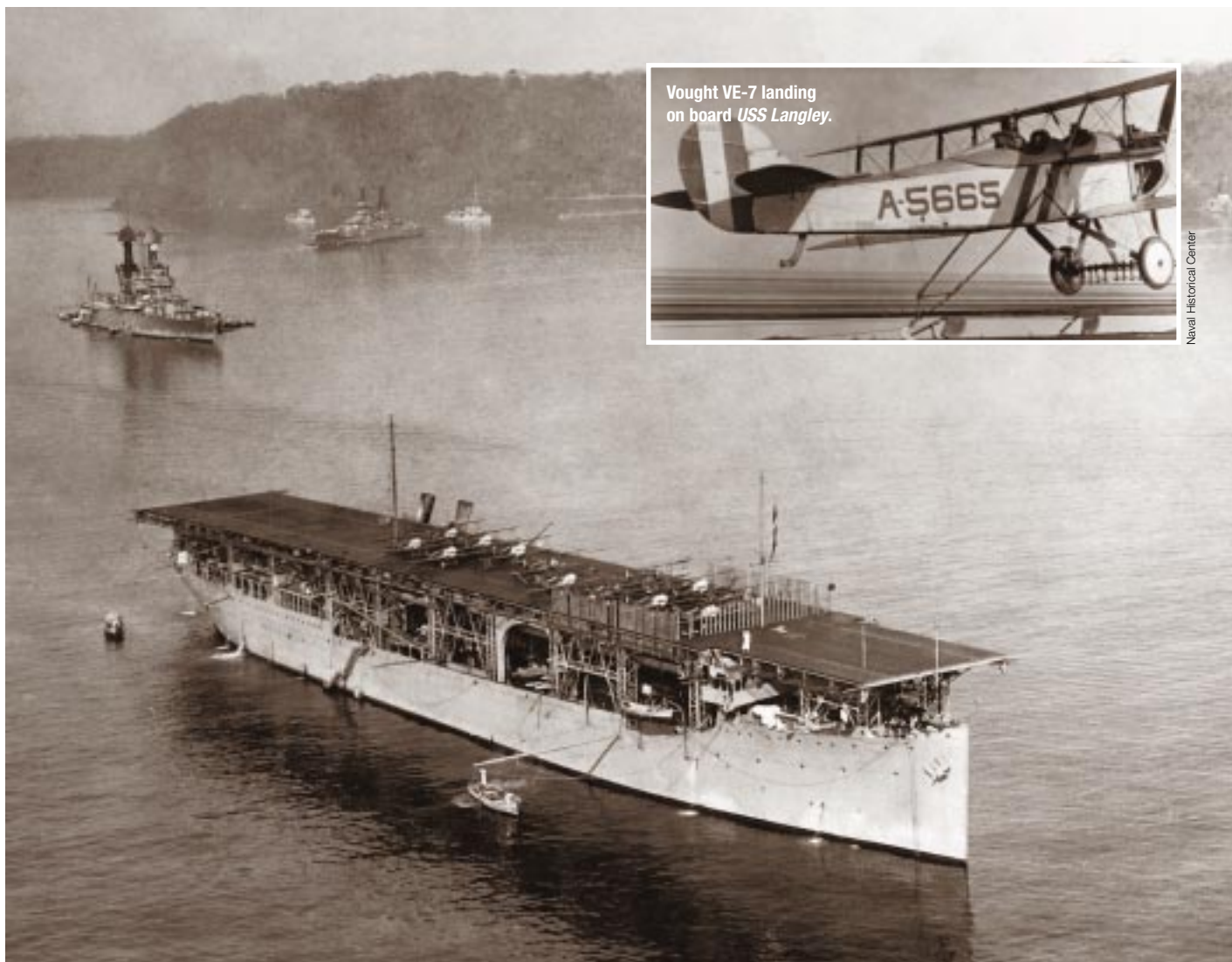
USS Langley, 1923.

Other uses for aircraft were driven by specific tactical problems. Rifles then machine guns were mounted in friendly aircraft to stop enemy aircraft from doing reconnaissance in 1914. Air-dropped torpedoes were used to reach anchored enemy ships when the Dardanelles were blocked to friendly ships in 1915. Zeppelins and seaplanes found the enemy battle fleet at sea in 1916. Submarine and airship bases were bombed a year later. Targets too distant for land-based forces were attacked from the sea in 1918. All these ideas were tried in World War I combat.

Lieutenant Commander Henry Mustin came up with novel ideas for employing aircraft on his own. While commanding the flight school at Pensacola (1915–17), he prepared a lecture on the "naval airplane." As a gunnery expert with service on battleships, he knew that devastating long-range gunfire, effectively controlled from aircraft, could win engagements in minutes. He started with the idea of light aircraft carried and launched from battleships, then moved to launching and recovering them with a special aircraft-carrying ship. Sometime before 1917 he advocated the use of aircraft to attack in support of friendly battleships. It is not clear why he made this leap, but he discussed such ideas with W.S. Sims and others. After war broke out Mustin responded to an appeal by the Secretary of the Navy for war-winning ideas by suggesting bombing of land targets from sea-based platforms. This and a similar proposal by Lieutenant Ken Whiting, assigned to Pensacola during Mustin's tenure, were endorsed by British and American planners in early 1918.

Moffett (second
from left), 1922.

In sum, many innovations appeared to be at-
tempts to solve specific problems. There seems to
have been a lot less of "Given technology X, what
militarily useful things might we do with it?"

Grasping the Vision

How quickly did those who grasped the con-
cept arrive at a clearly-defined vision? In the U.S.
Navy, Mustin was describing carrier aircraft as
landstrike and seastrike forces in 1915–17. By the
early 1920s, Newport was gaming specific tactical
questions, getting at physical realities and con-
straints. The president of
the Naval War College, Ad-
miral Sims, stressed the
connection between gam-
ing rules and actual data.
This was facilitated through
regular correspondence
among faculty members and aviators and, fol-
lowing its establishment in 1921, the Bureau of
Aeronautics.

because of treaty constraints, there were not enough carriers for experimentation

The games suggested things like the pulsed
nature of carrier striking power, the importance
of many aircraft in the air, the need to strike first,
and carrier air hitting an enemy carrier as the
leading objective. Game outcomes had concrete
results. By 1923 there were explicit connections
between gamed ideas and design of both fleet ex-
ercises and warships. Similarly, lessons from the
exercises and technical information on ships and
aircraft were fed into game design and rules.

Outside the Navy, political pressures gener-
ated by airpower purists such as Billy Mitchell
and his congressional supporters pushed the
Navy to put ideas into at-sea operational capabili-
ties by the mid-1920s. The prolonged and highly
public battleship versus airplane controversy had

the salutary effect of highlighting the question of
the proper role of naval aviation.

In 1925, Admiral Moffett reassigned Captain
Reeves, then head of the tactics department at
Newport, as commanding officer of the experi-
mental carrier *USS Langley* to test his ideas, many
of which stemmed from games. Reeves, having
determined through wargaming that the number
of aircraft aloft was the key measure of striking
power, solved practical problems associated with
launching and landing more planes. As a result,
USS Langley was deemed an operational unit by
1926. The presence of *USS Lexington* and *USS
Saratoga* in fleet problems in 1929–31 suggested
their utility and acceptance in a variety of roles,
although not as independent strike weapons.

However, the mature concept envisioned car-
riers as an independent strike force against sea and
land targets and was only achieved in 1944 after
years of trial and error. Interestingly, after the fleet
problems noted above, little work was done on
employing larger numbers of carriers or what their
role would be vis-à-vis the fleet. Because of treaty
constraints, there were not enough carriers for ex-
perimentation. But there is also no record of
work/gaming at Newport in the 1930s on such
matters. This is puzzling given that Reeves became
Commander in Chief, U.S. Fleet, in the mid-1930s
and was presumably in a position to have such
simulation and exercising done.

In the British case, the vision died early
when those naval aviators who experimented
with operations entailed in carrier strike warfare,
albeit in primitive form, were transferred en
masse to the Royal Air Force where success de-
manded adherence to strategic bombing.

Those who remained in the navy were by all
accounts also "air-minded." However, their con-
cept was wedded to bringing about battle with an
enemy fleet, then combining air spotters with ad-
vanced long-range gunnery to kill ships. Based on
wartime experience it was clear what aircraft were
expected to do, and much of British naval avia-
tion was dedicated to those ends. The clarity of
that vision was such that there was little room to
question it. The British experience suggests that
overconfidence in operational concepts can blind
an organization to better alternatives.

Individuals or Groups?

The relationships between individuals in
their institutional settings is vital. The presidency
of the Naval War College, the post of chief of the
Bureau of Aeronautics, and the commodore's role
as head of fleet aviation squadrons is what gave
Sims, Moffett, and Reeves an arena to interact

Bomber landing on
USS Lexington during
fleet problem, 1929.

professionally. By contrast the removal of the aircraft component of naval aviation from direct Royal Navy control in 1919 precluded appropriate players from conducting planning and designing experiments and exercises essential to developing the carrier concept. But there may be more to it. It is rather like the dispute between the "great man" and "impersonal forces" schools of history. Both individuals and organizations are crucial at different times and in different ways.

The creative spark necessarily comes from individuals or from interactions between them. Mustin appeared to be the first officer to see carriers as strike weapons. He actively discussed it with officers who later occupied positions where such ideas could be explored. The institutional setting mattered. This suggests that officers assigned to influential positions should be perceived as receptive to innovative people.

An individual may matter in other ways. The longevity of a senior officer in a key billet sometimes appeared crucial. Moffett remained the chief of the Bureau of Aeronautics from 1921 until his death in 1933. His incumbency gave him credibility with individuals and organizations closely involved with developing naval aviation, such as the General Board, Congress, and senior Navy leaders. This also enabled him to protect innovators such as Reeves from interference and influence the advancement of junior officers. It may have saved good ideas from being aborted in case of early failure. While such longevity has risks, its virtual absence today because of rapid billet changes may contribute to a lack of commitment to programs, inability to take the long view, and incapacity to build credibility for the bureaucratic struggle to get visions implemented.

Institutions played significant roles as well, particularly in seeing to the incremental details vital to translating ideas into practical reality. Organizations like the Bureau of Aeronautics and

T4M–1 torpedo bomber on deck of *USS Lexington.*

Naval Historical Center

the Naval War College were key. The role of the latter was important in two ways. First, long before carriers and real aircraft emerged, innovators like Mahan and Luce established intellectual rigor at Newport which was maintained into the 1930s. There was a reliance on rules of evidence with the proper questions asked, exercises done, and results weighed which made it credible to examine key questions with simulation in the 1920s. Second, iterative gaming at the Naval War College provided the theoretical underpinnings for tests by Reeves with early carriers, inputs into exercise and scenario design, and contributions to ship and aircraft design. In short, creative individuals also needed the right sandbox to play in.

The role of the Bureau of Aeronautics in providing data for Naval War College simulations and a home for aviation and aviators was also a factor. The bureau's interaction with nonmilitary institutions was key. It provided financial support for industry and initiated research in areas such as radial engines and served as a conduit for incorporating commercial advances to meet military needs, which was particularly critical as they outstripped military developments (like C[4]I today).

The General Board played a significant role in integrating technology and tactics. Through it, voting on such issues as the future of aviation was carried out in a community of professionals, not all aviators, with a shared sense of what mattered. Any large organization should have some mechanism through which new concepts which are proved worthwhile become institutionalized.

Again, the British case is instructive for what was lacking. The Royal Navy had no senior champions along the lines of Moffett, Sims, and Reeves since those who might have assumed such roles

now wore air force blue. It had no organizational mechanisms for relating technical choices with operational capabilities, a striking failure that accounts for much of the stunted development. Neither did it have, in the absence of acceptable platforms and aircraft, institutional mechanisms to examine alternative concepts as did the Naval War College.

Overcoming Barriers

Various barriers faced the U.S. Navy. Those confronted by Britain are of interest as well, if only to contrast the effect of America having avoided them, not always by intention.

Budgetary constraints. While significant, the effect of budgetary constraints was indirect. Certainly there were not funds for large numbers of expensive platforms to experiment with, but many would-be experiments could be primitively simulated through iterative gaming. The Bureau of Aeronautics was established to control funding which gave it the freedom to dedicate money to develop engine starters, arresting gear, better engines, etc., which incrementally solved many of the small technical problems. This also meant that such items were not hostage to yearly budgetary tradeoffs, ensuring continuity in development and easing a barrier to entry in contrast to many R&D efforts today.

Possible effects of the absence of budgetary constraints have been noted. Had the incipient rivalry between the U.S. Navy and Royal Navy continued unconstrained by treaty, spending on battleships might have crowded out spending for carriers and carrier aircraft.

Scarce funds ensured that Britain would be stuck with carriers built before requirements for sustained carrier operations were understood. The Royal Air Force focus on strategic bombing, coupled with control of all aviation assets, slowed British naval aviation development since aircraft acquisition was a zero-sum game. It precluded experimentation and may have lessened pressure to increase carrier aircraft capacity since the navy had little chance of getting more aircraft. The Royal Air Force consistently opposed increasing carrier capacity for just that reason.

Treaty constraints. Some have argued that the Washington naval treaties limited advances in carriers, particularly multi-carrier operations. But it appears that *USS Langley*, *USS Lexington*, and *USS Saratoga* would not have been built faster without treaties. Yet key developmental work was done on them and was directly reflected in the design of the *USS Essex* class carriers. By the time more carriers became available in the late 1930s,

USS Saratoga.

Naval Historical Center

USS Ranger,
circa 1930s.

the treaties were no longer in force. There is no compelling evidence that more carriers would have been built in the 1920s and 1930s absent the agreements, especially given the political climate against defense spending.

What kind of carriers might the U.S. Navy have bought had battle cruiser hulls not been available for conversion? Lacking treaties, *USS Lexington* and *USS Saratoga* would have been completed as battle cruisers. What kind of carriers America might have designed then is hard to know, but Britain had sent the design of its first built-for-purpose carrier to the United States in late 1917, and one may wonder if and why American designers would have departed significantly from the plans of the acknowledged world leaders.

The Royal Navy, on the other hand, paid an immediate and lasting price for its four extant carriers. Given the inability to replace them for budgetary reasons, it was stuck with the physical limits built into them. Since that directly affected aircraft design, and in turn concepts of operation, the Royal Navy was effectively locked into learning the wrong lessons from the wrong ships.

Sunk costs. The effect of sunk costs sticking Britain with the wrong ships has been noted. The United States did not face that problem; but the 1927 Taylor Board recommended acquisition of

bombs were not shipkillers and naval aircraft could not have carried them if they were

five small carriers of the unsatisfactory *USS Ranger* design that might have put the U.S. Navy in that position. In the late 1930s, the General Board was aware of that problem regarding aircraft in a period of rapid technological progress and recommended against acquiring a large inventory.

Technical barriers. Even had the Royal Navy grasped the carrier strike vision, it is difficult to see how it would have overcome the technical obstacles, given the financial inability to rid itself of the "wrong" ships and aircraft. Admiral Reeves solved a key technical problem for the Navy onboard *USS Langley* and thus paved the way for acceptance of carriers as fleet units.

The principal technical barrier to going beyond that to the wider conception of carriers as an independent strike force was aircraft and ordnance performance. In the 1920s bombs were not shipkillers and naval aircraft could not have carried them if they were. Torpedoes were shipkillers, but it was almost suicidal to attack antiaircraft equipped ships given the flight profile required. Until aircraft and ordnance that could kill ships were developed, it was difficult to sell the mature carrier concept, which was one reason battleships continued to have pride of place into the 1940s.

The risk of being wrong. In the early 1920s the General Board observed almost plaintively that

"it would be the height of unwisdom for any nation possessing sea power to pin its faith and change its practice upon mere theories as to the future development of new and untried weapons." The burden of proof lies heavily on those who propose change. The current way ostensibly works well; the new way may not be better, and it may be worse. Moreover, a particular new way may not be the best alternative. And new ways often imply high costs.

The key to overcoming this barrier is data which demonstrates the practical superiority (that is, lowers risks) of the new way. Initially, such data must come from theoretical explorations, simulation, and where possible testing with extant systems. Incremental experimental gains reduce risk and make it reasonable to continue the process on an increasing scale until their practical effect and superiority became institutionally accepted. This was basically what the Naval War College-Bureau of Aeronautics-fleet operations exchange achieved for carrier aviation in the 1920s.

Inability to experiment. Failing to consider alternatives is a certain barrier to entry and was manifested in various ways by the Royal Navy and U.S. Navy. Examples included:

■ Unwillingness to experiment, best characterized by "we already have the answers." To an extent, the Royal Navy as the leader in early carrier aviation was sometimes guilty of assuming that its way of operating was the correct one, its problems were faced by all competitors, etc.

■ No platforms. Arguably this was what precluded developing multi-carrier operations before the outbreak of war. But there remains the key question of to what extent other means, such as simulation or analysis, can get around the need for actual platforms until further down the conceptual road. It is conceivable that the support of senior officers discussed above could have, and perhaps ought have, led to better ideas of what multi-carrier operations would be like. The Royal Air Force chokehold over naval aircraft prevented some experimental work that might have alerted the Royal Navy earlier to problems it would encounter in 1940.

■ No means by which to evaluate. The U.S. Navy was able to evaluate operational and tactical concepts through an intellectual tradition among senior officers. The Royal Navy was unable to do the same in a rigorous manner.

■ Training realism. Moffett consciously accepted a high rate of peacetime damage to naval aircraft to push the envelope. Similar approaches prevailed in the *Luftwaffe* and Japanese navy in the 1930s. Both tolerated a high level of training casualties and damage to see what really worked.

■ Error tolerance. To the extent reasonable error is not tolerated, the willingness to experiment is reduced. The counter to this is largely the open experimentalist "trial and error" approach so much in evidence at Newport in the 1920s. (Its relative absence today, certainly vis-à-vis promotion and assignments, may be a factor in RMA-related progress.)

Competing organizations. The British and American cases contrast sharply. The Royal Air Force crimped naval aviation efforts from the start by removing aircraft and naval aviators from the control of the Royal Navy. The fortunate failure of corresponding efforts to establish a separate air service probably prevented similar distorted effects on U.S. and Japanese carrier development.

The impact of competing concepts must not be overlooked. The Mitchell campaign forced naval aviation proponents to demonstrate their case. Within naval aviation there was competition with the carrier idea as well; land-based naval aviation played a significant role in both the British and American navies during World War II.

Political and military interaction. The relationship between political and military leadership differed greatly in Britain and America, particularly access to political officials by military officers. Since the Royal Air Force controlled all aircraft in Britain, the Royal Navy effectively could only present its views and requirements to an often hostile Air Ministry. By contrast, the U.S. system afforded alternate ways of advancing ideas. Congress, by virtue of being outside the military but able to intervene decisively in its affairs (beyond the power of the purse), could push ideas, even against substantial military opposition. The press also circulated ideas on various occasions during the 1920s when Congress intervened substantively in carrier aviation development. While outside intervention may add chaos, it may also prevent good ideas from being prematurely stifled.

Costs. Change meant investing in both carriers and battleships. Aircraft and submarines presented greater technological opportunities for navies in the 1920s even as reduced tension meant reduced funding to develop alternatives. There was not money to buy enough carriers to show that battleships and battlecruisers were about to be superseded. At the same time the evidence of carrier superiority was not clear enough for navies to gamble on not buying battleships and other forces. So America and Japan invested in both carriers and battleships. In Britain, the need for carriers to support the battle force was clear. Moreover, the limited carrier aircraft capacity meant a greater number of carriers was required—if not actually purchased.

Rapid technological progress rendered aircraft obsolete in the late 1930s and raised the cost of change, which is why the General Board in 1937 was against high production levels of

USS Lexington during fleet concentration off Maui, 1932.

Naval Historical Center

carrier aircraft. But this had to be considered against the number of aircraft required to conduct current operations, train new pilots, and keep unit costs acceptable.

Competition and Change

There is a distinction between an enemy and a rival. Were the United States not forced to consider how to fight Japan in the Pacific, the need to take aviation to sea might not have been so apparent. Royal Navy design considerations, even in the post-treaty 1930s, were also affected by where carriers would be used (such as armored flight decks to survive against land-based aircraft in the Mediterranean). However, it was rivalry with Britain in engineering and on the operational level that helped drive early U.S. carrier development. Indeed, so little was known of the specifics of Japanese carrier aviation that "orange" aviation was usually given the same characteristics as U.S. naval forces in wargames.

The distinction between strategic opponent and technical rival is interesting. Is China today a potential strategic foe or Japan a technical rival? Which stimulates more competition?

Although crucial, there was no competition in the sense of directly playing off Britain or Japan (save in the latter case to describe the sandbox). Rather, competition to develop commercial aviation played a notable role in military aviation and later in increasing production. While there was little spillover from the civil sector to the Navy during the introduction of carrier aviation in the 1920s, an active exchange occurred over time. The National Advisory Committee for Aeronautics promoted dual-use technology, including aerodynamic streamlining, supercharged piston engines, and internally pressurized engines, assisted by Army and Navy financial and engineering support. Because of restrictions imposed on service contracting, the commercial aviation industry often led the Army and Navy in adopting new technology. (This is an interesting parallel with what appears to be the case today in such

sectors as telecommunications, computers, and possibly satellites.)

There was much less stimulative effect from British industry. It arguably showed in the lower quality of its aircraft. Perhaps the only top quality British plane in 1940, the Spitfire, was more the product of an individual designer than a solidly based industry.

The effect of competing organizations may warrant further study, especially since so many conditions today resemble those of the 1920s. There was no clear enemy to plan against and there were strong indications of significant technological changes to come, major budget constraints, and a bitter roles and missions debate brewing.

there was no clear enemy and there were strong indications of significant technological changes

While being conscious of change was essential, there was no particular way of achieving it. The meaning of carrier aviation varied even among naval aviators. In the U.S. Navy what allowed leading players with conflicting views to cooperate was a shared commitment to deciding rationally, on the basis of experimentation. By contrast the Royal Air Force, repository of all post-1918 British aviation assets, did not have an ethos of experimentation. It could not afford to in that financially constrained environment since its whole existence depended on maintaining and selling its fixed vision of strategic bombing.

The lack of senior level involvement was striking in the Royal Navy. Without awareness at decisionmaking levels, new concepts may never take practical effect. That was the most pernicious effect of Royal Air Force control over aviation. Whereas the experience of the Royal Navy during World War I convinced many senior American admirals to support aviation, no relevant audience of any size remained in the Royal Navy.

Senior leaders extended consciousness to important external players. For example, Moffett urged prominent figures to talk to the President, gained influence with members of Congress, and appealed to the public through the press and support for popular films such as "Helldivers" (1931). This was in stark contrast to the situation in Britain where senior officers could not approach senior civilian officials and so had less opportunity to present their case.

The Naval War College played an important role in two ways. First, the Newport games convinced fairly senior officers like Reeves of the potential of carrier aviation, thus making allies in the Navy. Second, games posed relevant questions and provided data, thereby reducing the risk of embracing a new concept.

A last significant factor was accumulating a pool of junior officers who were enthusiastic over the concept in its formative years—when its full potential could not be actually demonstrated because of technological limitations (such as weak ordnance and engines) and fiscal limitations (too few platforms to experiment). They would become senior leaders when better technology allowed full realization of the concept.

According to Tom Hone, vision is twisting a familiar situation in one's mind and seeing it in a new light. It requires a thorough understanding of extant technology and ideas, their strengths and weaknesses, and their potential to solve problems. The way visionaries get visions may also affect what they do with them. Visionaries tend to fall into two groups. The first is comprised of what might be called the "unconstrained" visionaries who believe in their vision as an end in itself (Mitchell). The second is more realistic—aimed less at a visionary mission and more at a visionary approach to fulfilling an existing mission (Reeves).

The vision that is eventually fulfilled may not be the one that starts the process. Along the way other players become interested and start to participate in various ways, thereby changing the vision incrementally over time. There may be competing versions of *the* vision, which in this case may be reflected by the competing visions of diverse factions within the naval aviation community in the 1920s when not all aviators saw large carriers as the proper vision. This is likely to happen with our vision of the emerging revolution in military affairs. **JFQ**

Camp Dobol, Bosnia.

55th Signal Company (Eduardo Guajardo)

Changing the Mindset—
Army Antiterrorism Force Protection

By RONALD F. ROKOSZ *and* CHARLES H. HASH

In 1995 and again in 1996 terrorists breached force protection measures for U.S. personnel located in Saudi Arabia. The November 1995 attack on the Office of the Program Manager/Saudi Arabian National Guard, which killed 6 and wounded 40, was a sign of deadly events to follow. In June 1996 at the Khobar Towers housing complex a tanker truck loaded with explosives was detonated next to the northern perimeter fence killing 19 U.S. airmen and injuring hundreds more. As Secretary of Defense William Perry stated at the time, "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." Accordingly, DOD launched an aggressive effort to protect all its personnel and their family members.

The Downing Report

To establish an antiterrorism force protection (AT/FP) baseline and corrective action plan after the Khobar Towers bombing, Perry immediately

Author block:

Brigadier General Ronald F. Rokosz, USA (Ret.), and Major Charles H. Hash, USA, served together in the Operations, Readiness, and Mobilization Directorate at Headquarters, Department of the Army.

110   **JFQ** / Autumn/Winter 1997–98

asked General Wayne Downing, USA (Ret.), a former commander in chief of U.S. Special Operations Command, to examine the circumstances surrounding the attack. In late August 1996 the Downing Assessment Task Force made some sweeping recommendations. The report submitted by the Secretary to the President on *The Protection of U.S. Forces Deployed Abroad*, which appeared the following month, declared that the Downing report was "an important contribution to changing our entire approach to force protection and provides evidence of the need for changes in the way we do business. We have taken the following actions. . . . [We will]:

■ issue DOD-wide standards for providing force protection
■ give local commanders operational control with regard to force protection matters
■ designate the Chairman . . . as the principal advisor and the single DOD-wide focal point for force protection activities
■ move force protection responsibilities from the Department of State to the Department of Defense where possible
■ improve the use of available intelligence and intelligence collection capabilities
■ establish a workable division of responsibilities on force protection matters between the United States and host nations
■ raise the funding level and priority for force protection and get the latest technology into the field and into the Department of Defense."

The Chairman then named the J-34 deputy director for Operations, Combating Terrorism, as single point of contact on the Joint Staff for antiterrorism/force protection. Moreover, he recognized the need to appoint a technical and field agent for AT/FP. That role was given to the Defense Special Weapons Agency (formerly the Defense Nuclear Agency) which functions in conjunction with J-34 to provide technical expertise and assessments. That agency established Joint Staff integrated vulnerability assessment teams which were assigned the AT/FP mission based on experience in conducting facility vulnerability assessments, weapon-target interaction computations, and multidisciplinary threat assessments.

the danger to military personnel comes primarily from unconventional means

The Threat

The danger to military personnel comes primarily from unconventional means because our conventional military capabilities are unrivalled. Foreign states, groups, and even individuals can avoid our military strengths and attack our vulnerabilities through asymmetrical warfare. In simple terms, this warfare pits one's strengths against an enemy's weaknesses.

Command and control nodes, airfields, and work areas are often hardened and difficult for terrorists to enter. However, barracks outside of work areas can house many soldiers and provide soft targets. Domestic terrorists looking to strike a blow may attack an accessible Federal office building as opposed to a hardened, guarded military installation.

Such attacks are asymmetrical and unconventional, but they accomplish their objective—to generate casualties and garner media attention. The broader the exposure and more spectacular the attack the better. The potential for terrorists to inflict high casualties has increased with advanced technology and larger bombs and the availability of weapons of mass destruction such as chemical and biological agents. Attacks like the bombing of the Oklahoma City Federal office building and the sarin gas attack on the Tokyo subway system could become all too common.

Casualties are a center of gravity. American values are based on the sanctity of human life, and public opinion is easily swayed by fatalities televised on CNN. That was demonstrated after the bombing of the Marine barracks in Beirut and the death of Army rangers in Somalia. Enemies are willing to capitalize on American sensitivities and are not restricted by political or ethical rules. Casualties at Khobar Towers confirmed this phenomenon and led us to quickly refocus our efforts to protect U.S. forces in the region.

The Army and AT/FP

The U.S. policy of "engagement and enlargement" finds itself supporting operations across the broad spectrum of conflict in every corner of the world. The Army has proven to be one of the forces of choice to execute these security missions. On any day it has over 100,000 soldiers and civilians forward deployed and another 35,000 temporarily deployed to 86 countries in support of contingency operations and exercises. These personnel make the Army a target of opportunity for terrorist acts. Our soldiers around the world must be proactive in protecting themselves, their unit members, and their families.

Although the Army has had a viable, focused AT/FP program for years, following the Khobar Towers bombing, General Dennis J. Reimer, the Chief of Staff, U.S. Army, directed the Deputy Chief of Staff for Operations and Plans to establish a task force to assess force protection. Major Army commands (MACOMs) focused on the adequacy of AT/FP in the areas of doctrine, policy, training, and resourcing and appraised program execution and recommendations to improve the protection of personnel, information, and critical resources.

Closed circuit security camera.

U.S. Air Force (Shonna Ridings)

As directed, MACOMs reviewed their AT/FP posture and helped to develop task force findings and recommendations. Once the results of the assessment were reviewed, the Chief of Staff sent a message to Army activities on July 26, 1996 outlining the findings of the task force and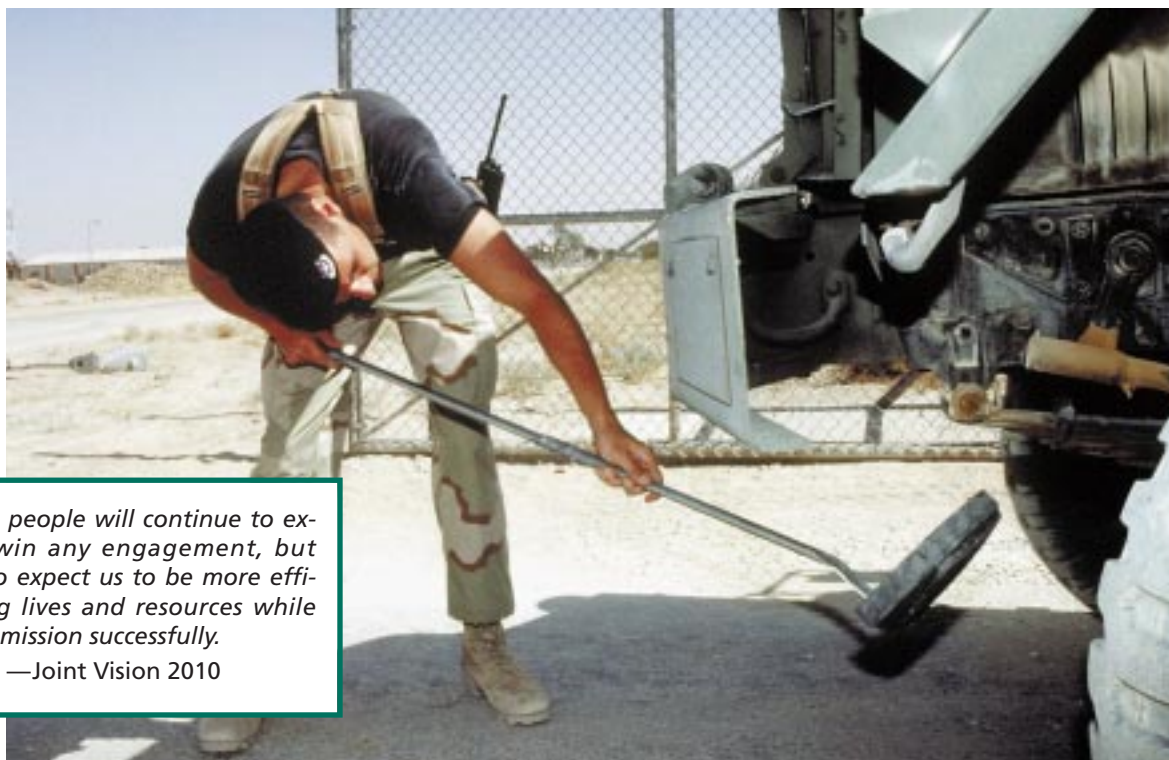 areas of emphasis. It directed commanders to ensure that key AT/FP initiatives were being followed, including efforts to:

the Army approaches AT/FP along three axes—doctrine and training, operations, and intelligence

■ review and revise Army regulation 525-13, the Army combating terrorism program, and ensure responsibilities and required actions are being followed

■ emphasize AT/FP training at all levels of command

■ ensure AT/FP assessments are part of leader recons in conjunction with deployments

■ guarantee AT/FP requirements are given a high priority in budgets

■ ensure AT/FP is an area of special emphasis for inspection and review relevant doctrine and supplement it with recent lessons learned.

Army initiatives were systematically being worked by the Army staff and commanders at all levels concurrent with a DOD-wide review of force protection directed by the Secretary of Defense.

What is AT/FP?

It may help to define what Army force protection is and is not. It is not a new program for the Army. AT/FP is the security portion of a much larger operational concept known as force protection. AT/FP synchronizes select security programs into comprehensive defensive measures to protect personnel, information, and critical resources against asymmetrical threat attacks. AT/FP targets foreign and domestic terrorist threats, as well as those criminals, violent protesters, saboteurs, and foreign intelligence agents who support terrorism, promote conditions beneficial to the conduct of terrorist operations, or otherwise mount operations to further their own agendas at the expense of the Army and its mission. According to a draft of Army regulation 525-13, antiterrorism force protection is defined as:

A security program to protect personnel, information, and critical resources from asymmetrical attacks. This is accomplished through the planned integration of personal security, C² Protect [command and control protection], physical security, and law enforcement, all supported by the synchronization of doctrine, training, operations, intelligence, and resources.

General Reimer has described AT/FP as a holistic program with four pillars: physical security, C² Protect, personal security, and law enforcement operations. Moreover, he urged that Army personnel: "Keep focused on force protection. It is a primary leader task and an inherent part of all operations (home station or deployed) to protect soldiers, family members, Army civilians, and resources."

Headquarters, Department of the Army, is responsible for both AT/FP policy and requirements. MACOMs further define policy, provide resources for critical requirements, and oversee subordinate command AT/FP programs. Both installation and unit commanders are responsible for implementing this policy and for allocating resources to maintain the protective posture of installations/units based on local threats and vulnerabilities. Commanders are ultimately responsible for AT/FP. That includes individual and unit antiterrorism awareness training prior to deploying outside the United States, its territories, and its possessions. U.S. Army Forces Command and U.S. Army Europe continue to ensure that all troops deploying to Bosnia are aware of threats and are ready to counter them.

The Army approaches AT/FP along three axes—doctrine and training, operations, and intelligence—which drive resourcing and policy and define the overall program.

Doctrine and Training

The doctrine and training axis is the institutionalization of the program. It is the catalyst for changing the Army's institutional mindset. We must not allow antiterrorism force protection to be a peaks and valleys program. With continued command emphasis, training can ensure that AT/FP is embedded in all operations and activities much like the Army safety program.

> **T**he American people will continue to expect us to win any engagement, but they will also expect us to be more efficient in protecting lives and resources while accomplishing the mission successfully.
> —Joint Vision 2010

U.S. Air Force (Richard M. Heileman)

The foundation of our training program comes from 15 security related courses taught by the U.S. Army Military Police School (USAMPS), Intelligence School, Corps of Engineers, and the John F. Kennedy Special Warfare Center. USAMPS volunteered for the mission to develop the CJCS level I, II, and III AT/FP training programs. A training task force was formed with each member carefully selected for instructional expertise and experience. The task force condensed 18–24 months of course planning and development to less than three to meet training implementation deadlines.

Level I training provides antiterrorism awareness and specific area of responsibility threat information to all soldiers, Army civilians, and family members deploying or traveling overseas. The purpose is to reduce their vulnerability to terrorism through increased and constant awareness and to reemphasize personal protection measures. This level is divided into two subsets based on threats in the destination country. Low/negligible threat deployments require only the viewing of the Army's individual protective measures video, issuance of Joint Staff Guide 5260 (*Personal Protection Guide*), a wallet-sized card, "Security While Traveling," etc. Medium and higher threat areas require viewing of additional videos and training by a qualified level II instructor. USAMPS has developed level II formal training entitled "The Force Protection Unit Advisors Course." Students

representing each unit, battalion and above, will be certified as unit level I trainers and advisors. Level II training prepares individuals to manage unit force protection programs and provide AT/FP expertise to commanders. The trainee can also serve as the level I trainer. This two-pronged program provides commanders with enhanced expertise and will integrate AT/FP into every mission.

The awareness of commanders must also be enhanced to complement level II training. The level III program accomplishes that mission. It provides battalion and brigade commanders with knowledge and skills to ensure unit combat power preservation. This two-hour training support package has been integrated into pre-command courses, including those for garrison and installation commanders. Army schools will energize the package with branch-specific tasks. Required tasks are also getting a technology boost through CD–ROMs which put AT/FP data at one's fingertips.

Level IV training is an executive tier seminar conducted three times a year in the Washington area. It is directed at senior colonels, flag officers, and equivalent level Army civilians to explain their roles in developing programs, address issues, and spotlight information sources to assist in integrating functional aspects of AT/FP. It also offers a forum for exchanging ideas on a host of AT/FP

subjects, better understanding the terrorist, and examining technology to enhance the program. It employs updates, briefings, guest speakers, panel discussions, and a tabletop wargame.

The Army is combining resident schools, exportable training packages, and mobile training team programs with greater command emphasis to institutionalize AT/FP awareness across the

new standards and policy will synchronize separate force protection elements

board. In addition, Headquarters, Department of the Army, and U.S. Army Training and Doctrine Command (TRADOC) are collaborating on the revision of AT/FP doctrine. The intent is to field a stand alone publication to provide commanders with tactics, techniques, and procedures to implement viable AT/FP operations or integrate them into extant operations field manuals.

Operations

The Army operations axis is command emphasis on awareness and synchronized efforts to protect people and critical assets. Establishing threat-based standards and revising Army policy are critical to founding baseline requirements for an aggressive and pervasive AT/FP mindset that is embedded in all soldiers and part of every process from mission planning through execution to the after action review.

While commanders are ultimately responsible for providing security for people and assets, other key players include G-3 (operations), G-2 (intelligence), resource manager, provost marshal, staff judge advocate, engineer, and public affairs officer. G-3 integrates all staff efforts.

Policy is being updated through a rewrite of AR 525-13 on the Army program to combat terrorism. The revision includes new DOD and Army standards and policy and will synchronize separate AT/FP elements for a seamless deterrent to terrorists, criminals, spies, and saboteurs. The new regulation embodies the overarching nature of antiterrorism force protection.

The Army recognized that it needed a force protection baseline before fully implementing a program. The tool to assess the Army AT/FP posture was Headquarters, Department of the Army, Force Protection Assistance Team (FPAT) assembled in January 1997. It represented the best from the fields of physical security/law enforcement, special operations, training, structural engineering, information operations, counterintelligence, chemical/biological, medical service, and risk management/safety. Its charter is to assess the health of the program, establish standards, and provide a tool for commanders to measure their force protection posture.

Khobar Towers.

FPAT completed 16 visits in early 1997 to include Army component headquarters of unified commands, MACOM headquarters and installations, and the Reserve components. Commanders received a bonus from the FPAT visits: an assessment of their overall security posture and recommendations on further site enhancements.

*A*merica has global interests and responsibilities. Our national security strategy for protecting those interests and carrying out those interests requires deployment of our forces to the far reaches of the globe. There will be future terrorist acts attempted against U.S. military forces. Some will have tragic consequences. No force protection approach can be perfect, but the responsibility of leaders is to use our national resources, skill, and creativity to minimize them.

—William J. Perry

FPAT coordinated with Headquarters, Department of the Army, to resolve issues from the field and recommended initiatives to improve AT/FP. This feedback is critical in tracking trends and indicators that will allow us to measure improvement. The staffed recommendations were brought to the AT/FP Steering Committee Board of Directors for action.

Additionally, the results of the FPAT review were briefed at the Senior Leaders' Training Conference in July 1997. Although FPAT completed its charter, this effort will continue with MACOM assessments of subordinate commands and installations, inspector general oversight of MACOM programs, and Joint Staff integrated assessments of Army installations scheduled by MACOMS and coordinated through Department of the Army.

The board, chaired by the director of Operations, Readiness, and Mobilization at Headquarters, Department of the Army, is the integrating agency for Army AT/FP initiatives. Its inner circle includes representatives from TRADOC, the U.S. Army Intelligence and Security Command, and Army staff elements with responsibility for training, counterintelligence/human intelligence, information operations, resource management, etc. Its outer circle includes key advisors whose areas of expertise sharpen our focus and facilitate key technical initiatives within their areas of specialization. Board oversight ensures that requirements are identified, tracked, and completed. It also develops and allocates tasks based on terrorist threats, Joint Staff team input, intelligence data, and CJCS guidance. The committee is currently reviewing initiatives designed to facilitate and implement the AT/FP program. Two critical initiatives are resourcing programs and developing, acquiring, and installing physical security equipment.

Exercise checkpoint.

Since the Khobar Towers bombing the Army has reviewed resourcing for AT/FP with an emphasis on antiterrorism. The initial review was completed in time for the submission of critical force protection initiatives in the FY97 congressional supplemental budget and the FY98–03 program objective memorandum relook. One major initiative is the acquisition and fielding of AT/FP equipment to the troops.

Properly equipping soldiers is vital to AT/FP. In 1997 $155 million was spent specifically on protecting personnel. Major funding included $86.4 million for up-armored, high-mobility multipurpose wheeled vehicles (HMMWVs), $11.3 million for body armor, $9.8 million for ballistic blankets, and $7.2 million for other physical security equipment. The Army received approval for program enhancements in the amount of $58.1 million in the FY97 supplemental budget. It included $37.6 million for the Army Central Command Saudi relocation and $7 million to implement the land information warfare activity command and control-protect (C²-P) mission. The remainder was added to the current Army program for activities related to antiterrorism force protection.

Since AT/FP is embedded in most Army activities, it is difficult to determine exact amounts programmed or expended towards that mission, but at the core of the program are the physical security equipment, law enforcement, antiterrorism, installation counterintelligence, and criminal investigations management decision packages. Some 85–90 percent of the personnel were military, Army civilian, or contract guards. Technological initiatives to supplement or replace the manpower-intensive guard force are being solicited for investment funding priority.

The Army's physical security equipment (PSE) program is a pivotal component of the operational axis and brings the latest in technology to counter the threat. Headquarters, Department of the Army, funds critical equipment based on MACOM PSE priorities. The most widely used intrusion detection systems are the joint service interior system, commercial systems, integrated commercial systems, and the alarm monitor group.

The Army has also taken the lead in preparing a DOD physical security and AT/FP technology guide which will be available to commanders in 4th quarter FY97. Commanders on all levels will use it to identify and purchase PSE. The Army PSE program is vital to the overall AT/FP posture of a command. Threat and vulnerability assessments are conducted and reviewed for all installations on a continuing basis. We rely heavily upon Army intelligence assets to help define the threat to personnel and installations. Once it is identified PSE must be applied.

Intelligence

The intelligence axis, specifically counterintelligence, drives the collection, analysis, and dissemination of terrorist threats. Army counterintelligence provides commanders with a predictive analysis tool to counter asymmetrical threats and identify potential terrorist attacks against soldiers and installations. Good intelligence facilitates training and applying resources to harden activities.

Counterintelligence (CI) support covers a range of functions by assisting in vulnerability assessments, advice and assistance to AT/FP and other security programs, liaison with local and national agencies, and CI force protection source operations overseas. Army CI elements collect and report military and military-related foreign intelligence and CI information on foreign terrorist activities and other specified areas. Army CI elements report that information to the Defense Intelligence Agency and provide information copies to the Army Counterintelligence Center (ACIC). Immediate threats are reported to commands and supporting provost marshals.

ACIC conducts analysis and production of strategic CI information. All echelons with CI staff capability conduct analysis and production to meet local needs. Strategic CI production may include worldwide assessments of organizations, personages, sites, funding, training, operations, capabilities, and when possible the intentions of terrorist groups. Local CI elements may use these products and analyze the local situation which affects supported units, installations, or activities.

the threat is no longer limited to the extremist willing to carry out a suicide bombing

The intelligence community, though limited by executive order from collecting information about U.S. persons, can effectively support AT/FP. There is a considerable difference between what CI elements can do for a commander in Bosnia and in CONUS. Federal, state, and local law enforcement agencies have primary responsibility for gathering information to protect U.S. forces in this country. Commanders work with these agencies through garrison provost marshals. Army intelligence personnel may collect, retain, analyze, and disseminate force protection-related data on Americans in CONUS only when DOD has determined they are an actual or potential threat to DOD personnel, installations, or matériel.

The nature of the threat is evolving. It is no longer limited to the foreign-based extremist willing to carry out a suicide bombing. We face domestic dangers from radical militia groups, separatist organizations, and individuals with agendas that include violence.

Threats include assaults on information systems. DOD systems worldwide experienced over 250,000 attacks in 1996 alone, ranging from adolescent hackers to foreign intelligence services. The information highway poses great opportunity and risk for the Army. Additionally, the Internet has become an excellent source for detailed information on bomb making and sabotage. A terrorist or disgruntled employee on a tight budget has easy access to a wealth of information at little or no cost, which may seriously harm Army personnel, information, and critical resources.

The Army vision for the future is simple: AT/FP must be integral to everything we do and plan. To accomplish this we must continue to educate all soldiers, Army civilians, and family members. It is an individual and unit responsibility that requires a dramatic change in outlook.
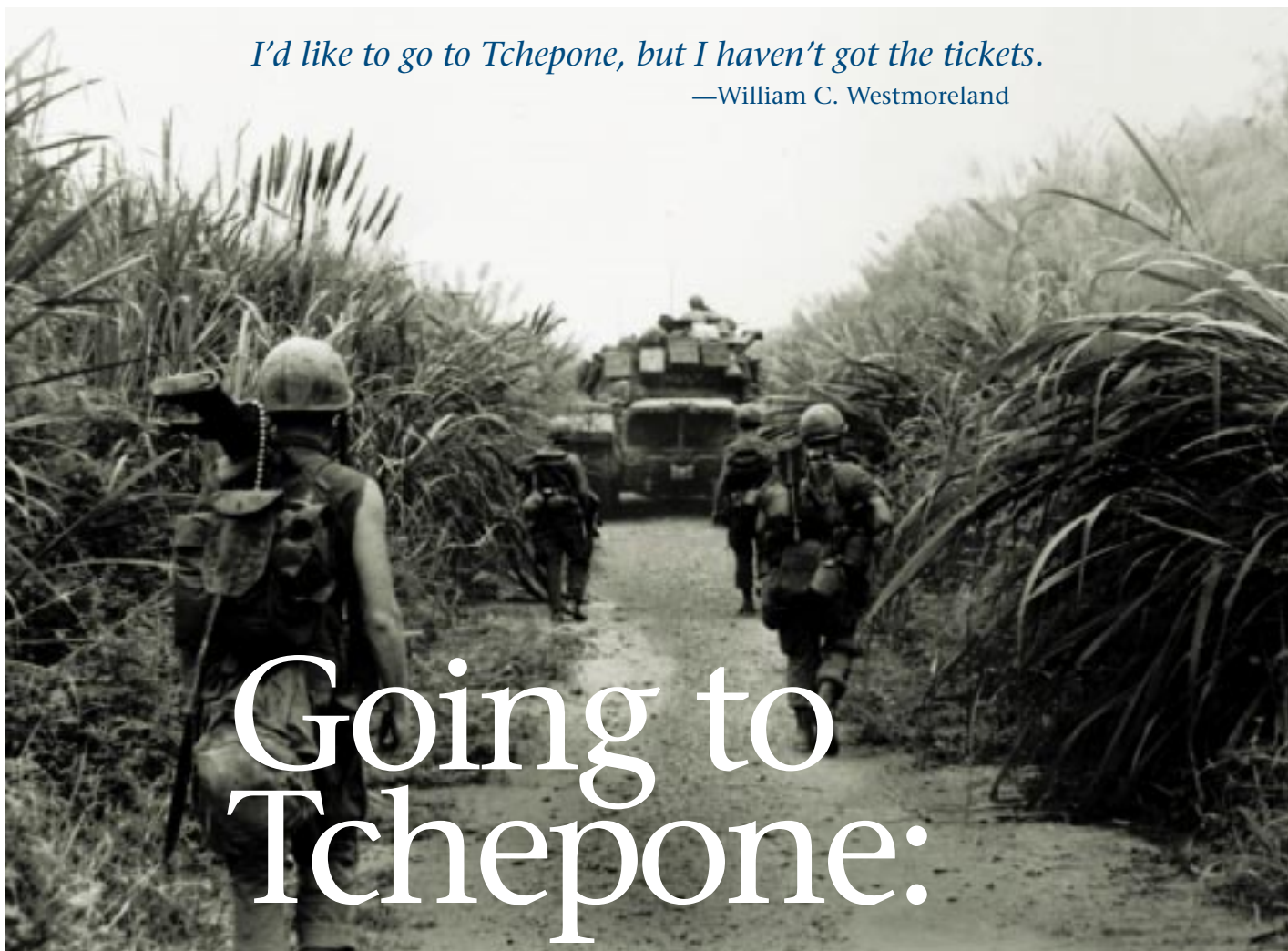
The Army mindset will be changed through initiatives designed to avoid the periodic peaks and valleys of interest in terrorist acts. We must permeate the operational environment with antiterrorism force protection initiatives and recognize that the best measures are proactive, not reactive. We must also continually update policy and doctrine and ensure that every soldier, civilian, and family member is educated on the subject. Finally, we must adhere to common standards, apply resources based on the threat, and continue to oversee protection through both deterrence and defense. **JFQ**

I'd like to go to Tchepone, but I haven't got the tickets.

—William C. Westmoreland

Going to Tchepone:

M–48 tank leading marines along Route 9.

U.S. Marine Corps (J.A. Reid)

OPLAN El Paso

By J O H N   M.   C O L L I N S

Colonel John M. Collins, USA (Ret.), a veteran of World War II, Korea, and Vietnam, served as senior specialist in national defense at the Library of Congress and is the author of eleven books, including *Military Geography for Professionals and the Public* (Washington: NDU Press, 1998) from which this article has been adapted.

The Ho Chi Minh Trail, which linked North and South Vietnam via the Laotian panhandle, was an indispensable source of supplies for communist forces operating below the 17th parallel in the 1960s and early 1970s. Air interdiction and special operations forces slowed but never stopped the flow of matériel. President Lyndon Johnson, primarily for political considerations, would not approve air strikes around Hanoi and Haiphong, which might have been more successful in the overall effort to disrupt enemy activities.
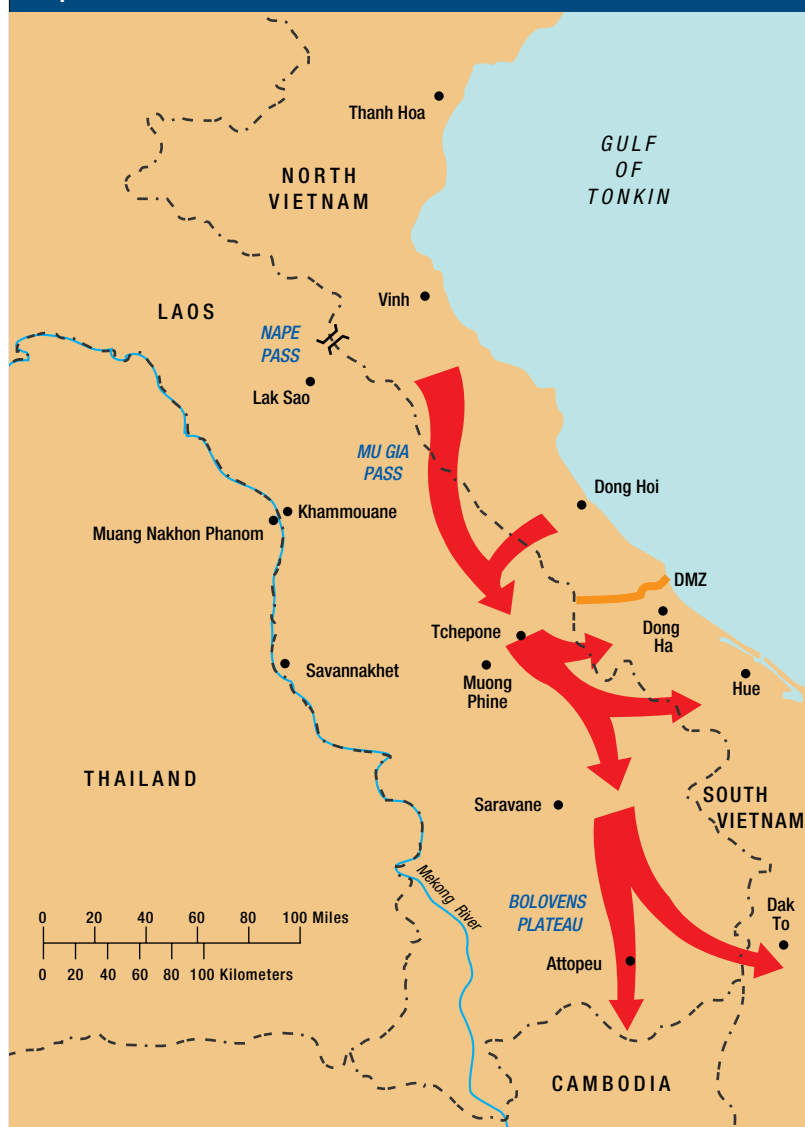
General William Westmoreland—the commander of U.S. Military Assistance Command, Vietnam, from 1964 to 1968—commissioned an operation plan designated El Paso to interdict the trail. It was a corps-sized operation to seal off the trail at Tchepone in Laos for 18 months during the dry season which was preceded and followed by torrential rains that reduced vehicle traffic to a

Map 1. Main Avenues of Ho Chi Minh Trail

through the wilderness in the late 1950s. Dedicated men, women, boys, and girls trudged down its paths bent bandy-legged beneath heavy loads, all but ignored by senior officials in Washington and Saigon because the invoices were unimpressive: a little rice, pitted handguns captured from the French, homemade weapons pieced together like so many Rube Goldberg inventions. The tempo, however, gradually picked up and the consignments increasingly included items such as radios, pharmaceuticals, plastic explosives, recoilless rifles, and repair parts. Ammunition requirements multiplied exponentially after U.S. combat forces hit North Vietnamese Army (NVA) regulars head on in 1965.

Evolutionary Development

Brutal courses that initially traversed several hundred miles of exhausting, saw-toothed terrain between Vinh and the demilitarized zone (DMZ) later continued the grind through Laos, which could more than double the distance to ultimate destinations in South Vietnam (see map 1). Human bearers and assorted beasts struggled to tote swelling loads, yet gaps between supplies and demands became ever wider as individual burdens grew progressively heavier. Each 122-mm rocket weighed 102 pounds (46 kilograms), more than most of the porters; five would buckle the knees of pint-sized elephants which pushed and pulled better than they bore cumbersome loads. Requirements for routes that could accommodate truck traffic thus were clear (figure 1), but most passages in the back country were primitive, largely bridgeless, pitted with water buffalo wallows, and subsequently battered by bombs.

Senior decisionmakers in Hanoi accordingly initiated ambitious renovation and expansion programs to widen rights of way, span streams, level humps, fill in hollows, corduroy spongy ground, and establish way stations. The improved Ho Chi Minh Trail, constructed and maintained with tools that ranged from D-handle shovels to bulldozers and scrapers, incrementally became a labyrinth of motorable roads, cart tracks, foot paths, and navigable streams that by early autumn 1967 furnished communist forces in South Vietnam about a quarter of their supplies (70 percent of arms and munitions). Aerial bombardments pocked those avenues like the surface of the moon, but dogged peasants under military supervisors patched the damage and built bypasses as convoys shuttled from point to point under cover of darkness and ever more effective antiaircraft umbrellas.

trickle. Planners who worked on the operation between November 1967 and March 1968 discovered that geography profoundly influenced every aspect of a large-scale, long-duration operation mounted far from existing support facilities. This article examines the geographic considerations which the author encountered as a member of the El Paso planning staff while assigned as chief of the campaign planning group at Headquarters, U.S. Army Vietnam.

The Trail

Initially opened to support Viet Cong guerrillas in South Vietnam, the Ho Chi Minh Trail was nothing more than a skein of rustic traces

Figure 1. Transport on the Trail

Prime Movers	Rated Capacity
Male Porters	68 lbs. (31 kg)
Female Porters	55 lbs. (25 kg)
Elephants	440 lbs. (200 kg)
Pack Bicycles	525 lbs. (238 kg)
Ox Carts	2,200 lbs. (998 kg)
Trucks	
GAZ–51	4,400 lbs. (1,996 kg)
ZIL–151	5,500 lbs. (2,495 kg)
STAR–66	7,720 lbs. (3,500 kg)

Laotian Landscapes

The panhandle of Laos is comprised of three parallel regions roughly oriented from north northwest to south southeast: jumbled mountains straddling the eastern frontier; a rolling plain west of Muong Phine stretching all the way to the Mekong; and a rough, fever-ridden, sparsely-settled transition zone which lies between them. The Ho Chi Minh Trail traversed all three areas (map 2).
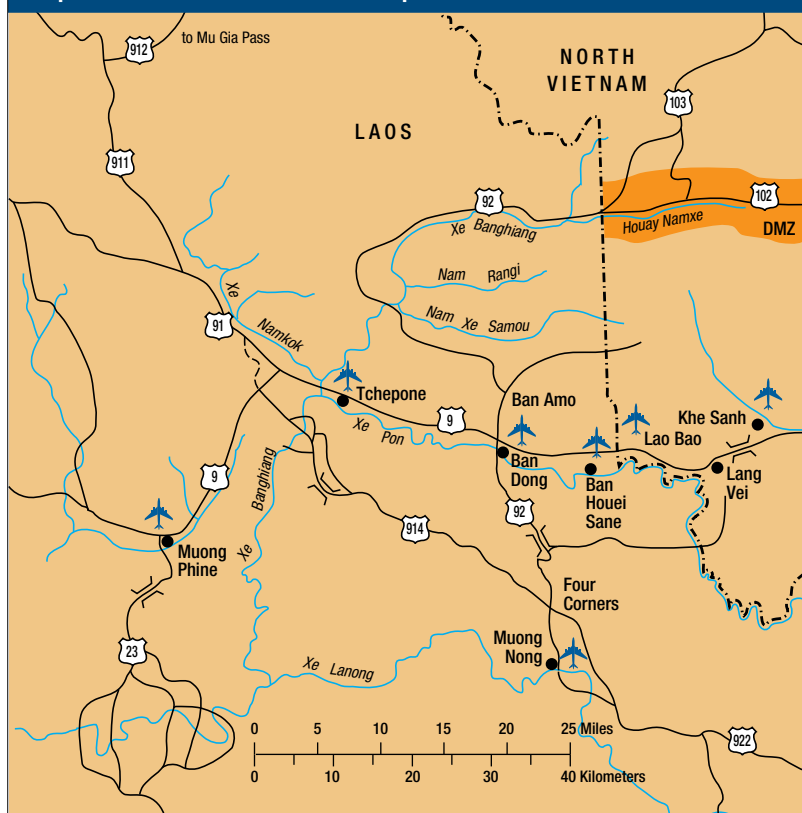
The Annamese Mountains. The highest peak along the border between Laos and Vietnam barely tops 5,500 feet, and a few other summits surpass 4,000 feet, but such heights are deceptive since mountain streams chisel razorbacked ridges and canyons from bedrock. Numerous inclines exceed 45 degrees or 100 percent (one vertical for each horizontal foot). Topography is roughest north and west of the DMZ, where massive limestone deposits dissolve in tropical downpours, sculpting needle-shaped pinnacles, sink holes, and culs-de-sac. NVA workshops, apartments, and stockpiles occupied giant caverns with cool, dry, blast-proof halls three or four stories high which extended 1,000 feet or more into hillsides.

Business was necessarily cyclical since seasonal rains turned the Ho Chi Minh Trail into mush from mid-April until at least late September. NVA logisticians on the lee side of mountains that block the southwest monsoon thus amassed stockpiles inside their border during summer months, when skies were sunny along the coast, in preparation for great surges south when roads in Laos became dry. Communist base areas honeycombed with caves, tunnels, bunkers, and subterranean storage pits inside Laos held stocks pending distribution to using units.

Abandoned runway at Ban Houei Sane.

U.S. Air Force

Map 2. Laotian Panhandle at Midpoint

into acute angle compartments. Two prominent east-west ridges a few miles apart with a trough in between follow parallel paths fifty miles from Khe Sanh past Tchepone, where the northern runner peters out. Its companion, which plunges on for another fifty miles, is a natural barrier breached in just four places. The Lang Vei cleft farthest east expires south of Route 9 in a maze of serrated highlands. A second portal at Ban Dong opens to form a shallow, oblong bowl generally centered on Four Corners. Tchepone, a natural hub, has breakthroughs leading southwest, southeast, and east. The final opening, farthest west, comprises a broad pass at Muong Phine.

Under optimum conditions the Banghiang River at Tchepone, which is 3 feet deep and 100 yards wide, forms an impressive obstacle. More than 50 perpendicular runnels that drain wooded, broken ground just north of the Pon River and corrugate its flood plains are militarily insignificant during dry seasons but become raging torrents when it rains, while trackless palisades up to 800 feet high shadow the south bank for 15 miles west of Ban Dong.

Blobs of blue and red that represent friendly and enemy forces on tactical maps more often than not are worlds apart in the transition zone, where no vehicles move far off roads and trails. Foot troops may hike a mile or two an hour in open forests, but vegetation makes military columns backtrack, doubling or tripling straight-line distances. Youthful Paul Bunyons wielding machetes can hew through 100 yards of bamboo in 60 blistering minutes, provided they take an interest in their work and sergeants rotate point men frequently. The racket sounds like several unsynchronized Anvil Choruses.

Desolation typified the transition zone. Tchepone, once a large village of 1,500 occupants, was home to fewer than half that number by the mid-1960s. With most hamlets deserted and their inhabitants dead or departed, panhandle life had shifted from traditional rural clusters to NVA base areas in dense woods or river towns the Royal Laotian Government held.

The Savannakhet Plain. Relatively low, gently rolling real estate overgrown by brush and savanna grass characterizes the Savannakhet Plain save for scattered subsistence agricultural land. Most of the trail was positioned well to the east in 1967–68 because its architects preferred better cover and more direct routes to destinations in South Vietnam.

Motorable Infiltration Routes

The Combined Intelligence Center in Saigon estimated that 90 percent of all enemy troops infiltrated Laos through the DMZ via Routes 103

Few convenient apertures other than Mu Gia Pass and Khe Sanh Gap cross that mountain wall because swift streams that cascade west carve constricted corridors studded with rapids—the Banghiang River traverses a gorge so steep that contour lines sit atop one another—and slopes everywhere are as slippery as bobsled runs when greased by rain.

Dank, gloomy, multistoried jungles with dense undergrowth mantle much of that redoubt

vegetation makes military columns backtrack, doubling or tripling straight-line distances

with thick stands of teak and mahogany towering 90 to 100 feet with occasional monsters half again as high. Corded vines festoon the lower levels and lacerate unwary travelers with terrible barbs. Huge breaks of bamboo stretch from Khe Sanh to Ban Houei Sane, close clumped, almost impenetrable, and with stalks up to half a foot thick. Secondary growth quickly reclaims lands exposed to slash-and-burn farming by Montagnard tribal groups.

The transition zone. Topography in the transition zone between mountains on the east and relatively level terrain on the west features discontinuous uplands that chop the Laotian landscape

and 102, after which some marched south while others swung back into South Vietnam along the Nam Samou River and Route 9, both showering tributary tracks (see map 2). Equipment and supplies, however, took different tacks in 1967–68.

Route 92. A rude way no more than 10 or 12 feet wide, Route 92 was passable to one-way motor traffic from the DMZ to Ban Dong, where trucks swam the Pon River in dry weather, then negotiated extremely tight turns and steep grades to Four Corners. Major improvements later transformed that byway into the preeminent infiltration corridor in southern Laos.

Route 914. From 1965 until early 1968 when it became the most heavily traveled supply route between Tchepone and Route 92 at Four Corners, Route 914 carried traffic from numerous sources, including Mu Gia Pass and inland waterways. With a width of 8 to 30 feet and a laterite surface that accommodated tractor-trailers in fair weather, the route did not exactly tip on end after fording the Banghiang River, but it climbed 23 percent grades before finding an easier course.

Route 23. The only other motorable north-south avenue along the Ho Chi Minh Trail was Route 23, which became dormant and fell into disrepair when convoys began to use Route 914 as a shortcut. This traffic ceased in 1966 after fighter-bombers destroyed the triple-span Banghiang bridge. The river at that point was unfordable, but traffic revived a bit when barges and by-passes appeared some months later. Construction crews, however, never restored or replaced the battered bridge and quickly improved the natural earth roadbed, which at best was 7 or 8 feet wide.

Route 9. The only east-west "turnpike" across Laos, Route 9 was once a passing fair post road connecting Quang Tri Province on the Tonkin Gulf coast with the town of Savannakhet on the Mekong River, a distance of 200 miles. War and neglect had taken their toll, but the route still had greater potential than others: a stable base, crushed stone and laterite surfaces averaging 13 to 14 feet in width (less shoulders), gradients that did not exceed plus or minus 3 to 5 percent even in the Khe Sanh Gap, and access to nearly all militarily significant features in the study area (transportation nodes along the trail, NVA base areas, and the few populated pockets).

Typical ford bypassing colonial bridge on Route 9.

U.S. Air Force

Liabilities countered the assets. Several gullied or grossly overgrown stretches up to a mile long restricted horizontal clearance to as little as 6 feet. Lengthy meanders around fallen trees and bomb craters also reduced throughput capacities and increased transit time. Few colonial bridges survived U.S. air strikes, which systematically took them out starting in 1966. The rickety relics that remained could not support fully loaded three-quarter-ton trucks, but enemy vehicles routinely sloshed across everywhere, including on the broad sand and mud Banghiang River bottom, where 12-ton U.S. semitrailers would have bogged down in the absence of a pontoon bridge or ferry.

Significant Airfields

U.S. Marines at Khe Sanh possessed the only operational fixed-wing airfield in the study area after January 1968. Six others were abandoned in various stages of disrepair (see figure 2).

Lao Bao and Ban Amo. Since they had not been capable in their heyday and were badly in need of repair, neither Lao Bao nor Ban Amo was worth rehabilitating. The time, manpower, and money which would have been required could be better spent elsewhere.

Ban Houei Sane. On the outskirts of the sleepy village from which it took its name, Ban Houei Sane served U.S. C–130 transports until January 1968, when NVA regulars overran it on their way to Khe Sanh shortly before Tet. The crushed stone and laterite runway received more than 20 deep craters at that time, but the rest was in fairly good shape and expansion room to the west was almost unlimited.

Tchepone. The former French airbase located 23 air miles farther west at Tchepone fell to the communists in 1961, after the Royal Laotian Army withdrew. U.S. engineers determined that its well-drained, well-compacted 3,700-foot runway could be rehabilitated rapidly, though one end was pocked with bomb craters and blocked by elephant grass and brush. A knife-edged ridge a mile

south might have made C–130 landings and take-offs iffy but would not have interfered with light assault transports such as C–123s and C–17s.

Muong Phine. The derelict runway reclaimed by the jungle at Muong Phine was scarcely visible from the air, but its bomb damage was slight and its laterite surface had a solid foundation. Refurbishment would have required extensive land clearing plus filling to repair erosion scars as well as one deep depression. Landings from and take-offs to the west were unobstructed, although the runway unhappily pointed straight at a mountain mass in the opposite direction.

Muong Nong. The stubby 1,300-foot earth-surfaced runway at Muong Nong butted into a loop of the Lanong River 20-some miles south of Route 9. Even so, there was room to double that length by planing off humps and draining swampland. Engineers equipped with air transportable earth-moving machines probably could have produced a C–123 strip in about two weeks.

Khe Sanh. Just across the border from Laos in South Vietnam, the operational airfield at Khe Sanh combat base was built on weathered basalt, a reddish substance which resembles laterite but has few of its properties. Aluminum planks covered the runway, taxi strips, and parking areas to ensure all-weather capabilities, because basalt churns to mush and ruts quickly with any rainfall. Khe Sanh, unlike other airfields in the area, was fully equipped with tactical air navigation systems and radio beacons, ground-controlled approach radar, and aircraft refueling facilities.

Drop and Landing Zones

Open spaces usable as large-scale parachute drop zones or helicopter landing zones are scarce in the Laotian panhandle except on the Savannakhet Plain. Topography elsewhere is too formidable and the vegetation too confining.

Parachute drop zones. Paddy fields around Muong Phine offered the only opportunity for sizable parachute assaults which, according to U.S. Seventh Air Force standards, required a clear drop zone 2,925 yards long (more than a mile and a half) for 64 troopers in a fully-loaded C–130. But clearings located near Tchepone, Four Corners, and Ban Houei Sane were more than adequate for container deliveries of petroleum, oils, and lubricants (POL), ammunition, rations, and other high priority items (35,200 pounds per C–130). Well-qualified crews equipped with the parachute low altitude delivery system generally could put 2,000-pound bundles on 20-yard-square bullseyes on isolated hilltops or in jungle clearings, and the low altitude parachute extraction system could slide 18,000-pound platforms down obstruction-free dirt roads or other smooth surfaces that were 50 feet wide by 1,200 feet long.

Figure 2. Airfields

Airfield Name	Runway Dimension (feet)	Elevation (feet)	Largest Potential Capacity	Status
Lao Bao	1,100 x 65	650	C–7a	Abandoned
Ban Amo	2,250 x 75	480	C–7a	Abandoned
Ban Houei Sane	3,560 x 90	480	C–130	Abandoned
Tchepone	3,700 x 120	558	C–130?	Abandoned
Muong Phine	2,900 x 60	656	C–130	Abandoned
Muong Nong	1,300 x 60	500	C–123	Abandoned
Khe Sanh	3,897 x 60	1,608	C–130	Operational

Map 3. Monsoonal Regimes in South Vietnam and Laos
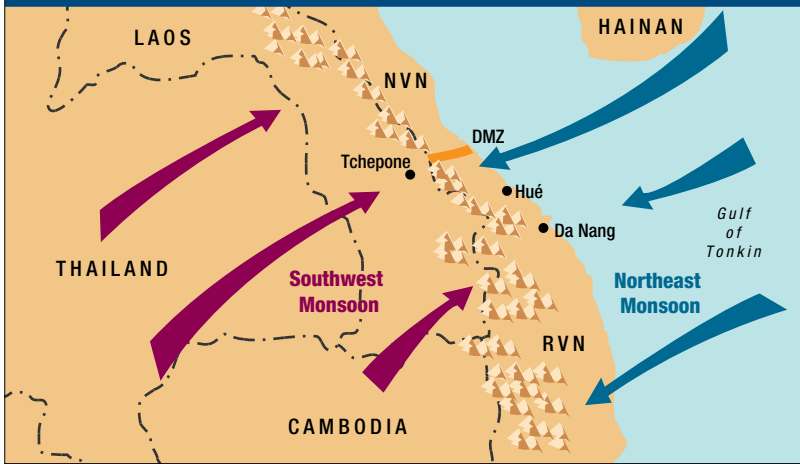
Monsoonal Influences

Planning for El Paso was complicated by the fact that forces committed to combat in Laos would have to stage in and be supported from one climatic zone along the coast of the Tonkin Gulf yet fight in another that is subject to different conditions including monsoonal rains, low ceilings, poor visibility, heat, humidity, and destructive winds. While hard data was available for most of Vietnam where French meteorologists had compiled records for many years, American intelligence agencies never acquired similar statistics for Laos where predictions involved guesswork.

The Annamese Mountains, perpendicular to prevailing winds, separate climatic regimes as surely as a closed door (map 3). When the northeast monsoon inundates South Vietnam from mid-October until March Laos is dry. Coastal regions bask in sunlight when the southwest monsoon occurs from May until early September, while Laos is saturated. Indefinite circulation during transitions produces instability and thunderstorms on both sides of the geologic curtain.
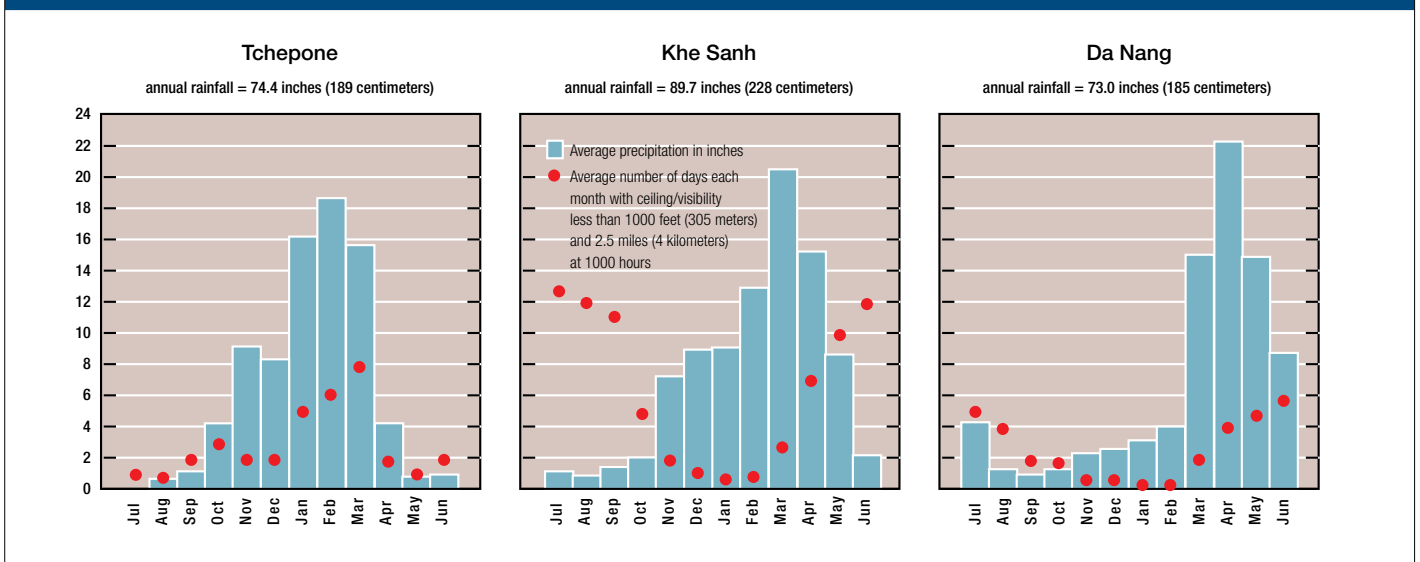
Spring rains in the Laotian panhandle, which generally start in April, increase exponentially when the southwest monsoon hits the next month, accompanied by frequent downpours and local flooding. Fair weather roads turn to quagmires and fords vanish beneath roiling runoff. Vehicular traffic ceased along the Ho Chi Minh Trail.

The northeast monsoon begins October 4–24. Precipitation perseveres in Laos for a week or two thereafter, then subsides, but low-hanging clouds close mountain passes along the eastern frontier half the days of some months (figure 3), military construction stops in South Vietnam, and flying weather becomes abominable as soon
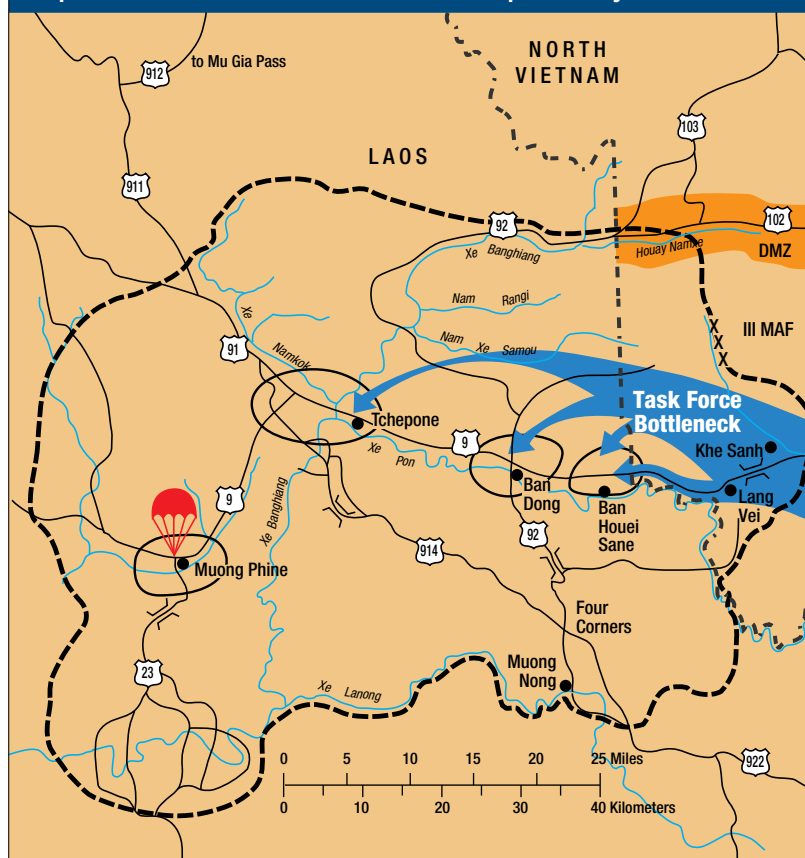
Helicopter landing zones. While the versatility of rotary-wing aircraft is limited by altitude and temperature which affect their lift capacities, helicopter transport boded better than delivery by parachute. Tilled flats along Muong Phine and the Pon River could handle formation landings and takeoffs by multiple flights, but there were few open areas elsewhere that could accommodate more than one or two helicopters at a time. High explosives and chain saws would have been needed to quickly cut small pads in the dense forest where no natural cavities in vegetation reach the floor.

the versatility of rotary-wing aircraft is limited by altitude and temperature

Figure 3. Monsoons at Tchepone, Khe Sanh, and Da Nang

Map 4. OPLAN El Paso: Tactical Area of Responsibility

Planning guidance earmarked one U.S. air-mobile division, one U.S. infantry division, and the Army of the Republic of Vietnam (ARVN) airborne division for Task Force Bottleneck, plus substantial combat and logistical support. Those allocations established requirements for a cockpit in which a corps-sized force could conduct sustained offensive and defensive operations without excessive risks or costs.

The logical lodgment area. Selection of the lodgment area presented no special problems because only one site meshed well with the mission:

■ Blocking positions at Mu Gia and Nape Passes were assessed as unsuitable because they were too far from staging and support bases, expensive, probably untenable, and easily bypassed.

■ Those at the western end of the DMZ would have scarcely affected traffic on the trail.

■ Those on the Bolovens Plateau far to the south afforded enemy troops, supplies, and equipment free access to much of embattled South Vietnam.

■ Blocking positions between Khe Sanh and Muong Phine were assessed as suitable since they covered most tracks and all motorable routes from North Vietnam through Laos to the South. Friendly forces could have installed roadblocks farther west in the unlikely event that enemy truck convoys side-slipped via the Savannakhet Plain where they would be exposed to air strikes.

Terrain. The tactical area of responsibility depicted in map 4 is a 2,400-square-mile oblate spheroid measuring forty by sixty miles. It contained ample room to deploy forces and enclosed seven key terrain features:
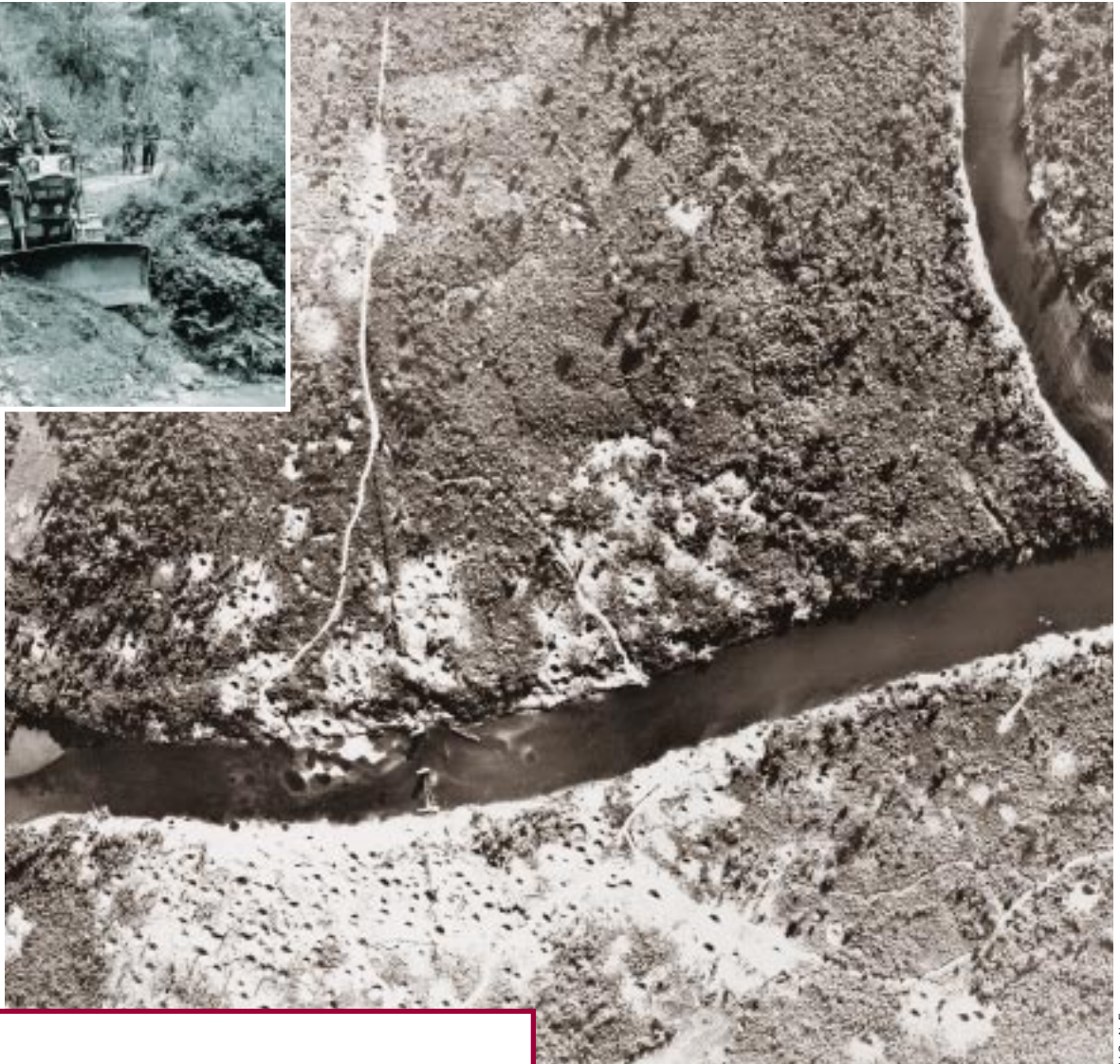
■ the choke point and airfield at Tchepone
■ the choke point and airfield at Muong Phine
■ the choke point at Ban Dong
■ the choke point at Four Corners
■ Ban Houei Sane airfield
■ Khe Sanh combat base
■ Highway (Route) 9

Tchepone, together with the huge, heavily defended NVA base area nearby, was the focal point for every motorable infiltration route from Mu Gia Pass except national highway 23. Muong Phine and Ban Dong were two other blockage points. Four Corners offered a possible alternative to the hornet's nest at Tchepone because road blocks there would have shunted all enemy motor vehicles onto vulnerable Route 23 well to the west of Vietnam. The C–130-capable airfield at Ban Houei Sane would have been essential for any large-scale operation other than a raid. Khe Sanh combat base, airfield, and communications center was the only U.S. or ARVN installation capable of staging and supporting a corps-sized venture into Laos (it sat on the Xom Cham Plateau which, though small, had room for added POL tank farms, ammunition pads, and helicopter maintenance facilities that are voracious space

as the coastal rainy season starts. Fluctuations from the autumn norm are fantastic. Hue, for example, has yo-yoed from 3.5 inches one year to 66 inches in another (Typhoon Bess dumped 20 inches on Da Nang in one day during 1968).

El Paso

Plans for operation El Paso, designed to interdict the Ho Chi Minh Trail, proceeded apace once the staff identified a sound lodgment area in Laos and a tactical area of responsibility (TAOR) within it. Efforts then turned to determining optimum timing, postulating a concept of operations, estimating force requirements, and presenting proposals to Westmoreland for approval.

The El Paso mission was the soul of simplicity: the task force would seize, secure, and as long as necessary block choke points astride the trail beginning at H-Hour on D-Day to forestall the infiltration of North Vietnamese troops, supplies, and equipment through the Laotian panhandle to South Vietnam and communist sanctuaries inside Cambodia.

Bulldozing Highway 9 east of Khe Sanh.

U.S. Marine Corps (Leblanc)

Destroyed bridge across Banghiang River near Tchepone.

U.S. Air Force

Key Points

- Monsoon winds alternately encourage and discourage most military operations in South and Southeast Asia.
- Geographical circumstances affect supply, maintenance, transportation, medical, and other logistical requirements at least as much as combat operations.
- Logistical problems multiply and intensify in direct proportion to the distance between support bases and supported forces.
- Construction requirements soar in underdeveloped areas of responsibility.
- Rudimentary road nets magnify military reliance on airfields and inland waterways.
- Jungle-covered mountains reduce the advantages of airmobile forces in open terrain.
- Parachute delivery systems and helicopters can sustain small, isolated units in jungles, but large formations need main supply routes with much greater capacities.
- Pipelines can distribute large quantities of petroleum and water more cost-effectively than other forms of transportation.

eaters). Military planners seldom regard lines of communication as key terrain, but Route 9 was indispensable as a main artery since no combination of fixed-wing and heliborne delivery systems could have borne long-term logistical loads.

Concept of Operation

El Paso called for the ARVN airborne division to be dropped on Muong Phine at H-Hour on D-Day as U.S. airmobile brigades seized Tchepone, Ban Dong, and Ban Houei Sane airfield. U.S. tanks and infantry were to attack west from Khe Sanh simultaneously along Route 9 and link up as soon as possible. All three divisions and corps-level combat forces thereafter were to block enemy movement southward.

Airfield rehabilitation and conversion of Route 9 to a double-lane artery were high-priority

Map 5. OPLAN El Paso: Supply Requirements

NORTH VIETNAM

Gulf of Tonkin

DMZ

Cua Viet

Dong Ha

Tchepone

9

QUANG TRI

Wunder Beach

Northern I Corps
123,000 Troops
5,315 Short Tons Daily

Hue

Tan My

THUA THIEN

Hai Van Pass

LAOS

Da Nang

Bottleneck TAOR
60,000 Troops
2,975 Short Tons Daily

1

QUANG NAM

Tam Ky

I Corps Total
215,000 Troops
11,265 Short Tons Daily

QUANG TIN

QUANG NGAI

I
XXX
II

```
0   10   20   30   40   50 Miles
0   20   40   60   80 Kilometers
```

tasks for Army engineers. Restrictions consistent with the accomplishment of assigned missions were designed to keep tonnages down since aerial delivery would have to suffice until those tasks were complete. Few vehicles were to accompany assault echelons, rapid evacuation of personnel casualties and inoperative equipment promised to reduce requirements for medical and maintenance facilities in the TAOR, and no base camps were to be built in Laos at any time.

> **the mission was to barricade the Ho Chi Minh Trail until the southwest monsoon again soaked Laos**

The optimum time to spring the trap would have been in November before the communist commissaries in Laos began to replenish depleted larders in the South. There was no mandate for Task Force Bottleneck to search and destroy once it cleaned out the base area around Tchepone since the mission was merely to barricade the Ho Chi Minh Trail until the southwest monsoon again soaked Laos. The only remaining question was whether American logisticians could sustain a three-division corps so far from established facilities.

Logistical Limitations

The support structure needed for El Paso existed within 10 or 12 miles of the Tonkin Gulf. Most dry cargo ships unloaded in the port of Da

Nang and petroleum tankers pumped bulk POL directly into storage bins at Tan My and Cua Viet. Fixed-wing aircraft, heavy-lift helicopters, and a meter-gauge railway transferred high-priority items to ultimate destinations. Military and civilian traffic shared coastal Highway 1, a heavily traveled artery that connected Saigon with Hanoi before Vietnam was partitioned along the 17th parallel, whereas military traffic predominated on Route 9, which ran west from Dong Ha to the prospective area of responsibility assigned to Bottleneck.

Logistical limitations and tactical vulnerabilities were as restrictive for purposes of El Paso as choke points along the trail were to infiltration since throughput capabilities in 1967–68 fell far short of I Corps tactical zone requirements combined with those for the Bottleneck TAOR (map 5).

Port Clearance Capacities

Da Nang could have handled all dry cargo requirements under adverse weather conditions with room to spare, but the capability to shift supplies and equipment north from that port was inadequate during the period under consideration. POL distribution problems were equally perplexing.

Coastal waterways and railroad. The cheapest way to move freight is by water or rail, but neither alternative showed much promise. Floods, tides, and littoral drift made a deep water port at Tan My impractical despite repeated proposals, while logistics-over-the-shore at Wunder Beach to the north were infeasible during the northeast monsoon. There was ample room for more landing craft ramps at Cua Viet but no way to move inland. Seabees figured that it would take 14 battalion months to build a road across coastal swamps.

The railway trunkline was unserviceable, and prospects for its early rehabilitation appeared dim given the number of demolished bridges between Da Nang and Dong Ha, including a colossal one over the Perfume River at Hue. Some optimistic members of the Vietnamese Railway System wagered that in 70 days the line could be renovated for single-track, daylight operations at 10 miles per hour given sufficient physical security, and U.S. engineers generally agreed. They noted that North Vietnamese trains managed to run part of the time despite savage aerial bombardment.

Highway 1. Upgrading had already shifted into high gear on Highway 1 with elements of seven Seabee battalions along with a U.S. Army engineer group and civilian contractors rapidly widening and paving the road, straightening hairpin curves in Hai Van Pass, creating turnarounds, strengthening bridges, and improving drainage. Capacities increased accordingly.

Land Lines to Laos

The only feasible supply route between the Tonkin Gulf and the TAOR lay directly south of the DMZ where it was painfully exposed to enemy action. No suitable alternative was available.

Route 9. The maximum capacities of Route 9, which were adequate for the Marines at the Khe Sanh combat base, looked ludicrous compared with the tonnages required by El Paso. Enemy sappers had blown half of the 36 bridges east of Khe Sanh and the ticklish bypasses cut in hillsides were impassable to heavy trucks. The roadway, averaging 12 to 14 feet wide, had been originally surfaced with asphalt prime, a bituminous treatment less than an inch thick. Some of it remained in 1968, buried under mud slides and debris, but much was gone and shoulders (where they existed) were simply soil. Glutinous gumbo would grip tires like molasses or cause wheels to slide during rainy seasons unless Route 9 received a solid waterproof surface.

Petroleum pipelines. Quang Tri and Thua Thien Provinces in 1967–68 had barely 10 miles of 6-inch petroleum pipeline, which could pump 756,000 gallons a day. Every drop of precious fuel for Khe Sanh consequently had to be trucked over Route 9. There was no possible way to satisfy the task force's insatiable thirst for POL short of extending that embryonic pipeline system into Laos or paving the road for use while the northeast monsoon pelted South Vietnam.

Rehabilitation

El Paso planners assigned a high priority to both road and airfield rehabilitation inside Laos beginning on D-Day because blocking positions astride the Ho Chi Minh Trail would have been logistically unsupportable otherwise. Plans consequently called for combat engineers to arrive by air and for others to follow closely behind ground linkup parties attacking west from Khe Sanh.

Route 9, degraded by bomb craters, blasted bridges, erosion, and the encroaching jungle, was in sad shape on the Laotian side of the border, but construction crews, confident of adhering to tight schedules shown in figure 4, predicted that convoys could truck in 750 short tons a day as far as Muong Phine within three weeks. Few streams would have demanded spans in dry season except the Banghiang River at Tchepone, where progress would be stalled for a day as engineers constructed a floating bridge once they cleared assembly areas and prepared approaches through a welter of water-filled craters. Subsequent action to widen rights of way and scrape out forward support areas where trucks could dump their loads would have taken somewhat longer (figure 5).

Suitable materials could have come first from remote basalt beds just west of Khe Sanh, then from dry stream beds of many Pon River tributaries with their rocky bottoms and steep banks. There would have been no rush to widen Route 9 as far as Muong Phine, garrisoned at most by one or two light ARVN airborne brigades.

No airfield in the Bottleneck objective areas would have been serviceable on D-Day. Those at Tchepone and Muong Phine required immediate action to clear obstructions, grade and compact surfaces, apply dust palliatives, then construct taxiways, parking lots, and cargo-handling areas. The runway at Ban Houei Sane looked like moldy cheese in mid-1968 but was otherwise almost as good as new. D+11 was not an unreasonable date to anticipate full operational status.

The Upshot

El Paso was a stillborn operation. Westmoreland never got the tickets to go to Tchepone, which consisted of added muscle—firepower, mobility, supplies, equipment, funds, and above all political approval. President Johnson announced his decision not to seek reelection in March 1968 and Richard Nixon, his successor, initiated the Vietnamization program that led U.S. forces and military presence in Southeast Asia to shrink instead of expand.

Figure 4. Road Openings

Section	Miles	Condition	Streams	Days	Completion
Lang Vei to Lao Border	7.4	Poor	6	3	D+2
Lao Border to Ban Houei Sane	4.4	Fair	7	1	D+3
Ban Houei Sane to Ban Dong	8.7	Poor	10	4	D+7
Ban Dong to Tchepone Airfield	17.4	Fair	30	5	D+12
Tchepone Airfield to Muong Phine	20.5	Fair	19	5	D+17

Figure 5. Dual-laning Route 9

Section	Miles	Engineer Companies	Days	Completion
Lang Vei to Ban Houei Sane	11.8	3	37	D+40
Ban Houei Sane to Ban Dong	8.7	2	40	D+47
Ban Dong to Tchepone Airfield	17.4	3	54	D+66

Helipad surrounded by triple canopy forest.

Convoy moving along Route 9.

No one will ever know whether El Paso could have succeeded. The operation would have been difficult with or without a determined enemy in the empty lands west of Khe Sanh—remote from existing bases and subject to the rigors of merciless terrain, heat, malarial fever, and leeches. Moreover, unopposed operations appear improbable because Hanoi wanted to maintain motorable routes through Laos, which was the lifeline for their forces in South Vietnam and Cambodia.

General Giap, who could read a map as well as Westmoreland, might have framed his own mission as follows: "Task Force Spoiler severs Routes 1 and 9 between the Tonkin Gulf coast and Laos beginning at H-Hour on D-Day to prevent U.S. and puppet forces from blocking the Ho Chi Minh Trail." Bottleneck would have been on a knife edge of existence if NVA forces successfully isolated Da Nang from the TAOR while blockading brigades survived on daily replenishment and logisticians struggled to build up supplies in objective areas. A few well-placed mortar rounds on airfield runways at Muong Phine, Tchepone, and Ban Houei Sane, plus attacks on ammunition and POL, would have been particularly effective. The Bottleneck corps might have repulsed all such efforts, but the price in blood and sweat, if not tears, almost surely would have been high.

Lam Son 719

Vietnamization was intended to bolster South Vietnam while reducing American casualties, cutting expenses, and enabling the U.S. military to withdraw began to unfold in 1969, soon after Richard Nixon became President. Soon he called for a strictly South Vietnamese incursion into Laos to test the program. ARVN I Corps, less U.S. advisers but with U.S. tactical air, helicopter, and long-range artillery support, launched Operation Lam Son 719 on February 8, 1971 to interdict the trail and obliterate the enemy base area around Tchepone; but neither U.S. nor ARVN forces completed the logistical preparations that OPLAN El Paso prescribed.

The outcome was predictable: Lam Son 719, said one South Vietnamese general, "was a bloody field exercise for ARVN forces under the command of I Corps. Nearly 8,000 ARVN soldiers and millions of dollars worth of valuable equipment and materiel (including more than 100 U.S. helicopters) were sacrificed" before the last troops withdrew on March 24. The enemy death toll was high and ARVN raiders destroyed large stores of enemy supplies but, in the final analysis, Lam Son 719 had few if any lasting effects on infiltration down the Ho Chi Minh Trail. **JFQ**

Patrolling during
Kernel Blitz '97.
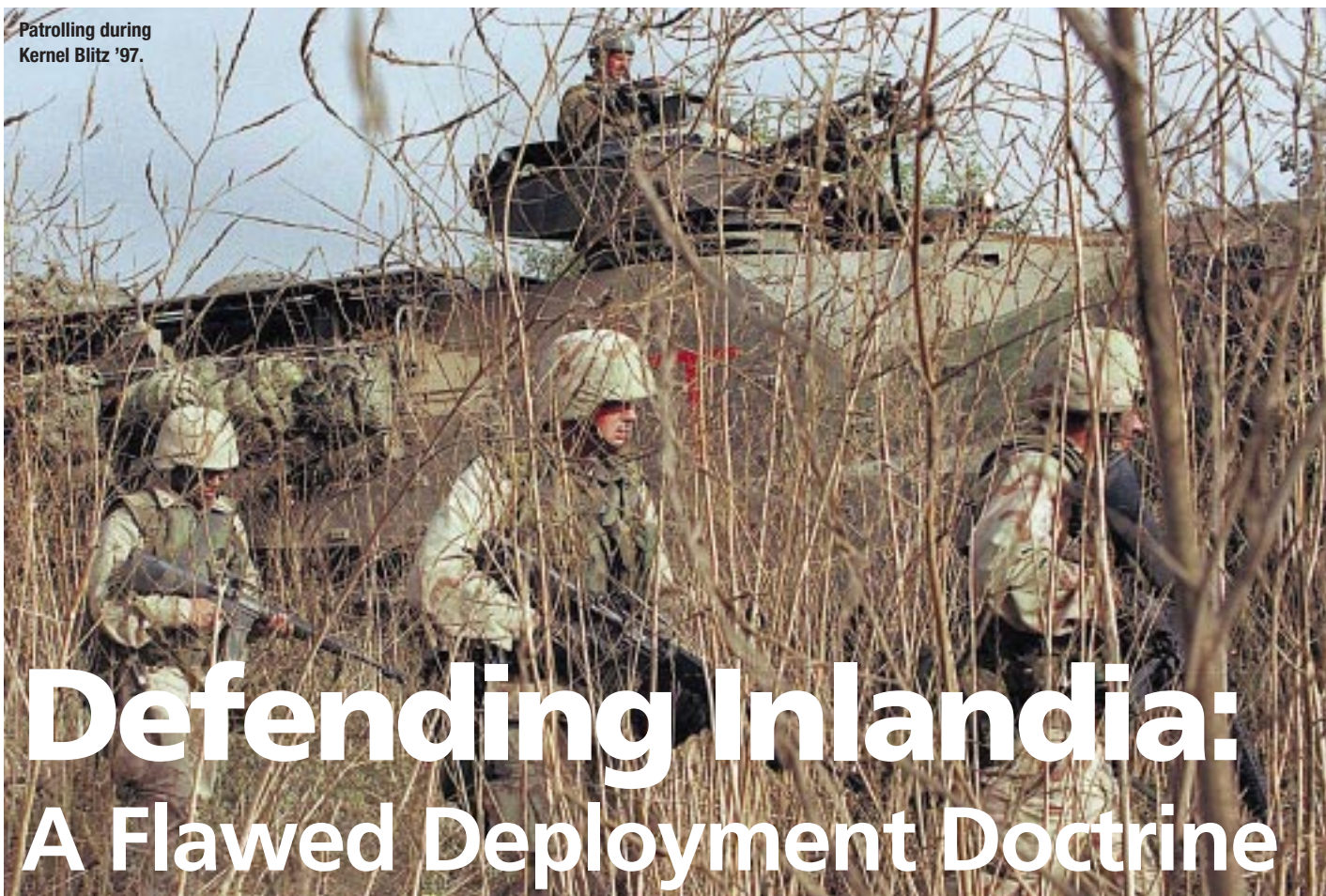
U.S. Marine Corps Combat Camera (Ryan Ward)

Defending Inlandia:
A Flawed Deployment Doctrine

By D R E W   A.   B E N N E T T

Lieutenant Colonel Drew A. Bennett, USMC, is assigned to Headquarters Company, 7th Marine Regiment, and has served as a congressional fellow in the Office of the Speaker of the House.

Getting to the battle ready to fight is half of the operational challenge. Unfortunately this is an area in which joint doctrine is designed for the last war, not the next. We must reevaluate how to mass the effects of combat power in a theater to fight and win a future major regional conflict. Warfare has evolved from deploying massed troops and enveloping an enemy on the tactical level to moving troops and equipment into theater on the strategic level. Current doctrine has not gotten beyond the Gulf War experience and assumes a benign environment which may not always exist.

A Scenario for Disaster

The nation of Outlandia knew that it was no match for the conventional military power of the United States. Its strategy was to grab as much of neighboring Inlandia as quickly as possible while delaying an inevitable build-up of U.S. forces in the area. Instead of pitting their tanks, ships, and aircraft against the enemy, Outlandese leaders planned to employ asymmetric means to inflict heavy damage on the Americans before they were ready to fight. The objective of Outlandia was not to win a decisive battle but to throw U.S. forces into disarray, buying time while influencing American public opinion. The Outlandese would not attempt to prevail on the battlefield but rather at the negotiating table with a better bargaining position.

They started with terrorist attacks on Inlandian airports and seaports. As the enemy massed

its troops on the disputed border, terrorist bombs damaged every airport. One bomb sank a tanker in the middle of the narrow channel leading to Inlandia's best harbor. The Outlandese main attack advanced despite U.S. efforts to stop them with airpower, and within a week Inlandia lost half of its homeland. American amphibious and airborne forces helped Inlandia establish a defensive line, then waited for the arrival of the U.S. heavy divisions necessary for an offensive.

Commentators and media sages pointed to the many similarities with the Persian Gulf War. Victory "on the cheap" seemed inevitable. Then the casualties began to mount. Within three days Outlandese commandos blew up two 747s and a C–5 carrying over a thousand American troops as they landed with their equipment on supposedly secure airfields in southern Inlandia. Outlandese insertion teams had actually reconnoitered targeted airports before the war and practiced on mock-ups of the facilities in Outlandia using media coverage of arriving flights.

What Could Happen

Things fared no better at sea. Although U.S. ships destroyed 25 Outlandese midget subs, one slipped into a port where *Buffalo Soldier*, an Army prepositioned afloat ship, was underway. A well placed torpedo sank the vessel with its desperately needed tanks and supplies at a choke point blocking the harbor. Before the United States could deploy Patriot missiles, Scud 3s with far more accuracy than anything encountered during Desert Storm found troop concentrations awaiting supplies and equipment undergoing maintenance preparations in staging areas adjacent to airfields and seaports. Two months and 6,000 lives later, after U.S. and allied security forces, air, and missile defenses had neutralized the Outlandese threat, lines of communication were restored as American forces resumed deployment to Inlandia.

Then Outlandian representatives sued for peace at the United Nations, claiming that their longstanding territorial dispute with Inlandia could be resolved through negotiations. The Outlandese agreed to return 75 percent of the seized territory if they could retain the balance of the contested area which bordered their homeland and contained one of the richest oil fields in the world. After bitter debate, Washington garnered sufficient international support to persuade the U.N. to refuse. U.S. aircraft, unable to regain the lost territory, did inflict horrible losses on enemy forces. While the American troops suffered and the original time-phased force and deployment

historically, leaders have searched for solutions to the problem of getting to the battle ready to fight

data (TPFDD) list was useless, the build-up had not been stopped. Realizing that they could not hold on indefinitely, Outlandese forces unleashed chemical and biological weapons. Relying on unconventional warfare teams and terrorists Outlandia detonated them on airfields and in ports used by the United States. Some soldiers and arms had been staged before the war began, based on the Outlandian analysis of where the Americans would most likely enter. While casualties were heavy, television coverage was much worse. Pundits became worried, faltered, and turned gloomy as public support eroded. The staff of the warfighting CINC blamed U.S. Transportation Command which, in turn, blamed the services. And the services blamed each other.

The experts estimated it would be six months before the United States and its allies could go on the offensive. Although some advocated nuclear retaliation, Outlandia returned to the United Nations to again sue for peace. All they wanted was the land—and the oil beneath it—they claimed was rightfully theirs.

This scenario is based on what could happen if our doctrine remains stagnant. Historically, as technology has increased the effectiveness of enemy firepower, military leaders have searched for solutions to the problem of getting to the battle ready to fight. Those who failed to progress were the losers. As range, accuracy, and rate of fire increased, so did the difficulty of arriving at the battle ready to attack.

Sequenced More Than Synchronized

On the tactical level, Frederick the Great achieved success at the Battle of Leuthen through use of iron discipline and precision drill, which allowed the Prussian army to stay massed and still envelop its enemy. Napoleon's armies had grown so large that they were organized into corps and marched along parallel routes and then massed just prior to the battle as they had at Jena/Auerstadt. Eventually the practice of conducting a flanking attack in sight of one's enemy became impractical. On the operational level, Moltke the Elder constructed the campaign for the Battle of Koniggratz so that Prussian forces concentrated at the point of battle, massing and enveloping simultaneously. By the 1900s the size of armies and the range of weapons expanded the scale of the problem since the enemy front could extend for hundreds of miles. Used as the basis for initial operations by the Germans at the outset of World War I, the Schlieffen plan of a wide envelopment by five armies swinging through Belgium and into France attempted a solution at the strategic level.

Operational readiness inspection.

U.S. Air Force (Christopher Wiant)

2d Communications Squadron (Billy W. Johnston)

Unloading C–5,
Crisis Reach 95–02.

By World War II the problem had increased in difficulty by several orders of magnitude as warfare became three dimensional. After devastating losses the Allies organized a system of air-sea coordination and anti-submarine hunter-killer groups to protect convoys from threats above and under the sea to get to the fight in two theaters. During the Korean War MacArthur turned defeat into victory with the amphibious assault at In-chon which landed joint forces, cutting enemy lines of communication and support. Finally, in Desert Shield/Desert Storm U.S. doctrine and capabilities had advanced to a point where in six months half a million troops and ten million short tons of fuel and cargo could be moved halfway around the world.

Unfortunately, doctrine has not evolved significantly since. To get to the battle we rely on moving forces into theater through secure air and seaports of debarkation (APOD/SPOD) according to TPFDD. Initially security may be limited and most deploying forces will not be ready to fight. We must stage them, marry them up, and ensure they are "logistically mature" and "operationally ready" before conducting a major campaign.[1] In getting to the fight troops are sequenced far more than synchronized and arrive administratively as independent units rather than as an integrated joint force organized for combat.

No Safe Haven

Potential enemies will study Schwarzkopf as well as Frederick the Great, and the Gulf War as well as the Silesian War. "Next time we may not be surrounded by allies, have six months of preparations time to project our power ashore under ideal conditions, and then fight a short conflict with limited casualties while controlling the skies."[2] Even if there is a friendly country in the area such as Saudi Arabia or a host country that expects us like South Korea, enemies will do anything to disrupt or prevent the introduction and build-up of U.S. forces in theater. We will be vulnerable to visibility and the tyranny of time as international news media report the slow assembly of forces through known APODs and SPODs.

Loading tanks on board *USNS Cuato*.

Evolving tactics and technology make it easier for an enemy to start fighting before we are ready. Unfortunately, these increased threats come at a time when reduced overseas presence, due to downsizing and the loss of overseas bases, only increases the complexity of getting to the battle. These threats make the idea of a benign airfield or port—a safe haven—obsolete.

Unconventional warfare. Countries with large and small militaries are keenly aware of the significant damage that special operations assets can inflict on high value targets. One example is

there is a need for JTTP to support introduction of combat ready forces into theater

North Korea which has 88,000 unconventional warfare personnel, 280 AN–2 aircraft able to evade radar while inserting teams, and the largest mini-submarine fleet in the world. These assets present a formidable threat to any lengthy U.S. build-up through known air and sea ports on the Korean peninsula.[3] Even countries that do not spend 26 percent of their GDP on defense, as does North Korea, understand the potential benefit of such capabilities. For the price of training and equipping a few teams a country can inflict heavy damage on an enemy by shutting down an air or seaport, destroying enormous amounts of valuable equipment, and causing heavy casualties.

Terrorism. Countries that wish to conceal their involvement, as well as non-state entities without an organized military, can use terrorism to gravely hamper efforts to introduce forces into theater. The terrorist bombing of the Marine bar-

racks in Beirut led the United States to pull out of the multinational peacekeeping effort in Lebanon. Bombings of the World Trade Center towers in New York and Federal Building in Oklahoma City created shock waves at home. Such acts during a build-up could severely test national will and divert public attention.

Missiles. The proliferation of precision guided missiles (PGMs) is a continuing threat as their range and accuracy improve. The number of states with ballistic missiles is expected to rise from 15 to 20 by the year 2000. Some 77 have cruise missiles.[4] When an enemy has the option of using such weapons or standing by and watching U.S. forces move uninterrupted into theater, there will be tremendous pressure to launch or lose PGMs.[5] In that environment the attacker only needs to get lucky once or twice while the defender must be perfect every time.

Weapons of mass destruction. Despite American efforts, the threat of the use of nuclear, biological, and chemical weapons is growing. With the breakup of the Soviet Union, the security of nuclear weapons in Eastern Europe—once assured—has become uncertain. With the Gulf War against Iraq it became clear that weapons of mass destruction were not limited to major powers. The Japanese cult group Aum Shin Rikyo manufactured the chemical compound sarin and wreaked havoc in the Tokyo underground. Investigations revealed that they were also attempting to acquire a biological weapon. Any state with access to a pharmaceutical industry, moderately sophisticated university, or specialist research laboratory can produce either chemical or biological capabilities.[6] In time such weaponry could be delivered by unconventional warfare teams, terrorists, or PGMs to halt the TPFDD flow through any APOD or SPOD.[7]

Counterstrokes

There is a need for joint tactics, techniques, and procedures (JTTP) to support a doctrine of rapid, seamless, and relatively invisible introduction of combat ready forces into theater. If we are willing to break out of a culture that demands a 12,000 foot runway, a deep water port, and secure staging areas, there are several concepts worth considering.

Stealth. Available stealth technology is dedicated to protecting a finite number of bombers from detection. We must expand this concept to include defense of air and sealift platforms from radar and satellite observation. In the past deployments have been publicized to deter. The future may require concealing the introduction of forces as a survival measure. The Royal Swedish Navy is already taking the lead and plans to build eight stealth warships over this decade.[8]

Security. The vast majority of our equipment will get to the next fight by sea. As a result of Desert Storm, each service now maintains equipment on prepositioned ships.[9] Unfortunately, these ships are unarmed, usually unescorted, and highly visible. They are susceptible to detection and preemptive terrorist attacks on PGMs at the start of hostilities and as they approach the SPOD. We should regard sealift ships as combatants and provide them with means for self defense.

Ready on arrival. The Joint Staff should take advantage of Marine doctrine on amphibious operations. Ships are loaded to facilitate the offloading of troops and equipment as self supporting units ready to fight. This concept should be incorporated in moving all U.S. forces into theater. TPFDD lists and transports must be redesigned accordingly. M1–A2 tanks that roll off aircraft or ships should be topped off with fuel, loaded with ordnance, and manned. Maintenance and vehicle preps need to take place en route by teams that will use them in order to preclude the necessity for staging areas that present lucrative targets.

Just-in-time marshaling. Japanese auto makers mastered the art of just-in-time delivery of auto parts to minimize storage costs. Applying this approach to introducing forces into theater will save lives as well as money. Troops should be able to walk off transport aircraft as trucks loaded with their unit equipment are driving off transport ships.

Expeditionary introduction. Introducing forces into theater today depends on cumbersome transports that require major airports and seaports. These facilities must be located within a certain distance of each other and are provided by a host country or taken at great cost from an enemy who then can anticipate and target where we will enter the theater. We must develop the capability to rapidly establish expeditionary APODs and SPODs where we choose and operate with a generation of expeditionary air and sea transports. This is not a new concept. During World War II aircraft in the Pacific landed on airfields built by Seabees before the battle was over. The Allies developed floating jetties to support the Normandy invasion. The C–130 was designed for short dirt strips and landing ships could beach and discharge cargo over a causeway it carried. Heavy airlift with a vertical short takeoff and landing capability and cargo ships with an air cushioned capability would revolutionize the way forces are introduced into theater.

Scenario for Victory

Although Outlandia attacked first, it was the only time they held the initiative. U.S. forces began to stream into Inlandia at an extraordinary rate from expeditionary APODs and SPODs along the coast. A new generation of air and sea transports evaded detection and were quickly offloaded. Though most brigades were still not designed to conduct a forced entry, they were organized to be much more combat ready. They offloaded at night and as a result of just-in-time marshaling were consolidated into a fighting division and sent off to the front within two days. The introduction of forces had become part of the warfighting plan and no longer resembled a travel agent's timetable. The Outlandese soon discovered empty PODs, which obliged their unconventional warfare teams, terrorists, and PGMs to look for other targets. Outlandia did not have the luxury of disrupting the flow of U.S. forces because it was occupied protecting its flank from a counteroffensive.

This is truly a joint problem. It will not be solved by one service or U.S. Transportation Command alone. The issue of moving troops and equipment into theater should be considered in conjunction with the joint monthly readiness review, the joint warfighting capabilities assessment, and the Joint Requirements Oversight Council. Doctrine must be focused on deploying capabilities militarily and evolve beyond the current ability to move forces commercially.   **JFQ**

NOTES

[1] In December 1990 LTG Calvin A.H. Waller, USA, Deputy CINCCENT, stated that the United States was not ready to conduct an offensive. See Russell Watson, "Fire When Ready," *Newsweek*, vol. 66, no. 27 (December 31, 1990), pp. 20–21, and Lisa Beyer, "Are We Ready to Wage War?" *Time*, vol. 136, no. 28 (December 31, 1990), pp. 26–27.

[2] Drew A. Bennett, "Will the Next War Be Like the Last One?" *Marine Corps Gazette*, vol. 76, no. 3 (March 1992), p. 39.

[3] *The Military Balance 1995–1996* (London: Oxford University Press for the International Institute for Strategic Studies, 1996), p. 184.

[4] "Theater Missile Defense: Rising to the Challenge," *International Defense Review*, vol. 28 (August 1995), p. 26.

[5] Also see Ronald R. Fogleman's assessment of missile threats to airfields and ports found in "Theater Ballistic Missile Defense," *Joint Force Quarterly*, no. 9 (Autumn 1995), p. 75.

[6] Richard J. Danzig, "Biological Warfare: A Nation at Risk—A Time to Act," *Strategic Forum* 58 (Washington: National Defense University, January 1996), pp. 1–4.

[7] John G. Roos, "The Ultimate Nightmare," *Armed Forces Journal*, vol. 133, no. 3 (October 1995), pp. 67–73.

[8] Bruce Linder, "Sea Shadow," *Proceedings*, vol. 120, no. 1 (January 1994), p. 72.

[9] For a detailed discussion see John M. Collins, "Prepositioning: Getting There First'est with the Most'est," *Proceedings*, vol. 122, no. 1 (January 1996), pp. 72–75.

General Earle Gilmore Wheeler

(1908–1975)

Chief of Staff, U.S. Army

Chairman, Joint Chiefs of Staff

VITA

Born in Washington, D.C.; graduated from Military Academy (1932); 29th Infantry (1932–36); Infantry School (1937); served with 15th Infantry, China (1937–40); mathematics instructor, West Point (1940–41); aide to commander, 36th Infantry; Command and General Staff College (1942); battalion commander, 141st Infantry, 36th Division (1942); assistant chief of staff for operations, 99th Infantry Division (1942–44); chief of staff, 63d Infantry, Europe (1944–45); instructor, Field Artillery School (1945–46); assistant chief of staff for supply, Western Base Section, Paris (1946), and deputy chief of staff for operations, U.S. constabulary in Germany (1947–49); Army War College (1949–50); Joint Intelligence Group (1950–51); commanded 351st Infantry, Italy (1951–52); assistant chief of staff for plans and operations, Allied Forces Southern Europe (1952–55); director of plans, office of deputy chief of staff for plans and operations, and then assistant deputy chief of staff for military operations at Headquarters, Department of the Army (1955–58); commanded 2d Armored Division (1958–59) and III Corps (1959–60); director, Joint Staff (1960–62); deputy commander in chief, U.S. European Command (1962); Chief of Staff, U.S. Army (1962–64); Chairman, Joint Chiefs of Staff (1964–70); died in Frederick, Maryland.

The Vietnam War is the foggiest in my own personal experience. Moreover, it is the first war I know of wherein the fog of war is thicker away from the scene of conflict than on the battlefield. . . .

Nevertheless, from all the information at my disposal . . . I am convinced of four things: (1) we are winning the war in Vietnam; (2) I cannot predict when the war will end; (3) although the tide of battle is running against Hanoi, they are not yet convinced that they cannot win; and (4) flowing from item (3), Hanoi is not yet ready to negotiate an end to the war.

—Address by Earle G. Wheeler before the Economic Club of Detroit (December 18, 1967)

Portrait by Lloyd Bowers Embry.

U.S. Army Center of Military History

Doctrine

JDWP MEETING

The 20th Joint Doctrine Working Party (JDWP) meeting was held on October 28–29 at the Joint Warfighting Center (JWFC) under the sponsorship of the Director for Operational Plans and Interoperability (J-7), Joint Staff, and attended by representatives of the combatant commands, services, Joint Staff, and service doctrine centers.

New joint doctrine proposals were briefed and the following decisions approved:

■ Develop disposal guidance for materials used in joint operations for inclusion in Joint Pub 4-01.4, *Joint Tactics, Techniques, and Procedures for Theater Distribution*. Disposal guidance will be referenced in Joint Pub 4-0, *Doctrine for Logistic Support of Joint Operations*, plus other publications as recommended by JWFC.

■ Cancel Joint Pub 3-04, *Doctrine for Joint Maritime Operations (Air)*. Guidance for maritime air operations will be added to other publications as recommended by JWFC.

■ Cancel Joint Pub 5-00.3, *Doctrine for the Joint Operation Planning and Execution System (JOPES)*.

■ Assess the SOCOM proposal to consolidate Joint Pub 3-05.3, *Joint Special Operations Operational Procedures* and Joint Pub 3-05.5, *Joint Special Operations Targeting and Mission Planning Procedures* in a single publication, after approval of Joint Pub 3-05, *Doctrine for Joint Special Operations*. This new volume will be designated Joint Pub 3-05.1, *Joint Tactics, Techniques, and Procedures for Joint Special Operations Task Force Operations*.

The meeting also included information briefings on *Joint Vision 2010*, joint training system terminology, and the *Joint Task Force Commander's Handbook for Peace Operations*; in addition, there were presentations on the status of Joint Pub 3-06, *Doctrine for Joint Riverine Operations*; Joint Pub 3-18, *Joint Doctrine for Forcible Entry Operations*; Joint Pub 3-18.1, *Joint Doctrine for Airborne and Air Assault Operations*; Joint Pub 3-51, *Electronic Warfare in Joint Military Operations*; Joint Pub 3-14, *Joint Doctrine and Joint Tactics, Techniques, and Procedures for Space Operations*; Joint Pub 3-59, *Joint Doctrine for Meteorological and Oceanographic Support*; Joint Pub 3-56, *Command and Control of Joint Operations*; Joint Pub 3-13, *Joint Doctrine for Information Operations*; Joint Pub 3-57,

Doctrine for Joint Civil Affairs; and Joint Pubs 3-05.3 and 3-05.5 (as previously mentioned).

The next JDWP meeting is scheduled for April 1998. **JFQ**

JOINT PUBS UPDATE

The following titles have been approved through the joint doctrine development process:

■ Joint Pub 3-01.1, *Aerospace Defense of North America,* establishes doctrinal guidance to defend against aerospace attack of North America and addresses implementation of combined U.S. and Canadian defense strategy (November 1, 1996).

■ Joint Pub 2-01, *Joint Intelligence Support to Military Operations,* furnishes doctrine on providing intelligence products, services, and support to joint operations (November 20, 1996).

■ Joint Pub 4-02.2, *Joint Tactics, Techniques, and Procedures for Patient Evacuation in Joint Operations,* outlines requirements and considerations for joint patient movement in the health service support (HSS) system, including special operations and military operations other than war (December 30, 1996).

■ Joint Pub 4-01.7, *Joint Tactics, Techniques, and Procedures for Use of Intermodal Containers in Joint Operations,* addresses joint tactics, techniques, and procedures for effective, efficient use of intermodal containers to deploy, sustain, and redeploy forces (January 7, 1997).

■ Joint Pub 3-54, *Joint Doctrine for Operations Security,* outlines the use of operations security in planning, preparing, and executing joint operations (January 24, 1997).

■ Joint Pub 3-03, *Doctrine for Joint Interdiction Operations,* contains guidance for joint action to divert, disrupt, delay, or destroy enemy surface military potential before it can be brought to bear against friendly forces (April 10, 1997).

■ Joint Pub 3-61, *Doctrine for Public Affairs in Joint Operations,* covers military support to U.S. and international media on military operations which constitutes the primary mission of joint public affairs (May 14, 1997).

■ Joint Pub 4-01, *Joint Doctrine for the Defense Transportation System,* encompasses the interrelationships and employment of the defense transportation system with focus

on combatant commanders, service component commands, and other user agencies (June 17, 1997).

■ *Joint Military Operations Historical Collection,* provides anecdotal items from military history that shed light on the development of military doctrine (July 15, 1997).

■ *Joint Doctrine Capstone and Keystone Primer with Annex,* provides executive summaries and outlines key principles contained in capstone and keystone doctrinal pubs (July 15, 1997).

■ Joint Pub 3-07.5, *Joint Tactics, Techniques, and Procedures for Noncombatant Evacuation Operations,* contains procedures for JFCs and subordinate component commanders on noncombatant evacuation operations (September 30, 1997).

■ Joint Pub 4-02.1, *Joint Tactics, Techniques, and Procedures for Health Service Logistics Support in Joint Operations,* provides guidance for service components of joint or multinational forces on theater health service logistics support for joint operations (October 6, 1997). **JFQ**

History

HEAVY LIFTING

A new book entitled *United States Transportation Command, The National Defense Reserve Fleet, and the Ready Reserve Force: A Chronology* by James K. Matthews is available on request from U.S. Transportation Command. Based on material published by the Departments of Defense and Transportation, it traces the evolution of the National Defense Reserve Fleet and the Ready Reserve Force from a joint perspective. With a range of statistical data and appendices on various aspects of sealift, this work promises to become a standard reference for planners, operators, and logisticians. For a copy contact: Director, Research Center, U.S. Transportation Command, 508 Scott Drive, Scott Air Force Base, Illinois 62225–5357. **JFQ**

Missing an issue?

MODERNIZATION OF THE PEOPLE'S LIBERATION ARMY

A Book Review by
BATES GILL

> **Chinese Views of Future Warfare**
> *Edited by Michael Pillsbury*
> Washington: National Defense
> University Press, 1997.
> 421 pp. $22.00
> [ISBN 1–57906–035–8]

Summing up his view of future warfare, Wang Pufeng, a prolific writer on the revolution in military affairs (RMA), states that: ". . . the authorized strength and equipment, strategy, tactics, and military theory of China's military are still basically the products of the industrial era and are far from satisfying the demands of information warfare. We have much work to do. . . . "

From this and other analyses in *Chinese Views of Future Warfare*, we gain greater insight into the paradoxes of the Chinese military: it faces new challenges and opportunities but has limited resources to address them. Its officer elite struggles to reconcile emergent doctrinal debates while their conservative and outdated forces seek to shape traditional concepts to meet future demands.

High marks go to the editor of this volume, Michael Pillsbury, for assembling these articles for a wide audience. The collection presents translations of 40 pieces by 44 authors—including 31 with the rank of colonel or higher, including several senior Chinese military leaders—and not only makes the People's Liberation Army (PLA) far more transparent but reveals an institution with high-tech visions of the future albeit one which lacks a coherent plan on how to get there.

Many articles in this volume appeared previously. Most are drawn from an open-source Chinese-language periodical published by the PLA Academy of Military Science, *Zhongguo Junshi Kexue* (*China Military Science*). Its issues in recent years have carried numerous pieces such as those found in Pillsbury's collection, often in large special sections devoted to RMA. In addition, at least a dozen books on high-tech warfare and RMA have surfaced in China. Articles found in open literature such as *Xiandai Junshi* (known as *Conmilit* in the West) routinely discuss the same subjects. In sum, the Chinese have written extensively about RMA since the early 1990s.

But these works have not been widely available to American readers, particularly those who do not focus on Chinese military affairs. Some of these articles have appeared in translations by the Foreign Broadcast Information Service or other translation services, but this is the first time the vast majority have appeared openly in English sources.

Pillsbury has compiled articles that first came out between 1988 and 1996, with about half published in 1995–96. Written over seven years, the original purpose of these pieces was not to present a coherent blueprint for China to achieve revolutionary military-technical breakthroughs but to inform Chinese military readers in two ways: to promote the correct ideological understanding of future PLA strategy and to describe developments in Western (mostly U.S.) military thinking and technology. As such, the discussions about future warfare mainly describe what others are doing, not PLA intentions. The last chapter, "Nanotechnology Weapons on Future Battlefields," is a case in point. It simply describes a RAND Corporation report on microscale electromechanical systems which appeared in 1993, not Chinese capabilities or intentions regarding such technologies.

The volume is divided into four sections, moving from the general to the specific. The first two—on Deng Xiaoping's strategic thought and future security trends respectively—perhaps will be the least interesting to China specialists and general readers alike. For specialists the contents will seem all too familiar or redundant while for general readers the articles may appear oblique and overladen with ideology and unfamiliar references. The editor addresses this potential problem in explanatory notes in the preface. China's greatest strategic objective comes out clearly in these first two sections: economic modernization and the realization of "comprehensive national strength." Rapid high-tech military modernization, force projection, and adoption of RMA are not prevalent themes in the 11 articles which make up these first two sections.

Sections 3 and 4—comprising the last 300 pages—are the most directly related to views of future warfare and treat "local wars under high-tech conditions" and RMA. Section 4 will likely be interesting to some readers but old hat to devotees of RMA. It focuses on systems, hardware, and operations that will characterize battlefields of the next century, including naval systems, airpower, land operations, information warfare, stealth, and the nature of conflict during the current RMA. Here the more forward-thinking authors demonstrate their mastery of the theoretical concepts of the current RMA, at least on paper. Of less concern is how to apply those concepts within the reality of the Chinese military-technical system. Many articles in this section advocating greater attention to RMA seem to almost blindly accept the silver bullet of high technology and uncritically assess the Gulf War of 1991 as the appropriate template from which to understand the current RMA.

Among the gems in the book are "Managing China's Future Security Crises" by Zheng Jian and a comparison of Chinese "local war" and U.S. "limited war" by Chen Zhou. In "Weapons of the 21st Century," Chang Mengxiong displays a broad grasp of "information-intensified" weapons of the future, with an informed discussion of how a country might use "information deterrence" to prevent the outbreak of war. Perhaps the best piece is a refreshingly frank and critical assessment by Wang Pufeng of China's tasks in facing the high-tech realities of future conflict.

Three main aspects of *Chinese Views of Future Warfare* combine to make it an interesting and valuable

Bates Gill is research professor at the Center for Nonproliferation Studies, Monterey Institute of International Studies.

**PLA destroyer *Harbin*
arriving in San Diego.**

U.S. Navy (Felix Garza)

work: it demonstrates the differences of opinion among China's military elite, exhibits China's ongoing military-technical deficiencies, and reveals a continued adherence to certain basic traditions of Chinese military thinking.

The debates which emerge from these pages will partially dispel the myth of a monolithic Chinese "center" whose policies can be easily characterized in black and white. For example, as in the United States, the opportunities and risks of the new technological age present clear differences on the fundamental concepts that should guide doctrine and strategy in the future. Those Chinese authors published here assign varying degrees of importance to "people's war," "local war under high-tech conditions," and RMA while also trying to fit these concepts into a single strategic vision that is both ideologically acceptable and militarily feasible.

Americans will find it interesting that the Chinese also argue over whether the current RMA is "concept-driven" or "technology-driven" and debate the nature and number of previous RMAs. On the first point, most authors probably agree with Zheng Qinsheng who admonishes those who "tend to place greater emphasis on hardware instead of software." For many of the authors, the current RMA is clearly "concept-driven" (probably more a practical than a philosophical opinion, given China's technological difficulties with RMA). Less explicit but present in these articles is the tension between traditional highly-centralized command structures (which are far more vulnerable to precision-strike and information attack) and decentralized, dispersed, redundant, and interlinked C^{3}I networks which are far less familiar in Chinese planning.

There are also differences among and within articles over the respective roles of "state" and "market" forces to

encourage the defense industrial base to exploit new technological opportunities inherent in RMA. There are even divergences of opinion—as in this country—over the nature and role of peacekeeping forces. Defense Minister Chi Haotian notes approvingly that China "actively participated in U.N. peacekeeping operations, making a positive contribution to world peace and stability," while Yu Qifen criticizes peacekeeping as "new interference from the U.S. and Western countries" and as attempts to "overthrow governments" that alarm the developing world.

Secondly, careful reading of this volume demonstrates that the contributors are for the most part very aware of the many military-technical difficulties China must overcome to take advantage of the current RMA. A colonel states that "the chief contradiction" for modernization is "between the objective requirements of modern warfare and the relative low level of modernization of our national defense." Solving it "will be the central task of our national defense construction." In the articles about future military trends, an analyst from the Academy of Social Sciences cautions that "there will be a big gap in the military capability between China and other relevant countries" and that in the future the "gap will be wider." One author warns the Chinese military "to overcome the enemy in ourselves" to meet the "severe historical requirement" of high-tech warfare.

Ding Henggao, formerly head of the ministry-level body in charge of the military-industrial base, directs attention to the "relationship between requirements and possibility." He predicts that "for a considerably long time, the gap between available funds and the large investment needed for developing high-tech weapons will be a restriction on development." The contribution on logistics modernization by the Chief of the General Staff goes on at length about what "should" be done and stresses the problems to overcome rather than solutions to them. Such comments abound.

According to Pillsbury, U.S. analysts have decided that China "lacks a vision of the nature of future warfare." But this may be an overstatement. Most American observers are clearly aware of Chinese military aspirations but seriously question how the gap between visions and reality will be closed. These articles do not greatly alter that understanding. There is no systematic effort in the articles, even at a theoretical level, to map out a strategy over time to meet the requirements and achieve the military-technical breakthroughs which they describe in detail as the next RMA.

In the end, in spite of pointed debates and revealing insights, one is struck with the lack of fundamental conceptual change in military thinking even as China contemplates the importance of RMAs. In one rather strange instance, an author calls on PLA leaders to conduct a conscientious study of "magic weapons" starkly reminiscent of Chinese military reformers more than a century ago who urged mastering "superb and secret weapons" to defeat foreign threats.

But significantly, Chinese military thinkers remain closely wedded to concepts of Maoist people's war, and several authors attempt to apply those to modern warfighting and RMA. On the one hand, the implications of this outlook extend beyond political or ideological considerations: the continued intellectual adherence to people's war doctrine also suggests sluggishness on the part of the Chinese military to adapt to a rapidly changing military-technical environment which will define the future of warfare. On the other hand, drawing on Sun Zi and Mao, the people's war concept of "defeating the superior with the inferior" runs throughout this collection. This approach suggests a more realistic sense of Chinese capabilities and encourages creative thinking in a new technological era to confront and defeat a more powerful adversary.

Spelling and translation miscues can be a bit distracting and confusing. For example, the well-known Maoist "third line" military-industrial strategy is rendered as the "three-line," and the "Mydao Co." should be McDonnell Douglas Corporation. Two workhorses

of the Chinese troop transport fleet—the Yun-8 and the Yun-12 aircraft—are misnamed; the term for "national security" often gets translated as "national safety." Similar errors pop up elsewhere, but they are minor. (The promise of a revised edition of this book is welcome news.)

More importantly, this volume would profit from greater analytical input from the editor. As a long-time specialist on China and its military-technical development, he certainly could have gone beyond the useful but basic descriptive summaries of the chapters and applied his skill for the analytical benefit of readers. Greater contextual discussions would have been especially useful to those who are approaching Chinese military writings for the first time. For example, without more analysis to provide context, non-specialists might come away with the impression that these articles represent capabilities that China can readily develop and employ. Such misperceptions only bolster Beijing's psychological deterrent or encourage those who predict confrontation with China, though neither alternative seems to be intended by this work. An index would also have proven useful.

China will likely continue a steady but problem-ridden integration of advanced technologies into its force structure. These developments will not resemble the current U.S.-style RMA, but there is no reason it should. Future changes in PLA modernization might be revolutionary by Chinese standards and best be termed an "RMA with Chinese characteristics." Its most capable aspects are those whereby China can use its "inferior position" to defeat a "superior enemy" and may combine old and new: stand-off weaponry such as ballistic and cruise missiles, information deception, sabotage, and deterrence, and methods to manage disadvantageous conflict escalation.

But no matter which direction China takes in pursuit of RMA, we will have a better sense of the process and problems it will face thanks to this unique and timely volume. **JFQ**

PENETRATING THE HERMIT KINGDOM

A Book Review By
ROBERT W. SENNEWALD

The Two Koreas: A Contemporary History
by Don Oberdorfer
Reading, Mass.: Addison-Wesley, 1997.
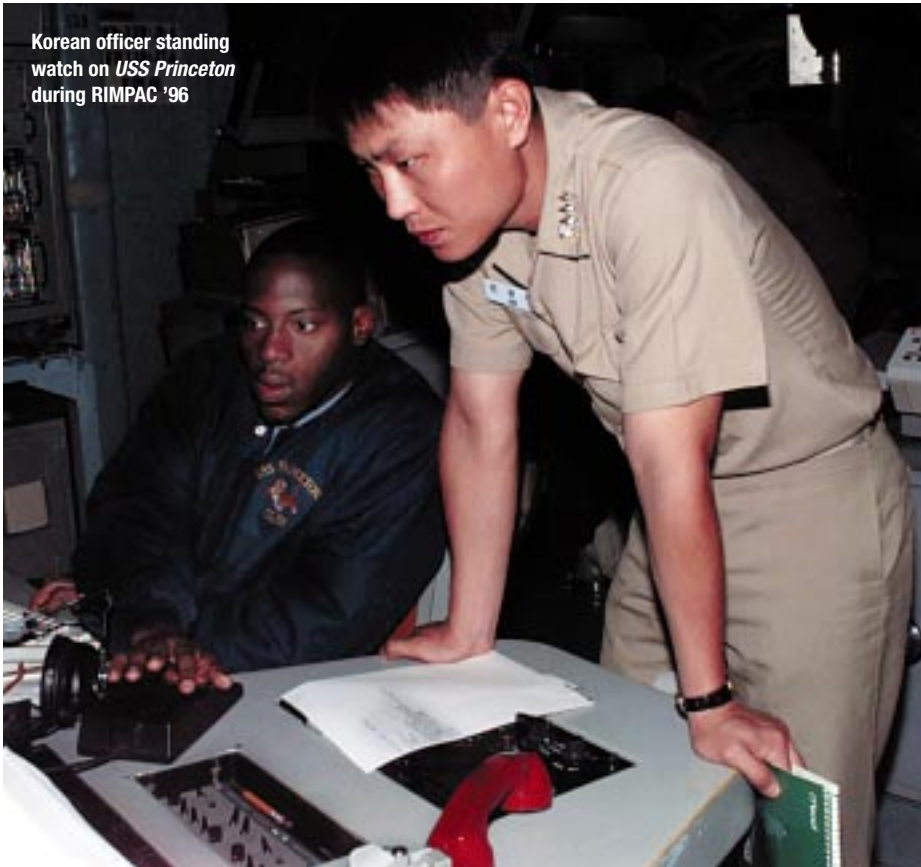480 pp. $30.00
[ISBN 0–201–40927–5]

Don Oberdorfer's account of contemporary Korea is a must read for Asian specialists and laymen alike. It provides excellent background on complex events in the two Koreas over the last two and a half decades, the part played by the United States, and the impact of other major powers on the peninsula. While the book reminds us that formal U.S. contact with Korea began in 1882 (America being the first Western nation to establish diplomatic relations) and briefly touches on the Korean War, it is focused on the period from the early 1970s until the present.

Considered by many observers (including this reviewer) as the finest American reporter on East Asia, Oberdorfer is well qualified to write a detailed account of this period in Korean history. He covered most of the crises reviewed in *The Two Koreas* and conducted hundreds of interviews in the course of his research. While academics may be disappointed by the lack of documentation, his efforts to identify sources and offer a balanced view of events are impressive. Readers should heed the author's admonition in the foreword that the book is a contemporary history which "seeks to transcend journalism but is written only a few years after the events it describes." It requires a certain degree of intellectual courage to undertake such a work. Many controversies raged in both Seoul and Washington over issues treated in the book which continue to generate strong reactions for those involved in the saga on the Korean

General Robert W. Sennewald, USA (Ret.), was commander in chief of U.S. Forces Korea from 1982 to 1984.

Korean officer standing watch on *USS Princeton* during RIMPAC '96

U.S. Navy (Felix Garza)

AMERICA'S LONG ROAD TO VIETNAM

A Book Review by
ANDREW F. KREPINEVICH, JR.

Dereliction of Duty:
Lyndon Johnson, Robert McNamara,
the Joint Chiefs of Staff,
and the Lies That Led to Vietnam

by H.R. McMaster
New York: Harper Collins, 1997.
446 pp. $27.50
[ISBN 0–06–018795–6]

Following the Bay of Pigs, President John Kennedy observed that, while victory has many fathers, defeat is an orphan. In *Dereliction of Duty*, however, H.R. McMaster ponders the period leading up to the deployment of U.S. combat forces to South Vietnam in summer 1965 and finds that their eventual defeat was fathered by almost every leader of the national security community.

The author, a serving Army officer, uses recently released documents that include records of White House meetings and deliberations by the Joint Chiefs. But he does not so much break new ground on events leading to intervention in Vietnam as deepen our knowledge of what became a decade-long, slow-motion Bay of Pigs. Although there are few revelations, readers are rewarded by his painstaking research, which presents a vivid account of the policy process that ultimately led to the greatest U.S. military defeat of this century.

Few of the players escape indictment. President Lyndon Johnson appears as a commander in chief who sees Vietnam as a subject for damage control, not serious strategic thought. He first determines that the conflict is an impediment to his election as President in his own right, and then a barrier to the Great Society, which he hopes will secure him a place in history not unlike that of Franklin Roosevelt. Toward that end LBJ is not above "slow rolling" the American

peninsula. Finally, one should not be deterred by the tendency of journalists to take some liberties with their prose.

The Two Koreas chronicles a legacy of strife which is attributed in large part to geography. It explains tensions on the Korean peninsula that range from contacts between North and South, to high-sounding peace initiatives, to violence along the demilitarized zone and the assassination of a South Korean president. Moreover, the pivotal role of the United States is examined throughout. Many lessons emerge for government leaders on both sides of the Pacific, including that:

■ Washington has had little leverage on the domestic scene in South Korea since the 1970s

■ dealing with both Koreas is not a typical exercise in diplomacy for the United States

■ lack of accurate information on the North seriously complicates policymaking in both Seoul and Washington

■ Seoul has a difficult time dealing with Washington on issues involving the North.

A major portion of this book is appropriately devoted to defining the Chun Doo Hwan era, including the Kwangju incident and the nuclear problem in the 1990s. The latter account warrants close consideration and presents a feasible explanation of American policy, although with a distinct State Department flavor. Oberdorfer skillfully and breathlessly recounts the U.S. slide toward war in the spring of 1994. Many Korean observers believe the potential for conflict at that time was misread and greatly exaggerated by Washington. The author acknowledges differences of opinion over the threat when he concludes the discussion of the war scare by observing that it will be years before we learn the truth about just how close the Korean peninsula came to war.

Oberdorfer has made a valuable contribution to our general knowledge of Korea and to the trials and tribulations of its people over the last 25 years. Unfortunately, his book appeared before the recent Asian financial meltdown opened another dynamic chapter in Korean history. **JFQ**

Lieutenant Colonel Andrew F. Krepinevich, Jr., USA (Ret.), is the author of *The Army and Vietnam*.

Johnson, McNamara, and Taylor.

Courtesy of Special Collections, NDU Library

people, their elected representatives, and the media. He approves a strategy of gradually increasing pressure on the communist regime in North Vietnam. But it is more of an election and legislative consideration with little if any regard for military issues.

The President's senior civilian advisors appear to be willing (though increasingly anxious) supporters of his approach to the war and dismissive of the Nation's senior military leaders, who seem to be old warriors who do not grasp that the nuclear age has changed the nature of conflict. Secretary of Defense Robert McNamara, Assistant Secretary of Defense John McNaughton, and National Security Advisor McGeorge Bundy are depicted as intent on managing the war by using political science game theory and analytic methodologies, attempting to send the proper "signals" to Hanoi to cease and desist from supporting the Viet Cong.

The difficulty with efforts to micro-manage the war was demonstrated in a tragic, yet comic episode in which the U.S. Ambassador to the Republic of Vietnam, Maxwell Taylor, frets that the newly initiated Rolling Thunder bombing campaign is not

proceeding with growing intensity from the central panhandle to the northern heartland of Vietnam and thus may not send the right signal. The Joint Chiefs, however, are more interested in destroying Hanoi's military capabilities, causing strikes to be postponed—with a corresponding reduction in the tempo of the bombing—when poor weather obscures the most lucrative targets. At the same time, to safeguard his domestic political flank Johnson placed tight restrictions on "marching" bombing raids into the Red River Delta, thereby stopping Taylor's "mounting crescendo" in its tracks.

As the Nation slowly proceeded down the road toward tragic intervention, the Joint Chiefs emerge as an object of both sympathy and contempt. At times they are depicted as isolated from policymaking on the war, denied by McNamara (and supported by two Chairmen, Maxwell Taylor and Earle Wheeler) the opportunity to present their views to the President. Much more disturbing is the account of occasions when McNamara, Taylor, and

Wheeler distorted recommendations by the Joint Chiefs or selectively cited them to advance their agendas with LBJ. Here the evidence is compelling and the author's verdict is both chilling and blunt: "When the Chiefs' advice was not consistent with his own recommendations, McNamara, with the aid of the Chairman . . . lied in meetings of the National Security Council about the Chiefs' views."

But the Chiefs also appear as the "gang that couldn't shoot straight." When opportunities arose to advance a persuasive strategy, they invariably squabbled over the proper course of action. Their inability to put aside service rivalry and adopt a unified approach left them on the sidelines in senior level policy debates over Vietnam.

Far more disturbing, however, was the willingness of several members of the Joint Chiefs to put the welfare of their service ahead of national interests. General Harold Johnson, Chief of Staff of the U.S. Army, agonized over whether to resign in protest, then decided to stay on, in McMaster's words, to "protect the Army's interests as best he could." Admiral David McDonald, Chief of Naval Operations, mutes his criticism of McNamara's approach to the war after the latter supported retaining the position of commander in chief, U.S. Pacific Command, as a Navy billet. This was an issue deemed vital for Navy morale and for McDonald's credibility within the service. General John McConnell, Chief of Staff of the Air Force, was chosen for this position only after assuring the President that he could support policies inconsistent with his views as a professional officer. The Joint Chiefs backed Johnson's approach despite a lack of faith in its efficacy, while consoling themselves that their strategic logic would eventually prevail. It did not.

What the President wanted most from the Joint Chiefs was their loyalty and support, not professional military advice. Strategy was subordinate, in Lyndon Johnson's mind, to the need to protect his domestic power base and enact the Great Society. Although Robert McNamara may have been a barrier between the President and senior military leaders, the fact remains that Johnson saw the Joint Chiefs not

as a source of counsel, but rather as a constituency he wanted on board to protect himself from accusations that he was soft on the war. As the author notes, when members of the Joint Chiefs named by Eisenhower retired, Kennedy and Johnson replaced them with men who would not "pull a MacArthur" or who, like Taylor, were comfortable with the nostrums of limited war deterrence theory.

This tragic state of affairs begs several important questions: What if the Joint Chiefs had gotten their way? What if the United States had applied far more military force more quickly than the Johnson administration permitted? Would it have made a difference? On this particular point the author leaves us with the somewhat ambiguous and ultimately unsatisfying observation that the war "was not lost in the field, nor was it lost on the front pages of *The New York Times* or on the college campuses. It was lost in Washington, D.C., even before Americans assumed sole responsibility for the fighting in 1965. . . ." But that is not so. The conflict was lost principally in Vietnam. It was lost by a succession of Saigon regimes that could not command the loyalty and support of their people to extract the sacrifices required to prevail. And it was also lost because the enemy proved to be resourceful and both willing and able to wage a protracted conflict, which the United States was not.

Putting aside speculation over "Who lost Vietnam," McMaster has written a compelling and detailed account of a policymaking process that led to defeat. Already in its fifth printing with 55,000 copies in circulation, *Dereliction of Duty* is a must-read for anyone with interest in that conflict or civil-military relations. **JFQ**

JFQ welcomes your letters and comments

Fax your correspondence to (202) 685–4219/DSN 325–4219 or via e-mail to JFQ1@ndu.edu

---

THE NEW LIVING ROOM WAR

A Book Review by
ROBERT B. OAKLEY

Late-Breaking Foreign Policy: The News Media's Influence on Peace Operations
by Warren P. Strobel
Washington: U.S. Institute of Peace Press, 1997.
304 pp. $29.95
[ISBN 1–878379–68–2]

Warren Strobel has produced a well-researched and well-written study of the influence that the media exerts on U.S. foreign policy, with special emphasis on recent attempts at peacekeeping. He makes the penetrating observation that the media is apt to have more effect on peace operations than on conventional military operations and illustrates this point by examining events in Somalia, Bosnia, Haiti, and Rwanda. He shows why "understanding properly the role of the news media is vital to the future of American foreign policy."

Late-Breaking Foreign Policy deals with print and electronic media, particularly the latter's accelerating impact on policymaking. Based on a range of sources and his own research, Strobel concludes that the media does not by itself exercise a determining influence on policy. That opinion is shared by others such as Ted Koppel. However, his analysis as well as some of his other conclusions reveal that this is an oversimplification. Among the operations he examines are instances in which the media had a major impact on policy.

The argument advanced by those who, like Strobel, believe that there is no "CNN effect" in the making of foreign policy is that powerful media influence results from weaknesses in policy. When there is sufficient public and congressional support and policymakers are resolute, the media cannot change policy. Yet this tends to belittle the demonstrated power of the media to

---

Robert B. Oakley served as special envoy to Somalia under Presidents Bush and Clinton.

---

alter public and congressional opinion by providing a decisive weapon to opponents of a policy who have been unable to prevail otherwise. It seems to vastly underrate our political system as it now functions within the reality of an energized public with limited long-term perspectives.

Occasionally, determined officials have tried to explain their policy to stay on course in the face of what could have been a major backlash—even with a significant loss of life, which Strobel identifies as the number one determinant of negative public reaction. One such case was the 1987 Iraqi missile attack that killed 37 sailors aboard *USS Stark* in the Persian Gulf. The President and the Secretaries of State and Defense had already argued in favor of protecting friendly shipping. Moreover, the merits of maintaining U.S. presence had been virtually an article of faith since the Carter doctrine, and the Reagan administration was firmly behind it. Contrast that with the reaction to the 1983 bombing of the Marine barracks in Beirut, which obliged the same officials to reverse the policy of our military presence in Lebanon. However, the carnage of the bombing was shown in bloody detail shortly after it took place, creating public shock. There were no television pictures of *USS Stark* for several days since it was at sea; and there were none of the fatalities.

Certainly images of dead American soldiers in the streets of Mogadishu and another being held in captivity had a profound influence on the decision by the Clinton administration to pull out in six months. Following a meeting with congressional leaders when the President set March 31, 1993 as a deadline for withdrawal, Senator Sam Nunn and Representative Lee Hamilton privately criticized the announcement of a date for withdrawal since it would strengthen the hand of Aideed, who could simply wait out the United States. However, when asked what Congress would have done if Clinton had appealed to his prerogative as commander in chief and refused to set any limit, both men replied that Senator William Byrd could have easily gotten a law passed

SRO news conference, Sarajevo.

1st Combat Camera Squadron (Lance Cheung)

requiring that all U.S. forces be out of Somalia before January 1, 1993.

Strobel is on solid ground since his careful examination of peace operations draws upon interviews with military and civilian personnel in the field and in Washington, higher levels in the administration, members of Congress, and other observers. He offers perceptive insights, starting with the comment that there is much less margin of error in the conduct of peace operations than in more traditional military efforts. This can be attributed to the lower degree of national commitment to such operations—which are more complicated and must avoid an excessive use of force—and to inescapable media attention, at least during initial stages of an operation. Thus he concludes that peace operations "require a more sophisticated understanding on the part of military and civilian officials of news media behaviors." He gives an accurate account of operations and demonstrates the negative consequences that occur when this "more sophisticated understanding" does not exist. This conclusion has not only been endorsed by officials and military commanders involved, it has become doctrine for the Army and Marines in planning for peace operations.

The book shows how the media—together with nongovernmental organizations, Congress, and individuals within a hesitant administration—promote their own policy agendas. In looking at the Rwanda and Somalia operations, Strobel documents the advocacy of interventionist policies by actors deeply concerned over dire humanitarian situations and how they provided information to the media to

advance their perspective on addressing the root cause.

Strobel cites senior officials (including a former national security advisor to the President, Brent Scowcroft) who asserted that absent TV cameras, the United States might not have mounted these operations. He also points out how Secretary of State James Baker used television coverage of his visit to Iraqi Kurds to build support for the humanitarian policies of the Bush administration and how Brian Atwood, the administrator of the U.S. Agency for International Development, used it to precipitate the decision for massive assistance of the Rwandan refugees. On the other hand, he notes the limits of the media in influencing the Bush administration on U.N. peace operations in Bosnia. To support his arguments he has gathered data on media coverage, how the level of that coverage varied, and its ultimate impact.
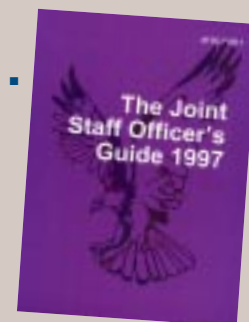
Late-Breaking Foreign Policy is a laudable book on a controversial subject which contains useful background for civilian officials and military officers. It is worthwhile for anyone engaged in peace operations in particular and military operations other than war in general. Strobel explains both how the media operates and how to work with media representatives rather than accepting the adverse consequences of not cooperating. **JFQ**

DISTRIBUTION: *JFQ* is distributed to the field and fleet through service channels. Individuals and organizations interested in receiving the journal on a regular basis should make their requirements known through command channels. Any corrections in shipping instructions for service distribution should be directed to the appropriate activity listed below.

■ **ARMY**—Contact the installation publications control officer (citing Misc. Publication 71–1) or write: U.S. Army Publications Distribution Center, ATTN: Customer Service, 1655 Woodson Street, St. Louis, Missouri 63114–6181, or call (314) 263–7305 / DSN 693–7305 (extension 268); or order via Starpubs or the Internet [http://www.usappc.hoffman.army.mil].

■ **NAVY**—Contact the Navy Inventory Control Point, Customer Service List Maintenance (Code 3343.09), 700 Robbins Avenue, Philadelphia, Pennsylvania 19111–5098; requests may be sent by Fax to (215) 697–5914 (include SNDL, UIC, and full address).

■ **MARINE CORPS**—For one-time distribution of an individual issue write to Marine Corps Logistics Base (Code 876), 814 Radford Boulevard, Albany, Georgia 31704–1128; request by Fax at (912) 439–5839 / DSN 567–5839. To be placed on standard distribution contact Headquarters, U.S. Marine Corps (Code ARDE), Federal Building No. 2 (Room 1302), Navy Annex, Washington, D.C. 20380; request by Fax at (703) 614–2951 / DSN 224–2951.

■ **AIR FORCE**—Submit AF Form 764A with short title "JFQN (indicate issue number)" to the base publications distribution office to establish unit requirement through the Air Force Distribution Center, 2800 Eastern Boulevard, Baltimore, Maryland 21220–2896.

■ **COAST GUARD**—Contact Headquarters, U.S. Coast Guard, ATTN: Defense Operations Division, 2100 2d Street, S.W., Washington, D.C. 20593–0001.

In addition to service channels, bulk distribution is made directly to defense agencies, the Joint Staff, unified commands, service colleges, and other activities. Changes in shipping instructions should be communicated to the Editor (see schedule below).

SUBSCRIPTIONS: *JFQ* is available by subscription from the Government Printing Office. To order for one year, cite: *Joint Force Quarterly* (*JFQ*) on the order and mail with a check for $17.00 ($21.25 foreign) or provide a VISA or MasterCard account number with expiration date to the Superintendent of Documents, P.O. Box 371954, Pittsburgh, Pennsylvania 15250–7954, or Fax the order to: (202) 512–2233.

Individual copies may be purchased through GPO bookstores nationwide for $8.00 each.

CONTRIBUTIONS: *JFQ* welcomes submissions from members of the Armed Forces as well as from both defense analysts and academic specialists from this country and abroad, including foreign military officers and civilians. There is no required length for contributions, but manuscripts of 3,000 to 5,000 words are appropriate. Other submissions, however, to include letters, commentary, and brief essays are invited. Reproductions of supporting material (such as maps and photos) should be submitted with manuscripts; do *not* send originals. Unsolicited book reviews are generally not accepted for publication.

All submissions to *JFQ* must be accompanied by a covering letter which states that the manuscript has not been previously published and is not being submitted simultaneously to any other publication. In addition, the letter must include the author's full name (including military grade, service/component, and assignment if applicable), a complete postal address (with Zip code), and a work telephone number. Submissions which do not comply with these conditions may not be considered for publication. Neither facsimile nor e-mail manuscripts will be accepted as formal submissions.

All manuscripts are reviewed, a process which takes approximately three months. To facilitate review, provide three copies of the manuscript together with a 150-word summary. Place personal or biographical data on a separate sheet of paper and do not identify the author (or authors) in the body of the text. Follow any accepted style guide in preparing the manuscript, but endnotes rather than footnotes should always be used. The manuscript should be double-spaced with one-inch margins.

JFQ reserves the right to edit contributions to meet space limitations and conform to the journal's style and format. Proofs of articles accepted for publication are not normally returned to authors for review.

Unless evidence of prior clearance is provided, all manuscripts selected for publication which are contributed by members of the U.S. Armed Forces or employees of the Federal Government are forwarded to the Office of the Assistant Secretary of Defense for Public Affairs to undergo security review. No honorarium or other form of payment is authorized for the publication of articles submitted by servicemembers or U.S. Government employees.

If possible submit the manuscript on a disk together with the typescript version. While 3.5- and 5.25-inch disks in various formats can be processed, WordPerfect is preferred (disks will not be returned unless requested). Information on the submission of contributions is available by contacting (202) 685–4220 / DSN 325–4220, Fax: (202) 685–4219 / DSN 325–4219, or writing to the Editor, *Joint Force Quarterly,* ATTN: NDU–NSS–JFQ, 300 Fifth Avenue (Bldg. 62), Fort Lesley J. McNair, Washington, D.C. 20319–5066. **JFQ**

DISTRIBUTION SCHEDULE

A total of 35,000 copies of *Joint Force Quarterly* is distributed worldwide. Of this number, more than 17,500 copies are sent directly to the five services for break down and delivery to subordinate commands, units, bases, etc. Bulk shipments also are made to other organizations listed below.

	copies		copies		copies
Office of the Secretary of Defense	400	U.S. Atlantic Command	75	**PME Institutions**	
Joint Staff and Joint Activities	700	U.S. Southern Command	150	U.S. Army War College	600
Services		U.S. Central Command	275	U.S. Army Command and General	
Army	3,000	U.S. Strategic Command	200	Staff College (including the School	
Navy	6,500	U.S. Space Command	150	of Advanced Military Studies)	1,525
Marine Corps	1,500	U.S. Special Operations Command	50	Naval War College (both resident and	
Air Force	6,500	U.S. Transportation Command	100	nonresident programs)	1,750
Coast Guard	75	**Defense Agencies**		Naval Postgraduate School	300
Unified Commands		Defense Information Systems Agency	125	Marine Corps War College and Marine	
U.S. European Command	275	Defense Intelligence Agency	150	Corps Command and Staff College	400
U.S. Pacific Command	275	Defense Logistics Agency	150	Air War College	450
U.S. Forces Korea	75	Defense Mapping Agency	25	Air Command and Staff College	
U.S. Forces Japan	50	Defense Nuclear Agency	25	(including the School of Advanced	
Alaska Command	25	National Security Agency	50	Airpower Studies)	900

In addition to the above, copies of *JFQ* are distributed to general/flag rank officers and members of Congress; service doctrine centers; both U.S. and foreign military attachés; and selected educational institutions, journals, and libraries in this country and abroad.

coming next . . .

Plumbing the Battlespace
plus
**professional military education,
multinational doctrine,
global mobility,**
and more in the Spring 98 issue of JFQ

JFQ

J O I N T   F O R C E   Q U A R T E R L Y

Published for the
Chairman of the Joint Chiefs of Staff
by the Institute for National Strategic Studies
National Defense University
Washington, D.C.